Chapter 12 Inequalities in Malnutrition and Living Conditions of Children from Native and Migrant Families Residing in the Productive Belt of La Plata City in Buenos Aires, Argentina



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12.1 Introduction

From an anthropological approach, food is viewed from the point of view of biology, culture, and adaptive response to the environment (Contreras, 2007). It also links biological and socio-cultural attributes in an indissoluble way since humans do not only consume nutrients but also "perceive" (Fischler, 1995). In the words of Aguirre (2010a, b; p. 14), "eating for humans is not only ingesting nutrients to sustain life: it is a complex process that transcends the eater, situates him/her in a time, a

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geography and a history, with others, sharing, transforming and transmitting -real or symbolically- that which he/she calls food and the why, which makes him/her eat it". In turn, these meanings depend on multiple factors, such as the position of groups in the social structure, ethnic-national affiliation, gender, age, health, housing, sanitation, employment, access to goods and services, among others.

García Canclini (1995) stated that classes and social groups are differentiated by their unequal appropriation of material and symbolic goods in production, distribution and consumption, which is the basis for the concept of food insecurity. According to the Food and Agriculture Organization FAO, food security exists when all people, always have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 2011).

In this way, knowing the data of dietary habits of the people of a society allow us to understand the social organization and structure, since consumption reflects the place occupied by the individuals in a given society (Durán Monfort, 2006). In this sense, we understand that food as an eloquent indicator of the living conditions of families and, growth and nutritional status of children, as empirical references of them (Bergel Sanchís, 2014; Ortale, 2003).

Nutritional status is defined as the balance between caloric gain and loss. Therefore, malnutrition occurs when this balance is altered, either by deficit (undernutrition) or excess (overweight and obesity). Both types have direct consequences on health, being even more serious when they occur during the early stages of growth (WHO, 2008).

In general terms, current food consumption patterns in Argentina are characterized by an abundant intake of fat, sugar and sodium, and deficient intake of essential nutrients such as calcium, iron, zinc or vitamins C and A and fiber (Durán et al., 2009). According to Piaggio et al. (2011), the problems indicated in the quality and quantity of food that children receive have consequences on their health: (1) micronutrient deficiencies are associated with short stature (chronic malnutrition), greater susceptibility to infections and learning difficulties; (2) excessive consumption of sugars has an impact on the high prevalence of dental problems (caries and loss of teeth); (3) excessive consumption of fat and sugar, combined with increasing sedentary behavior, contribute to become overweight and obesity, which are correlated with the development of chronic noncommunicable diseases in adulthood.

On the other hand, it is well known that migration is a phenomenon of great social, economic, and political relevance, to the point that cosmopolitanism characterizes today's urban societies. It is often stated, moreover, that migratory processes

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entail transformations that modify, among other aspects, food consumption practices (Koc & Welsh, 2014).

The movement of populations from neighboring countries to Argentina has a long history; Balán (1985) has defined the existence of a "Southern Cone migratory system" in which our country has been a regular destination (Magliano & Mallimaci Barral, 2015). Specifically, since 1970, there has been an intense and constant flow of Bolivian immigrants to Argentina (Cerrutti, 2010).

According to García (2015), a characteristic of this process was the settlement of immigrant families in peripheral areas of the main cities, as we observed in the present study. Our sample was made up of people who settled in the productive belt of La Plata, capital city of the province of Buenos Aires, which is located around 60 kilometers away from the Autonomous City of Buenos Aires (CABA in Spanish acronym), the capital of Argentina. This territory is conceived, regionally, as a rural-peri-urban or intermediate rural area and is characterized by its rural identity – underlined by a predominance of horticultural activity, together with a partial provision of public services. In general, it has a low population density and a large presence of family farmers, many of whom are immigrants from neighboring countries, mostly Bolivia (Barsky, 2015).

Like other groups, due to their migrant status and low labor qualifications, Bolivians are frequently employed at the lowest and most precarious levels of the occupational structure, which results in a lack of social security (Cerrutti, 2010). In such conditions, these families must adapt to the characteristics of the new environment and the cultural peculiarities of its inhabitants, including types of consumption, possibilities of access to food and change or modify their eating habits (Salva, 2000). As expressed by Koc and Welsh (2014), such adaptations usually require transformations that combine actions aimed at reproducing preparations from the place of origin with culinary substitutions, incorporations and/or suppressions in the absence or inaccessibility of traditional ingredients. Thus, the difficulty in accessing a nutritionally and culturally adequate diet, usually involves changes in the quality of the diet, with an impact on nutritional status and population health (Hun & Urzúa, 2019; Zhou et al., 2018).

