





Impact of foot health behavior among ethnic minority populations: A cross-sectional population-based study

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Abstract

Objective: To analyze the impact of the foot health and health behavior and the characteristics of outdoor footwear among minority ethnic groups.

Design and measures: A cross-sectional study design using the Foot Health Status Questionnaire: foot pain, foot function, shoe, general foot health, general health, physical activity, social capacity, and vigor. Outcomes included the self-reported type of outdoor footwear and clinical characteristics by sex were collected in 2019–2020.

Sample: A total of 78 Roma participants self-identified as members of this ethnic minority and 72 participants non-Roma were assessed ($n = 150$).

Results: The lower score values was recorded in the footwear and general foot health domains in Roma population. General population obtained higher scores in general health domains. The most common outdoor footwear types were running shoes and walking shoes in non-Roma population, versus flip flops and slippers in Roma population. Clinical characteristics did not show any statistically significant differences ($p < .05$).

Conclusion: Roma people wear flip flops and slippers and non-Roma people running shoes and walking shoes. These findings reveal cultural differences that make it easier for the Roma population to experience a greater burden of foot health problems. General foot health and foot pain dimensions show statistically significant differences among ethnicity.

KEYWORDS

ethnicity, foot health, footwear, pain, Roma risk taking

1 | BACKGROUND

Roma ethnicity is a term essential for understanding health and confronting health inequities (Bhopal et al., 2021). Health is an area focused by the European framework for the National Roma Integration Strategies (NRISs) 2020, and self-perceived health studies are indi-

cators used in the NRIS (La-parra-Casado et al., 2020). Roma people are a vulnerable population group (social, economic, and political), it not related with the sociodemographic characteristics (Condon et al. 2019; European Union. Roma Health Report. 2014; Fundación Secretariado Gitano, 2009), Roma people are populations at risk across the lifespan and the evidence of foot health in this minority ethnic group

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is scarce. Spanish Roma represents 700,000–900,000 people of the total population and it represents one of the oldest ethnic minority in many European countries (5.2 million) (Fundación Secretariado Gitano, 2009).

According to the World Health Organization, quality of life is affected by the culture of a specific population. In this sense, there are cultures with greater roots than others, such as the Roma population. In the general population, foot-related health problems are well known, and the prevalence of podiatric medical abnormalities is frequent (Pita-Fernández et al., 2014). Identification of foot problems is crucial, they have a significant impact on their functional status. Though literature exists for foot problems in general people, few studies have compared the foot health related quality of life by ethnicity.

Additionally, the use of a certain type of footwear is associated with sociocultural factors, though aesthetics and psychosocial factors also affect your choice (Hockey et al., 2013). Other ethnicities, even walk barefoot, without protecting the foot from possible injuries or wounds. The level of foot health have associated with the using walking or running shoes outdoors. Different footwear can negatively affect the health of a community, and cause biomechanical problems, painful conditions, and musculoskeletal diseases (Buldt & Menz, 2018). Outdoor footwear used by other populations has already been reported in the literature, but it has not been carried out in Roma population. Given the relationship between footwear and pathology, the podiatrist can advise on the type of healthy footwear to avoid foot problems (Vernon et al., 2007). Despite the existence of investigations that report the poor foot health effects of not receiving treatment such as musculoskeletal disorders and biomechanical disease, a low population rate takes account of the recommendations. However, it is a condition relevant in public health due to its relationship to general health, wellbeing, and quality of life of people (Usera-clavero et al., 2019).

Some studies report that Spanish Roma people show worse health indicators related to compare to the general population (Usera-clavero et al., 2019). In this context, a study of Roma participants found that they had lower values in the footwear domains, and they had worse quality of life (Coheña-Jiménez et al., 2020). Hence, they have foot health problems, a high percentage of them has poor foot health as well as a shorter life expectancy than national average. This could have important public health implications. Therefore, understanding the associations between foot health and footwear is very important for an approach multidisciplinary care of the Roma population. With that, this study was carried out with the intent to address foot health knowledge gaps. As the evidence suggests, many researchers utilized the clinimetric tool validated Foot Health Status Questionnaire to measure the quality of life, and many people wear inappropriate footwear even with foot problems (Bennett et al., 2001).

