

Undernutrition among Roma and non-Roma children in the Balkans: prevalence and determinants of persistent inequalities, 2011-2020

1. INTRODUCTION

Despite some declines, undernutrition remains a serious problem in low- and middle-income countries, with lasting social, economic and health implications. Undernutrition hinders children in particular from reaching their physical and cognitive potential and makes them much more vulnerable to disease and death (UNICEF 2019; WHO 2020).

The United Nations Sustainable Development Agenda aims to end all forms of hunger by 2030, ensuring that all people –especially children– have sufficient and nutritious food. The pledge to ‘leave no one behind’ requires prioritizing policies that tackle inequalities and reach the most marginalized communities (United Nations 2015). Roma settlements in the Balkans are known to suffer from persistent social exclusion (UNICEF 2007; World Bank 2019; Janevic et al. 2010). This paper focuses on prevalence of undernutrition among Roma and non-Roma children over the last decade, and sheds light on the main determinants of inequalities with the intent of informing policies.

Literature on the determinants of undernutrition is wide and has significantly increased in the last few decades. Recent studies highlight that economic growth is not always a sufficiently powerful element to reduce undernutrition (Subramanyam et al. 2011), neither are interventions focused only on nutrition, health and water, sanitation, and hygiene (Bhutta et al. 2013). Indeed, several studies emphasize the importance of a multifactorial framework for understanding child undernutrition (Bhutta et al. 2008) that includes more social and structural factors (wealth, socioeconomic status and maternal education) associated with child nutritional outcomes.

Literature on undernutrition shows that several maternal characteristics impact the nutritional status of children, among which education, age at marriage and at childbirth. Mother’s education has been identified in other populations as a strong protective factor for undernutrition (Wachs 2008; Gupta and Santhya 2020). Young maternal age at childbirth is also a risk factor for child undernutrition (Wemakor et al. 2018) and is associated with an inverted U-shaped birth weight (Wang et al., 2020). An increased risk of stunting is observed in event of young age at marriage/union (Efevbera et al. 2017).

As for child characteristics, sex has been showed to be an important determinant of undernutrition, with males consistently displaying higher risk of stunting (Masibo 2013), while the relationship between child’s age and undernutrition seems to follow an inverted U-shape pattern (Boah et al. 2019). An especially relevant factor is also the place of residence - whether it is urban or rural, as children living in urban areas tend to be less likely to suffer from undernutrition (Van de Poel et al. 2009). Household income, too, appears to have a substantial impact on children’s nutrition, with children growing in households with higher socioeconomic status displaying lower probability of stunting, wasting and underweight (Harttgen, Klasen and Vollmer 2013).

2. DATA AND DESCRIPTIVE STATISTICS

The analysis is based on 18 Multiple Indicator Cluster Surveys (MICS) covering national and Roma settlements representative probabilistic samples in Bosnia-Herzegovina, Kosovo, Macedonia, Montenegro and Serbia in the period 2011-2013 and 2018-2020.¹ These surveys were designed by UNICEF to collect comparable data on key indicators on the well-being of women and children. The MICS questionnaire

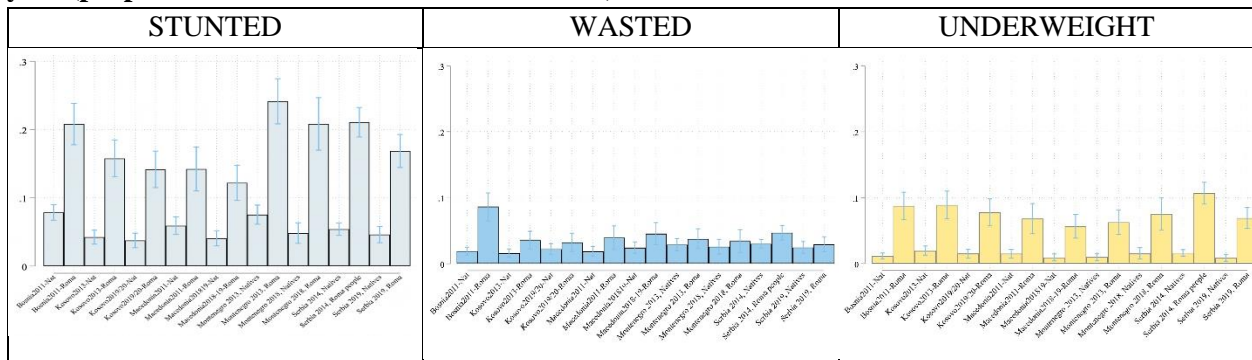
¹ In Bosnia-Herzegovina the surveys were only conducted in 2011.

consisted of three core modules. A household module was administered to a responsible adult in the household, with the main purpose of gathering information regarding the age and sex of all household members. All women between ages 15 and 49 who were reported in the household module were eligible for individual interview. Mothers or caretakers of children aged less than 5 at the date of the survey were also asked to complete a child health module. The latter included an anthropometric section which involved recording height and weight of each child using standard measuring boards and electronic scales (UNICEF 2014).