In this sense, the present study seeks to address the nutrition-feeding processes to obtain quantifiable data to achieve a deeper understanding of the expression of the body as a result of the interaction of particular socio-cultural co-determinants (Peña Sánchez, 2012).

Therefore, the objectives of this study were: (1) to characterize nutritional status of children living in the productive belt of the city of La Plata, together with house-hold socio-economic, ethnic composition, and environmental indicators that allowed us to understand the living conditions of these populations; and (2) to explore the existence of possible inequalities, by means of comparative analysis between native and immigrant families.

12.2 The Productive Belt of La Plata City as a Study Area

In recent decades, the territories surrounding the CABA, capital of Argentina (Fig. 12.1), have undergone intense socio-spatial and socio-productive transformations. The so-called "Third crown" of the city has emerged as the geographic scenario where active peri-urbanization processes are taking place (Fig. 12.2). The region known as the "*Cinturón Verde Bonaerense*" (Buenos Aires' Green Belt) comprises a 50-kilometer radius around CABA and is made up of 13 districts, with an area of approximately 18,000 hectares. Within this region, La Plata is the district with the largest horticultural production, occupying 26.7% of total area and producing more than 75,000 tons of agricultural products, annually (CHFBA, 2005).



Fig. 12.1 Province of Buenos Aires in the context of Argentina and Latin America. (Self-elaboration)



Fig. 12.2 Location of the third crown of the CABA, Buenos Aires green belt and La Plata district. (Self-elaboration)

The productive belt of La Plata is a heterogeneous territory, both physically and socially (Quintero et al., 2021). Diverse activities are carried out in this region, such as primary food production, urbanization and industrial development, and other issues that generate coexistence of conflicts and cohesion among people (Feito, 2018). Its current development responds to the changes occurred both in the economic modality of horticultural farms and in the ethnic composition of the workers. Since the end of the nineteenth century, production in the farms of that region was traditionally carried out first by the Italian and Spanish immigrants and then by the Portuguese. From the second half of the twentieth century onwards, there was a socio-demographic change observed with the arrival of Bolivian immigrants, who shaped their cultural patterns both in the production practices and in the distribution and marketing modalities (Barsky, 2015).

12.3 Population and Sample

The present study was carried out in 7 state schools in 5 community centers (CC) located in the productive peri-urban areas of La Plata: Arana, Arturo Seguí, Ángel Etcheverry, Los Hornos and Lisandro Olmos (Fig. 12.3). The survey was carried out based on convenience sampling. Access to the schools was arranged with the authorities of the *Dirección General de Cultura y Educación* of the province of Buenos Aires.



Fig. 12.3 La Plata district. Location of the community centers where field work was carried out. (Self-elaboration)

	Total			Natives		Immigrants	
Age	Total	Boys	Girls	Boys	Girls	Boys	Girls
(years)	n (%)	n (%)					
3	58 (12.5)	28 (6.0)	30 (6.5)	21 (4.5)	20 (4.3)	7 (1.5)	10 (2.2)
4	174 (37.4)	93 (20.0)	81 (17.4)	63 (13.5)	54 (11.6)	30 (6.5)	27 (5.8)
5	190 (40.9)	114 (24.5)	76 (16.3)	66 (14.2)	42 (9.0)	48 (10.3)	34 (7.3)
6	43 (9.3)	26 (5.6)	17 (3.7)	20 (4.3)	13 (2.8)	6 (1.3)	4 (0.9)
Total n	465 (100)	261 (56.1)	204 (43.9)	170 (36.6)	129 (27.7)	91 (19.6)	75 (16.1)
(%)							

Table 12.1 Sample composition by family origin, sex and age

The cross-sectional study included 465 participants (boys: 56.1%; girls: 43.9%) between 3.0 and 6.9 years of age (Table 12.1). Schoolchildren with a pathological history and who expressed their refusal to participate and/or did not have a signed authorization from mother/father/guardian were excluded from the survey.