However, despite that, National Health Surveys of the Roma population in Spain and Europe have not taken into account foot health (Martín-Pérez, et al., 2015). To our knowledge this study to compare an in-depth characterization of foot health status between Roma and general population. Exploring outdoor footwear and foot health of a population is essential to aid the development of tailored public health strategies targeting the Roma population. These findings could poten-

tially help in the access to educational information, recognizing the importance of the cultural beliefs of these people. Patient education related to foot health and foot self-care is rarely provided during medical appointments (Graham et al., 2017).

Therefore, the present study aims to analyze the impact of the foot health and health behavior and the characteristics of outdoor footwear among these ethnic groups: Roma and non-Roma populations.

2 | METHODS

This is a cross-sectional study desing.

2.1 | Sample

The sample consisted of 78 Roma participants self-identified as members of this community and 72 participants non-Roma. This analysis is part of the findings of a cross-sectional survey on the foot health behaviors of the Roma population in Spain. There were no language difficulties in approaching the groups, as Spanish Roma are Spanish citizens, they speak the language of the majority. It has been necessary to use a convenience sample and a “snowball sampling” procedure. Participants included were Spanish Roma and general Spanish population; were males or females aged 19–65 years; and were the ability to understand the questionnaire. The rules for exclusion were participants with cognitive problems. Some participants did not complete the questionnaire and they have not been accounted for in the statistical analysis of the present study.

The sample was recruited from different centers, a health center and a Non-governmental organization (NGO) center, which associated quality of life, foot health, and footwear in ethnic minority population and the general population. General population was recruited face-to-face in the first visit to a health center by the interviews. The Roma sample was recruited among the persons who attended the provincial headquarters of the Spanish Roma foundation in Spain.

2.2 | Recruitment

Data collection took place between November 2019 and December 2020. Data were collected with the aid of the interviewers, which worked directly with or indirectly with the Roma population. Subjects completed the self-administered questionnaires with the help of the Spanish Roma foundation. Spanish Roma are Spanish citizens, they speak the language of the majority (LaParra-Casado et al., 2020). Participants were instructed to ask researchers for clarification of doubts about filling out the questionnaires or understanding any questions, if any. Roma people surveys were mainly supervised by the main researcher, a nurse with expertise in transcultural nursing and health inequalities. The data collection was a total of 241 participants, 124 non-Roma, and 117 Roma participants. Finally, 52 non-Roma participants and 39 Roma participants were excluded (refused to participate,



change of mind). Therefore, a total of 72 Roma and 78 non-Roma Participants completed the questionnaire.

Sample size calculation was performed by means of the difference between two independent groups using the G*Power 3.1.9.2 software (Heinrich-Heine-Universität Düsseldorf; Düsseldorf, Germany) and based on the foot function domain scores (mean \pm standard deviation) from the FHSQ from a pilot study ($n = 40$) with the two groups. According to a previous similar study, the smallest clinically important difference in FHSQ scores is 21 points (Bennett et al., 2001). To data analysis were used a group composed of 20 Roma people and 20 general persons. Indeed, a one-tailed hypothesis, an effect size of 0.47, an α error probability of 0.01, a power ($1-\beta$ error probability) of 0.80, and an allocation ratio of 1 was used for the sample size calculations. Participants were enrolled consecutively until the sample size was achieved.

2.3 | Measures

During the research, two types of self-administered anonymous questionnaires were used: (1) foot-specific questionnaire and (2) types of footwear. The questionnaire used was a modified version of the study of Barwick et al. and it was previously validated and translated by other researchers (Barton et al., 2009; Barwick et al., 2018).