Following the WHO guidelines, we calculate three different measures of undernutrition. Children whose height-for-age was more than two standard deviations below the median height-for-age of the WHO Child Growth Standards were classified as stunted. Those whose weight-for-height was more than two standard deviations below the median weight-for-height of the WHO Child Growth Standards were classified as wasted. Those whose weight-for-age was more than two standard deviations below the median weight-for-age of the WHO Child Growth Standards were classified as underweight (WHO 2020).

Overall, in 2011-2013 the weighted prevalence of stunting among children under 5 years was 10.8%, the prevalence of underweight 3.7% and the prevalence of wasting 3.4%, whereas in 2018-2020 they were respectively 9.0%, 3.5% and 2.9%. As evident from figure 1, inequalities between Roma and non-Roma children are substantial in all the five Balkan countries under study (particularly for stunting and underweight) and persistent over time. The worst nutritional status is found in Bosnia-Herzegovina, Montenegro and Serbia, with nearly one Roma child out of five being stunted.

Figure 1- Stunting, wasting and underweight among Roma and non-Roma children by country and year (proportions and 95% confidence intervals)



3. RESEARCH METHODS AND PRELIMINARY RESULTS

To investigate differences in undernutrition among Roma and non-Roma children, this study employs a logistic regression model with country and year fixed effects. The main independent variable is a binary variable, classifying children into non-Roma or Roma. Specifically, we look at the prevalence of underweight, wasting and stunting among Roma and non-Roma children, controlling for a number of important factors identified by the literature.

The stepwise inclusion of variables shows that the differences between Roma and non-Roma children persist even when controlling for the economic conditions of the household, as well as for selected mother- and child-level socio-demographic characteristics, but disappear when we control for the interaction of some variables with Roma/non-Roma status.

Despite the fact that most Roma families live in relative poverty, the wealth index shows a strong and significant effect. In particular, there is a clear risk gradient in the relationship between wealth index and stunting, with children in the top quintile of the wealth index displaying a lower risk of being stunted, compared to those in the bottom category of the wealth index.

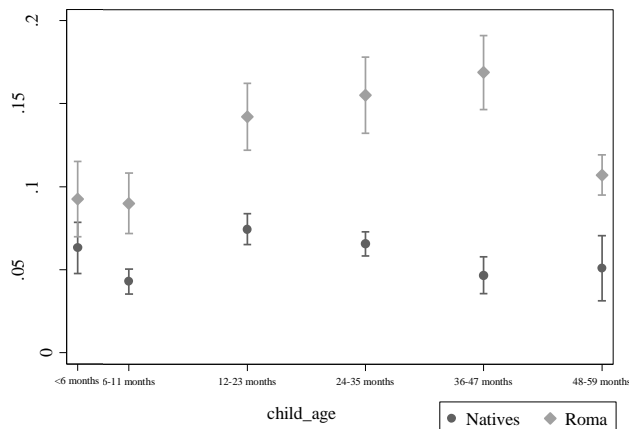
As literature showed, undernutrition measures are strongly related with some socio-demographic characteristics of the mother, and of the quality of childcare.

Having a higher-educated mother protects children from undernutrition both in the Roma and non-Roma community. Indeed, despite the low number of mothers who attended secondary school in the Roma samples, our models show that mother's education is a strong and significant protective factor on all the measures of child undernutrition. As expected, age at first union or marriage, age of woman at childbirth and low birth interval have effect on undernutrition (although some effects disappear once we include the interactions). Also the quality of childcare measures displays a significant effect. The lack of breastfeeding and vaccination are associated to higher risk of stunting, wasting and underweight. Similarly, being left alone or with other (older) children, as well as not having any children's books in the household, are both factors associated with one or more measures of undernutrition.

It is noteworthy that the penalizing effect of being Roma remains significant in the model up to the inclusion of three significant interactions with the Roma/non-Roma variable.

- Firstly, the interaction between the binary variable on Roma and child age in the three models shows the existence of a significant, strong but opposite gradient of age among Roma and non-Roma children (Figure 2). Indeed, due to the wide diffusion of breastfeeding among Roma, children show a low level of malnutrition in the first year of life with an increase from the second year of life. Geraci, Maisano, Motta (1998) suggested that this result could be attributed to the lifestyle of nomads: in Roma settlements, children who are able to walk and thus exit the barracks are exposed to a greater risk of infections and consequent debilitation. A further reason for these inequalities could be related to the different health treatment that Roma mothers and their children are exposed to, as well as to physical or linguistic barriers (Janevic et al. 2011; Logar, Pavlic and Maksuti 2015): such factors could hinder Roma mothers from seeking medical help, making a delicate moment like the weaning phase an even more critical one.
- Secondly, the interaction between the age of the mother at childbirth and the binary variable on Roma and child age seems to suggest again a different age-gradient among Roma and non-Roma children. The younger age of woman at childbirth (18 and less) is a risk factor for stunting for all children, whereas the older age of woman at childbirth (35 and over) is a risk factor for stunting only among the national children, but this effect is different among Roma children.
- Thirdly, the interaction between type of place of residence and the Roma variable reveals that, consistently with the literature (Van de Poel et al. 2011), Roma children are exposed to a higher risk of stunting when living in rural areas.

Figure 2 - Adjusted predicted probabilities of stunting by age among Roma and non-Roma children (90% confidence intervals)



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