Of these 465 children, 299 (64.3%) were considered "natives", as they had parents from Argentina, and 166 (35.7%) were considered "immigrants", as at least one of their parents had a foreign nationality. Regarding the place of origin of the latter group, 71% were from Bolivia, 26% from Paraguay and the remaining (3%) from other countries in the region.

12.3.1 Anthropometric Measurements

Anthropometric measurements were recorded following standard protocols (Lohman et al., 1988): (a) body weight in kilograms using a portable digital scale (100 g of precision) that was calibrated at the beginning of each session, and (b) height in centimeters using a vertical anthropometer (1 mm of precision). Body weight and height data were used to calculate the Body Mass Index (BMI = body weight (kg)/height (m²)), z-score values were calculated according to the WHO reference (WHO, 2006).

Malnutrition, in all its forms were estimated: underweight (low weight-for-age, UW); stunting (low height-for-age, S); wasting (low weight for height, W) by taking $\langle -2z \rangle$ values as cut-off point, while overweight (Ov) and obesity (Ob) by taking into consideration BMI values between > +1z and $\leq +2z$ and > +2z, respectively. Thus, three groups were defined based on nutritional status: undernourished (UW, S, W); excess weight (Ov plus Ob) and normal (children who were not included in other categories). The assessment of nutritional status was based on the z-score values calculated using WHO Anthroplus v1.0.3 program.

12.3.2 Household Socio-economic and Environmental Study

A structured questionnaire filled out by the parents was applied to record household socio-economic characteristics and thereby estimating the status (Oyhenart et al., 2008). Therefore, data of the household environment (critical overcrowding following the INDEC (2018) definition, and characteristics of the dwelling place) and of the peri-domiciliary environment (availability of public services: pavement, running water, electricity, waste collection, sewage, natural gas, etc.) were collected. Regarding household socio-economic status, the following aspects were considered: nationality, level of education and occupation of mother/father/guardian, tenancy regime of the dwelling, health coverage, orchard practices in the family garden, animal husbandry and access to the material and consumer goods, and to social plans, referring to national or local programs (from government agencies, NGO's, or other entities) that benefit poor families by supplementing their food budget (nutritional support) and/or by providing cash relief to the heads of households (monetary support). According to the information of the nationality of fathers and mothers, each participant was assigned to one of the following groups: (1) "native", when both father and mother reported being Argentinean; and (2) "immigrants", when the father or mother reported to be a foreigner.

12.3.3 Statistical Analysis

Prevalence (%) of nutritional status indicators and frequencies for the socioeconomic and environmental variables were calculated. The comparative analysis was performed by applying Chi-square test. All data analysis was performed using the SPSS v21 statistical package.

12.3.4 Ethical Considerations

This research was conducted in accordance with the principles proclaimed in the Universal Declaration of Human Rights (1948), the ethical standards instituted by the Nuremberg Code (1947), the Declaration of Helsinki (1964) and its subsequent amendments and clarifications, and the national law 25,326 (Law 26,343/08) and its amendments N° 1558/01, regulations and rules for the protection of personal data. In addition, the research protocol was approved by the Bioethics Committee of the Latin American School of Bioethics CELABE and had the permissions of the *Dirección General de Cultura y Educación de la provincia de Buenos Aires* and by the authorities of each educational establishments where the research was carried out.

Complementarily, the study objectives and procedures were explained to the mother/father/guardian of the schoolchildren through meetings carried out in each school and an informed consent form was signed by them. In addition, children's verbal assent was obtained and only those who agreed were included in the guaranteed, emphasizing voluntary participation.

12.4 Results

The results of anthropometric evaluation showed that 46.5% of children (n = 216) were not suffering from malnutrition, while 53.5% (n = 249) had either undernutrition or excess weight: 6.2% and 48.9%, respectively; 1.6% had both types (stunting and excess weight). Separate estimates showed 5.2% had S, 1.3% UW and 1.3% W, 32.3% Ov and 16.6% Ob (Table 12.2). The comparative analysis of nutritional status by sex and age showed no significant differences.