Firstly, foot-specific health-related quality of life was evaluated using the Foot health status questionnaire (FHSQ). All participants completed the validated self-report Spanish FHSQ (version 1.03), which showed adequate psychometric properties, and has been validated in previous research (Cuesta-Vargas et al., 2013; Menz et al., 2014). The questionnaire contains three blocks. The first block evaluates 13 questions about foot health: foot pain, foot function, footwear, and general foot health, with an adequate criterion, and construct validity (Cronbach $\alpha = 0.89-0.95$) and high retest reliability (intraclass correlation coefficient = 0.74–0.92) (Bennett et al., 2001). The second block evaluates domains related to general health: overall health, physical activity, social capacity, and vigor. The last section asked comorbidities with dichotomous answers. The responses are analyzed through a computer software, which it obtains several indexes. After processing the data, the software produces a score ranging from 0 to 100 (global score). Higher scores are the best possible foot status health and lower scores reflect a worst state of health for the foot. Secondly, to know the outcome variable of the type of footwear, each participant was presented with a validated footwear type picture chart. The chart included a total of 16 different types of footwear. The participants selected a type of footwear from the different types. This footwear assessment has been validated in previous research (Barwick et al., 2018).

2.4 | Data analysis

Data exploration was done for the statistical analysis, generating summary statistics for all the cases. The analysis of the data will be carried

out using the statistical software IBM SPSS Statistics (Version 23.0, IBM Corp., Armonk, NY, USA).

Means and standard deviations are reported for independent continuous variables. Frequency and percentages were used for dichotomous and categorical variables. All variables were examined for normality of distribution using the Kolmogorov-Smirnov test. Data were considered a normal distribution if $p > .01$. FHSQ domains were described. Mean \pm SD for parametric data, median \pm interquartile range for nonparametric data, and the maximum and minimum (range) values were used.

The Chi-square test (χ^2) with Yates continuity correction was applied to the contingency tables, two by two, of the demographic variables for the sex comparison groups. The Mann-Whitney U test for non-normal distributions and t-student independent for normal distributions were used in the analyses. FHSQ scores were obtained from the FHSQ Data Analysis Software (Version 1.03, Care Quest, Brisbane, Australia). It was administered to calculate HQoL values related to foot health. In all of the analyses, statistical significance was established with a p -value $< .01$ with a 99% confidence interval (CI). Cases with missing data were excluded, as the proportion of missing data cases was minimal ($< 5\%$ in all cases).

2.5 | Ethical considerations

It was approved by the Biomedical Research Ethics Committee of the Regional Government (0377N2019), following the ethical principles for studies on human subjects in the European Union. All participants received written and oral information about the study, including the right to withdraw and the guarantee of anonymity. Participation was voluntary. No incentives were offered for participation. All participants received explanations about the procedures and signed a statement of an Informed Consent Form prior to participation.

3 | RESULTS

3.1 | Participants

The sample consisted of 150 men and women from the Roma and non-Roma population from Spain. There was a loss of participants they have not been accounted for in the statistical analysis of the present study. The final sample consisted of 78 Roma participants self-identified as members of this community and 72 non-Roma. The mean age (mean \pm SD in years) was 52.10 \pm 14.70 to non-Roma population and 50.40 \pm 13.90 to Roma population.

3.2 | Foot health behavior

Our data have revealed foot health related quality of life between different minority ethnic groups (Table 1). This table shown the comparison between FHSQ scores. The prevalence of the overall FHSQ scores