The results of household socio-economic and environmental survey are presented in Table 12.3. Four out of ten households did not own house and a quarter of these (25%) lived in overcrowded conditions. In terms of house building quality, 57% of the families had houses with firebrick walls and 44% had wooden walls or other types. Only 31% had concrete floor and most were made of cement (67%). Only 30% houses were located beside paved roads, 20% had sewage service, 12% had piped gas system, 79% households had electricity, 67% had piped water system, and

	Total	Natives	Immigrants		
Nutritional Status	(n = 465)	(n = 299)	(n = 166)	Chi ²	p-value
Undernourished	6.2	5.7	7.2	0.43	0.510
Stunting (low height-for-age)	5.2	4.3	6.6	1.13	0.287
Underweight (low weight-for-age)	1.3	1.3	1.2	0.01	0.903
Wasting (low weight-for-height)	1.3	1.7	0.6	0.96	0.327
Excess weight	48.9	44.8	56.0	5.37	0.021
Overweight	32.3	30.4	35.5	1.27	0.259
Obesity	16.6	14.4	20.5	2.87	0.060

 Table 12.2
 Nutritional status: comparison between native and migrant children

 Table 12.3
 Frequency of household socio-economic and environmental characteristics in total sample and among native and immigrant families

Socioeconomic status	Total	No	Native	Immigrants		
variables	(n = 465)	data	(n = 299)	(n = 166)	Chi ²	p-values
Lodging status						
Own house	59.0	1.9	70.9	37.8	47.52	< 0.0001
Lease holder	20.8	1.9	11.3	37.8	44.73	< 0.0001
Rented or borrowed	20.2	1.9	17.8	24.4	2.82	0.093
house						
Crowding						
Critical crowding	24.9	0.0	24.1	26.5	0.33	0.562
Public assistance						
Monetary support	22.7	0.4	21.5	24.8	0.69	0.407
Nutritional support (foods)	9.5	0.2	13.1	3.0	12.61	< 0.0001
Health insurance						
Public hospital	77.1	0.4	67.3	94.6	44.75	< 0.0001
Social work	21.8	0.4	32.7	2.4	57.13	< 0.0001
Prepaid coverage	1.3	0.4	2.0	0.0	3.39	0.065
Others						
Internet	19.2	2.4	27.5	3.8	37.41	< 0.0001
Cable television	68.9	2.4	73.9	59.7	9.66	0.002
Air conditioning	5.7	2.4	8.1	1.3	9.05	0.003
Car	37.0	2.4	40.0	31.4	3.24	0.072
Father's occupation						
Formal employment	34.2	27.7	44.8	13.3	33.20	< 0.0001
Self-employed worker	26.5	27.7	23.3	32.7	3.42	0.064
Unemployed	6.8	27.7	5.8	8.8	1.07	0.300
Informal worker	35.8	27.7	28.7	49.6	14.37	< 0.0001
Retired/pensioned	2.4	27.7	3.1	0.9	1.64	0.200

(continued)

Socioeconomic status	Total	No	Native	Immigrants		
variables	(n = 465)	data	(n = 299)	(n = 166)	Chi ²	p-values
Mother's occupation						
Formal employment	16.9	9.7	22.7	6.1	18.71	< 0.0001
Self-employed worker	9.0	9.7	7.7	11.6	1.83	0.176
Unemployed	10.0	9.7	12.0	6.2	3.66	0.380
Informal worker	9.5	9.7	6.2	15.8	10.08	0.001
Retired/pensioned	5.5	9.7	5.8	4.8	0.20	0.654
Housewife	61.2	9.7	58.0	67.1	3.32	0.043
Father's education		26.2				
None	0.6		0.0	1.7	10.08	0.039
Elementary incomplete	25.4		22.5	30.6		
Elementary complete	46.4		45.9	47.1		
High school complete	23.6		26.1	19.0		
Tertiary/Universitary	4.1		5.4	1.7		
Mother's education		5.8				
None	0.2		0.3	0.0	45.80	< 0.0001
Elementary incomplete	18.0		12.5	28.7		
Elementary complete	39.7		34.7	49.3		
High school complete	36.5		44.1	22.0		
Tertiary/Universitary	5.5		8.3	0.0		
Farming practice						
Orchard (agriculture)	12.6	0.6	4.7	26.5	45.94	< 0.0001
Animal husbandry	3.9	0.2	2.7	6.0	3.19	0.074
Building materials						
Fired brick	56.4	0.4	70.5	30.9	67.58	0.000
Metal sheet	7.8	0.4	7.0	9.1	0.62	0.432
Wood	45.4	0.4	34.6	64.8	39.30	< 0.0001
Dirt floor	3.3	1.7	2.4	4.9	2.17	0.141
Cement floor	67.4	1.7	58.6	83.3	29.01	< 0.0001
Coated floor (ceramic)	31.5	1.7	42.0	12.3	42.71	< 0.0001
Services						
Pavement	32.6	2.4	43.3	12.6	44.64	< 0.0001
Sewage system	20.7	2.4	26.8	9.4	18.93	< 0.0001
Septic tank	69.8	2.4	66.1	76.7	5.54	0.019
Gas (piped system)	13.2	2.4	15.9	8.2	5.42	0.020
Bottled gas (cylinder)	83.5	2.4	81.7	86.8	1.95	0.163
Firewood	10.4	2.4	3.7	22.6	39.82	< 0.0001
Electricity	83.0	2.4	85.4	78.6	3.40	0.065
Waste collection	57.5	2.4	73.2	28.3	85.30	< 0.0001
Piped water system	68.1	2.4	81.0	44.0	65.04	< 0.0001
Protected well	20.3	2.4	11.2	37.1	42.96	< 0.0001

Table 12.3 (continued)

55% had waste collection. Ten percent used firewood for heating and/or cooking. Also, 18% had Internet access, 5% had air conditioning, and approximately 32% did not have cable television. Twenty-two percent of the families received state monetary aid, 9% received food aid, and the majority received care in public hospitals (77%). In addition, 13% consumed food from their own orchard and 4% raised animals for the same purpose.

Regarding father's and mothers' occupation, it was observed that approximately 24% and 14% were "employed"; 18% and 8% were "self-employed"; 27% and 9% were "temporary" (intermittent and informal work) and 5% and 9% were "unemployed", respectively. On the other hand, 61% of the mothers described themselves as "housewives" or home makers. About the maximum level of education reached by fathers and mothers, the most prevalent category was "completed elementary school" with 33% and 37%, respectively. Approximately 20% said they had not completed this level and only 18% of fathers and 34% of mothers said they had completed high school. Completion of tertiary/university level did not exceed 5% in any case.

12.4.1 Comparative Study Between Native and Immigrant Families

The comparative analysis of nutritional status of schoolchildren representing native and immigrant families showed non-significant differences except for the combined prevalence of overweight and obesity (p = 0.021), with a higher rate among the immigrant group (56.0% vs. 44.8%) (Table 12.2).

In contrast, analysis of household socio-economic and environmental status showed statistically significant differences between the two groups in most of the variables considered (Table 12.3). For example, majority of native families owned their houses (71%), while immigrants lived either in rented or borrowed ones (62%). In addition, the most prevalent construction material in native dwellings was firebrick (71%), while wood appeared in first place among immigrant families (65%). Forty-five percent of the native fathers and twenty-three percent of the native mothers were employed, while thirteen percent and six percent, respectively, of the immigrant population were employed. Likewise, approximately half of the fathers and sixteen percent of the immigrant mothers reported themselves as "changarines" (temporary job) vs. twenty-nine and six percent of the natives, respectively. Regarding educational level, twenty-six and forty-four percent of native fathers and mothers completed secondary school, respectively, while nineteen and twenty-two percent of immigrant fathers and mothers completed high school, respectively. In terms of health coverage, 33% of native families had social security coverage vs. two percent of immigrant families. Finally, among other variables, 28% of native families had internet access, while only four percent of immigrant families had access to this service (Table 12.3).

12.5 Discussion

The results obtained in this study showed that the nutritional status of children aged 3 to 6 years living in the productive belt of La Plata is compromised since half of the schoolchildren showed some type of malnutrition. While undernutrition presented prevalence rate close to 6% (mainly chronic type), excess weight reached 49% of the sample. According to Atalah et al. (2014), in the context of poverty, it is common to find coexistence of undernutrition and excess weight in the same region, social stratum, family environment and even in the same child (as occurred with 1.6% in the sample of present study), because of the micronutrient deficiency that accompanies excess weight. Other reports by Raj Patel (2008) and Miryam K. de Gorban (2014), explained undernutrition and overweight as "two sides of the same coin", pointing to the food industry as one of the main causes of both extremes of malnutrition.