TABLE 1 Impact of foot health related quality of life by ethnicity

FHSQ domains	Total Group	Roma population	General population	p value
Foot Pain	77.34 ± 18.04 ^b (12.50–100.00)	72.12 ± 18.90 ^b (28.13–100.00)	82.56 ± 15.64 ^b (12.50–100.00)	.001 ^d
Foot Function	81.25 ± 37.50 ^a (18.75–100.00)	74.50 ± 18.12 ^b (18.75–100.00)	87.50 ± 25.00 ^a (43.75–100.00)	.011 ^c
Footwear	66.67 ± 50.00 ^a (8.33–100.00)	41.67 ± 50.00 ^a (8.33–100.00)	75.00 ± 50.00 ^a (16.67–100.00)	.197 ^c
General Foot Health	72.50 ± 25.50 ^a (12.50–100.00)	60.00 ± 25.00 ^a (25.00–100.00)	85.00 ± 32.50 ^a (12.50–100.00)	.002 ^c
General Health	80.00 ± 40.00 ^a (10.00–100.00)	69.20 ± 25.39 ^b (10.00–100.00)	90.00 ± 30.00 ^a (30.00–100.00)	.010 ^c
Physical activity	94.44 ± 11.11 ^a (44.44–100.00)	94.44 ± 16.67 ^a (44.44–100.00)	100.00 ± 11.11 ^a (44.44–100.00)	.037 ^c
Social capacity	87.50 ± 34.36 ^a (37.50–100.00)	87.50 ± 37.50 ^a (50.00–100.00)	87.50 ± 25.00 ^a (37.50–100.00)	.555 ^c
Vigor	62.50 ± 25.00 ^a (25.00–87.50)	62.50 ± 17.19 ^a (25.00–87.50)	62.50 ± 25.00 ^a (25.00–87.50)	.015 ^c

Note: In all the analyses, $p < .01$ was considered statistically significant.

^aMedian ± IR (range).

^bMean ± SD (range).

^cMann–Whitney U-test.

^dt student independent test.

of the study sample were higher for the domains: Physical activity (94.44 ± 11.11 , $p = .037$) and Social capacity (87.50 ± 34.36 , $p = .555$). Therefore, FHSQ scores were lower in all domains (general health, physical activity, social capacity, and vigor) for Roma people. In addition, overall the quality of life was poor for Roma men and Roma women. The prevalence of foot health was greater in the general population. Statistically significant differences between Roma people and the general population were shown for the domains foot pain and general foot health $p < .01$. The rest of the domains did not show any statistically significant differences between the groups ($p \geq .01$). The results reflect that the highest scores were in the physical activity domain (100.00 ± 11.11) and general health of the general population (90.00 ± 30.00). It was found that there was no difference in the score of the Vigor (62.50 ± 25.00) and Social capacity (87.50 ± 34.36) between both groups.

3.3 | Behavior of outdoor footwear on health

When analyzing the different types of outdoor footwear according to ethnic minority groups, the results obtained did not show changes of relevance between both groups (Table 2). There were minor differences between the majority of types of footwear between both groups. Regarding general population, running shoes were worn by 25.0 % of participants, followed by walking shoes, though with statistical significance. While for Roma population, Flip flops, Slippers, and Backless slippers had a statistically significant ($p = .0035$; $p = .0019$; $p = .0102$). The other types of footwear showed no significant difference between groups. The shoe most popular by Roma Popula-

TABLE 2 Prevalence of outdoor footwear among Roma and non-Roma populations

Outcomes	Roma population	Non-Roma population	p value
Flip flops	15 (19.2)	2 (2.8)	.003**
High heels	1 (1.3)	7 (9.7)	.530**
Ugg boots	1 (1.3)	1 (1.4)	.512**
Bespoke footwear	1 (1.3)	1 (1.4)	.512**
Mules	1 (1.3)	3 (4.2)	.556**
Court shoes	2 (2.6)	1 (1.4)	.944**
Moccasins	1 (1.3)	2 (2.8)	.944**
Oxford shoes	2 (2.6)	3 (4.2)	.927**
Slippers	18 (23.1)	3 (4.2)	.001**
Backless slippers	11 (14.1)	1 (1.4)	.010**
Sandals	13 (16.7)	10 (13.9)	.637*
Running shoe	5 (6.4)	18 (25.0)	.001*
Walking shoe	3 (3.8)	13 (18.1)	.010**
Boots	2 (2.6)	5 (6.9)	.377**
Socks only	1 (1.3)	1 (1.4)	.512**
Barefoot	1 (1.3)	1 (1.4)	.512**

Note: *Chi square test; **Chi-square statistic with Yates correction.

tion were slippers. This, however, did not apply to others outdoor footwear. Further, socks only or another style footwear were worn by one participant. However, there were no statistically significant differences.