In this sense, although the prevalence of undernutrition in our country continues to decline, the increase in excess weight in the last three decades is a fact reported in previous studies (Bustamante et al., 2021; Guimarey et al., 2014; Navazo et al., 2018; Oyhenart et al., 2021).

As in other regions of our country and of the continent, the low prevalence of undernutrition together with high prevalence of overweight illustrate an advanced process of nutrition transition (Bergel et al., 2016, 2017; Cordero & Cesani, 2019; Garraza & Oyhenart, 2020; Navazo et al., 2019). In this regard, Rosique Gracia et al. (2012) stated, while the coexistence of undernutrition and obesity characterizes the societies in nutrition transition, the prevalence of overweight and obesity, as the main epidemiological problem of malnutrition, characterizes societies that have completed their transition.

Therefore, what at first seemed to be a situation characteristic of the more affluent social sectors, that become evident with an increasing trend and at an accelerated rate in less favored populations, since, in the background of limited economic resources, one of the most common family consumption strategies is to invest in volume and not in nutritional quality. That is why, in the contexts of poverty, it is common that the intake of flours, sugars and fats predominates, which are cheaper and produce greater satiety, but are conducive to an increase in overweight and obesity (Cordero & Cesani, 2018). As stated by the WHO, poverty amplifies the risk of malnutrition. People who are poor are more likely to be affected by different forms of malnutrition. Also, malnutrition increases health care costs, reduces productivity, and slows down economic growth, which can perpetuate a cycle of poverty and illhealth (WHO, 2021).

Our data obtained from the primary sources, showed that families living in the productive belt of La Plata are in a situation of socio-economic deprivation and environmental vulnerability: a quarter of the children lived in overcrowded house-hold, only two out of ten had health coverage through social security, most of them lived in houses with cement floors, beside unpaved street, did not have piped gas system or piped water system, nor even internet connection. In addition, four out of

ten households did not receive waste collection service. Furthermore, most of the parents of these children had barely completed elementary school and did not have formal and stable occupation. In this context, the difficulty in accessing a balanced diet could explain the high prevalence of overweight and obesity.

Going deeper, the poverty-excess weight interrelationship is reaffirmed upon further analysis. While differentiating and comparing nutritional status of children and household living conditions between native and immigrant families, it was observed that the latter presented the worst conditions for both indicators. Among immigrant families, health coverage through social security decreased to the point of being practically insignificant, as did households with connectivity; houses with concrete floors and walls are markedly reduced in relation to native families (12% vs. 42%), and most of them are made of sheet metal or wood (while in the houses of native families, bricks predominated). Educational levels and the formal job of fathers and mothers also decrease notably among the immigrants, to mention just a few indicators. On the other hand, children of this immigrant population reached 56% of excess weight, more than 11% above their native peers.

A similar scenario has been reported in a study conducted in more than 50,000 multicultural preschoolers in Hannover (Germany), where the close interrelationship between excess weight and ethnic and social inequalities has been confirmed (Zhou et al., 2018). In national territory, Navazo et al. (2019) also reported higher prevalence of excess weight among children of foreign origins, living in the northwest of Puerto Madryn city (Chubut, Argentina), where socio-environmental conditions are deficient compared to those found in the rest of the city.

A plausible explanation of this situation can be taken from Ambort (2019) and Fernández (2018) who reported that, despite the fact that these immigrant families can achieve some social ascent (from the development of own productive ventures through the lease or purchase of land that turns them into small-scale producers with the contribution of their own and their family's labor force), do not manage to reverse the conditions of exploitation, precariousness and informality that characterize this labor market, keeping many families in a situation of poverty and marginalization, that have negative impacts on child health and nutritional status.

According to the literature, in a globalized world such as the present, migration plays a central role in the processes of social reproduction. More specifically, migration is intimately linked to the processes of demographic changes, economic development and socio-economic stratification. In relation to demographic changes, migration plays a central role in "the complementarity of the population dynamics of the regions of origin with the dynamics in the countries of destination" (Canales, 2016, p. 22). In relation to the reproduction of capital, it has a double effect: as a process of transferring labor force and human capital between the contexts of origin and destination, and by originating flows of resources, especially remittances, often essential for the social reproduction of families, by definition, transnational and their communities of origin. Finally, migration is an important factor in the reproduction of social differences and inequalities in the countries of origin and destination, in the former case, there is a dependence on the labor and economic dynamics of the contexts of arrival. In the latter case, the work of immigrants is usually

concentrated in activities linked to the social and daily reproduction of the native population, for example, through domestic and care work, as is generally the case of Paraguayan and Peruvian women, or in activities linked to rural work, as is the case of Bolivian families (CEPAL, 2018; Courtis & Pacecca, 2010).