TABLE 3 Clinical characteristics by ethnicity and sex

Clinical characteristics	Roma men	Roma women	<i>p</i> value	Non-Roma men	Non-Roma women	<i>p</i> value
Cardiac alterations	3 (9.3)	4 (8.7)	.764**	5 (17.9)	5 (11.4)	.437*
Diabetes	6 (18.8)	8 (17.4)	.877*	6 (21.4)	18 (41.0)	.087*
Arterial hypertension	12 (37.5)	14 (30.4)	.514*	11 (39.3)	15 (34.1)	.654*
Serious illness	4 (12.5)	4 (8.7)	.868**	3 (10.7)	7 (16.0)	.785**
Allergy	7 (21.9)	9 (19.6)	.803*	4 (14.3)	8 (18.2)	.913**
Vaccine	32 (100.0)	46 (100.0)	–	28 (100.0)	44 (100.0)	–
Surgery	8 (25.0)	12 (26.1)	.567*	8 (28.6)	19 (43.2)	.211*
Medical Visit	30 (93.8)	41 (89.1)	.764**	28 (100.0)	44 (100.0)	–
Medication	9 (28.1)	14 (30.4)	.825*	10 (35.7)	16 (36.0)	.955*
Toxics Habits	15 (46.9)	19 (41.3)	.625*	14 (50.0)	10 (22.7)	.016*
Problems feet	12 (37.5)	25 (54.3)	.142*	18 (64.3)	34 (77.6)	.230*

Note: * Chi square test; ** Chi-square statistic with Yates correction for categorical variables by sex.

3.4 | Clinical characteristics

When analyzing some of the clinical characteristics associated with foot health, the results revealed that the overall scores of the clinical characteristics did not show any statistically significant differences ($p < .05$) (Table 3). Considering the differences by gender, the data showed that there were minor differences between Roma and non-Roma groups. Participants who had foot structural deformities had consulted a physician to the health centre. In addition, the prevalence of most of the outcomes clinics was greater in women than men. When asking about the problems feet, non-Roma women reported more problems than Roma women.

4 | DISCUSSION

This study found that Roma population have a greater impact on behavior on foot health than non-Roma population, and that footwear have a higher influence in Roma people. These findings reveal important cultural differences that should be addressed by public health managers in order to consider the characteristics of this population. In this regard, health problems often affect unequally.

Numerous studies around the world examined the foot health in the general population, but studies of this type are not frequent among populations at risk across the lifespan, such as Roma community or as immigrant populations. The main findings of this study show that there exist differences among groups according the foot health perceived and it must be interpreted as the study based in a minority population. Previous evidence has reported that foot problems are frequently observed in the general population (Menz et al., 2014; Palomo-López et al., 2019).

Concerning the data of the domains of the FHSQ, a key finding from this investigation is that we found statistically significant differences between both groups, regarding foot pain and general foot health. Roma population shows lower scores in the domains: footwear

(41.67 ± 50.00), general foot health (60.00 ± 25.00), and general health (69.20 ± 25.39). By contrast, the dimensions that have a higher value on non-Roma population were physical activity and general health (90.00 ± 30.00). Roma population reported having difficulty in finding suitable footwear, and the comorbidity analysis was related to the poor state of the Roma population health (Martín-Pérez et al., 2015). It has also been reported that the use of traditional flat flip-flops have been shown to produce higher peak plantar pressures. It is interesting to note that, in both groups, and with regard to quality of life, the use of footwear, such as flip flops or slippers, is associated with a poorer general foot health. Concerning the gender, there is evidence to suggest that women are more likely to have foot pain than men, associated with wearing unhealthy footwear. In relation to foot pain, our results reported that the foot pain outcome was greater in the general population than minority ethnic group (Thomas et al., 2011). Pain could be caused by wearing inappropriate footwear. Sandals and flip flops are less advisable and can be more harmful to women's health (McRitchie et al., 2018). This could explain the high rate of pain reported and its relationship with the type of outdoor footwear. Our findings are supported by previous studies, a report carried out in 2019 in Spain found that disadvantaged populations usually have lower health levels, and that general population have not barriers to physical activity (Sanz-Remacha et al., 2019). Roma population suffers greater difficulties than the general population in activities of daily living due to foot problems, which impacts on their health in general. Therefore, physical inactivity becomes more frequent in disadvantaged populations like Roma population, and preventive cares are very important in the quality of life related to foot health. Lower quality of foot health can affect quality of life, and this contributes to reducing social participation (Menz et al., 2014; Pita-fernández et al., 2014). However, it is interesting note that lower scores in those domains related to social function (87.50 ± 34.36), and vigor (62.50 ± 25.00) may be the result of anxiety than suffer people with foot problems. In relation to general health, prior studies have shown associations between health problems and belonging to a minority ethnic group. Our results show lower scores in the Roma



population (69.20 ± 25.39). The health of the Roma population is conditioned by social determinants (Cook et al., 2013), which are necessary to know in order to understand health in these ethnic minorities.

When we analyzed the outdoor footwear, our results have suggested two reasons to explain the findings. Firstly, the cultural factor /Ethnicity is decisive in the health of the Roma community. For example, Roma culture is particular and diverse. Secondly, economic factors play a major role within private foot health care. Avoid services for the feet for financial reasons are the most important factor that contributes to impoverish the health of the feet. If this is correct, this paper contributes valuable new information on a previously-unpublished aspect of footwear and health status in Roma population, and may be useful for footwear behaviour change interventions and programs for foot health promotion and disease prevention, and improvement on quality of life by empowering people to manage existing disease (Abbott & Elliott, 2017). Moreover, it is known that several factors determine a footwear purchase decision, like emotions, price, climate, foot pathology, culture of the majority. Comparing the type of footwear and ethnicity, our results show that running shoes are used by a rather high percentage (25%) of non-Roma population. Wearing running shoes could indicate that, because of foot problems, patients prefer using footwear with adequate shock absorption and comfort (Tehan et al., 2019). This was followed by walking shoes (18%), and we found that a small percentage wore the other types of footwear. This may be explained by the healthy lifestyles associated with populations that are not at risk. In 2018, a study showed that 20% of people were wearing running footwear, 14% flip flops and 13% sandals (Barwick et al., 2018). In our study, it should be noted that the percentages of slippers and flip flops were higher in the Roma people.

Finally, concerning to the clinical outcomes, our study revealed that chronic diseases demonstrated a high prevalence in the general population. By contrast, Roma population indicates lower values. This may be explained as follows. Our data collection was carried out in specific places: Roma population in a ONG and non-Roma-population in a health care centre. In relation to chronic diseases, the published studies have conflicting findings, Evidence on ethnic differences between both groups regarding medical risk factors is scarce. Roma population had significantly more risk factors and they were treated less frequently with medication, compared with non-Roma. A previous Spanish study reported that 69.1% take medication, and another study shows 46% of Roma people while the results of our study show lower values of medication intake, in comparison with the general population. In Spain, a population based national study reported that 37% of the Roma population had self-medicated (Martín-Pérez et al., 2015). Roma people are a population who are most at-risk for worsening chronic disease morbidity, including those from socioeconomically disadvantaged and ethnic minority backgrounds. Previous evidence has reported that the Roma population has higher risk for chronic illnesses like cardiovascular disease (Sudzinova et al., 2013). Likewise, other authors compared cardiovascular diseases and diabetes in the Roma and general people reporting a high prevalence in Roma population. In relation to accessibility (Stojisavljevic et al., 2020), some authors also point out that health inequalities can be the result in lower use of dental health services, hearing aids and visual problems, which makes it difficult to

provide preventive foot health care for populations (Delgado-Angulo et al., 2019; Du & Xu, 2016; Latorre-Arteaga et al., 2017; Palencia et al., 2013). In Spain, different ethnic groups use of health care services within the Spanish National Health System, but podiatry care is not included.

These findings have important public health implications. Knowing the nature of foot problems in different ethnic groups allows health-care professionals to perform clinical health evaluations and help to deal to public health managers, considering the cultural backgrounds and peculiarities of the minority populations. The objective of the study was to analyse the impact of foot health behavior among ethnic minority populations and how managers could improve the assistance of these ethnic groups. From the transcultural nursing perspective, the recognition of foot health in minority ethnic groups is of the utmost importance as foot problems may hamper well-being of the vulnerable populations at risk. ONG could offer foot health education services and could also collaborate with local podiatrists to provide appointments where the Spanish Roma population could discuss their foot problems. Health professionals need to be aware of the benefits of proactive actions in foot health care. This study provides a description of foot health among minority ethnic groups, reinforcing evidence of foot health and showing the need of foot care services in population at risk.

4.1 | Study limitations

Some limitations should be considered when interpreting our findings. Caution is recommended when attempting to generalize the findings from this study to other Roma-populations, data were collected in well-established Roma communities, in Spain. However, Roma population lives in segregated Roma settlements in some countries of Europe, due to their nomadic life. Further, this is an investigation carried out with a significant participation of the Roma population, but the data are subject to a risk of selection bias, only the population accessing to a specific NGO were analyzed. Those who responded to the questionnaire could have been more motivated and interested in foot health. A convenience sample was used. Nevertheless, the results are consistent with official data and other studies. Another limiting factor was that this full-scale study is necessary to improve the evidence base for know of foot health and enhance outcomes and quality life for this population. Further studies should include large representative samples. Although valuable data can be obtained from surveys, studies like this requires a new qualitative his Roma populations. Also, we would like to indicate the main strength of this study. In the literature, no references have been found regarding studies comparing foot health between these populations at risk across the lifespan.

5 | CONCLUSION

This study found important cultural differences between outdoor footwear among Roma population and Spanish general population with different impacts on foot health, general health, and clinical outcomes.



The findings of this study show how Roma population experience a higher burden of foot health problems. General foot health and foot pain dimensions show statistically significant differences between both groups. Roma population shows lower values in the domains of footwear and general foot health with respect to the general population. The study reveals that the most people wear two different types of footwear: slippers versus running shoes, but there are many factors that can affect the decision to wear a shoe. Slippers and flip flops were more culturally accepted among Roma population. Unlike, non-Roma population was more likely to wear walking shoes and running shoes. We found that Foot health problems are public health and they affect the wellbeing of people. Ethnicity present a greater negative impact on foot health and quality of life which appears to be related to the population at risk. It is necessary to develop cross-cultural strategies for the promotion of foot health by health risks. To assume the guarantee of the right to health as a fundamental issue should assure equity in access to foot health care.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

The people listed as authors participated in all stages of the design and conception of the study, and read and approved the final manuscript as well as its submission to the journal. Design of the study: Manuel Coheña-Jiménez, Pedro Montaña-Jiménez, José Algaba-del-Castillo; Ana-Juana Pérez-Belloso; Data collection: Manuel Coheña-Jiménez, Ana-Juana Pérez-Belloso; Data analysis: Pedro Montaña-Jiménez, Ana-Juana Pérez-Belloso, José Algaba-del-Castillo; Study supervision: Manuel Coheña-Jiménez, Pedro Montaña-Jiménez; Drafting the manuscript: Manuel Coheña-Jiménez, Pedro Montaña-Jiménez, José Algaba-del-Castillo, Ana-Juana Pérez-Belloso; Critical revisions for important intellectual content: Manuel Coheña-Jiménez, José Algaba-del-Castillo, Pedro Montaña-Jiménez, Ana-Juana Pérez-Belloso.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICAL CONSIDERATIONS

It was approved by the Biomedical Research Ethics Committee of the Andalusian Regional Government (O377N2019), following the ethical principles for studies on human subjects in Spain and the European Union.

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How to cite this article: Pérez-Belloso, A.-J., Montañó-Jiménez, P., Algaba-del-Castillo, J., & Coheña-Jiménez, M. (2022). Impact of foot health behavior among ethnic minority populations: A cross-sectional population-based study. *Public Health Nursing*, 39, 736–743. <https://doi.org/10.1111/phn.13043>