Food consumption belongs to the habitual practices in private and daily sphere of all human beings, it is also an unmistakable feature of economic, social, and cultural position. Inevitably, during the migratory process, children's food habits are transformed as a way of cultural and economic adaptation to the new environment. Given that food is a faithful reflection of the social roles and cultural customs of a community, it is to be expected that the nutritional status and/or physical activity are also differentiated in the population (Pavez-Soto et al., 2017). In this sense, it seems that post-migration food practices are often associated with a detriment in nutritional status, quality of life and health status, as reported by Zhou et al. (2018): "the problem that migrants must face is not the availability of food, specific to their place of origin, but rather access, by virtue of the income they have and the costs, distances and time to acquire the products".

Indeed, in a system where food is a consumer good and consequently access to it is strongly dependent on income and on the cost of food (Aguirre, 2004, 2005) "acceptable, sufficient and adequate", the basis of food security, is restricted for these sectors, promoting high prevalence of child malnutrition as we observed in the present study. Likewise, the results obtained showed the unequal distribution is even more accentuated in the case of immigrant families, who arrive in the country in search of better living conditions and find themselves in precarious situations that end up affecting children's growth, health, and nutrition, since food has a direct impact on the development of chronic undernutrition, obesity and other chronic non-communicable diseases at the present and/or in a future life. Household socio-economic environment and diet of children are the important determinants of child health. Recent studies also reported that it is not only the nutrition, rather social-economic-political-emotional (SEPE) inequalities and insecurities are the important factors that determine physical growth and nutrition of children (Bogin & Varea, 2020; Schffler et al., 2019).

Therefore, to achieve food security, the State must guarantee, in addition to availability, access to food for these immigrant communities. Equal access and basic citizenship rights are the public obligations with respect to food security. In addition, having access to nutritionally sufficient and culturally appropriate food is a fundamental part of "feeling at home", as food "is central to our sense of identity" (Fischler, 1988; Koc & Welsh, 2014).

12.6 Final Considerations

Based on the data analyzed, we are able to affirm that the population residing in the productive belt of La Plata city is defined as heterogeneous one, in terms of ethnic, cultural, social, and economic opportunities and quality of life. Native/migrant

status appears as a differentiating variable that places the migrant group at a higher levels of socioeconomic and environmental vulnerability, with impacts on child health. In this context, excess weight -possibly due to an inadequate and monotonous diet of low nutritive values- together with social-economic-political-emotional inequalities and insecurities are of concerns. In addition, undernutrition, although to a lesser degree, is still present in this population, indicating a nutrition transition process. Therefore, it is essential to implement joint actions by different public sectors for intervention programs to improve the living conditions also to mitigate child malnutrition in this population, paying special attention to the needs of immigrant families.

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References

- Aguirre, P. (2004). *Ricos Flacos, Gordos Pobres. La Alimentación en Crisis*. Colección Claves para Todos. Capital Intelectual.
- Aguirre, P. (2005). Estrategias de Consumo ¿Qué Comen los Argentinos que Comen? Miño y Dávila-CIEPP.
- Aguirre, P. (2010a). An anthropological view of the impact of poverty and globalization on the emerging epidemic of obesity. In A. Tsatsoulis, J. Wyckoff, & F. Brown (Eds.), *Diabetes in* women. Pathophysiology and therapy (pp. 105–125). Springer/Humana Press. https://doi. org/10.1007/978-1-60327-250-6. ISBN 978-1-60327-249-0, e-ISBN 978-1-60327-250-6.
- Aguirre, P. (2010b). La construcción social del gusto en el comensal moderno. In P. Aguirre, M. Katz, & M. Bruera (Eds.), *Comer. Una Palabra con Múltiples Sentidos*. Libros del Zorzal. ISBN 10: 9875991546, ISBN 13: 9789875991545.
- Ambort, M. E. (2019). Género, migración y trabajo en la agricultura familiar: Trayectorias laborales y migratorias de horticultoras bolivianas en el cinturón hortícola del gran La Plata (Argentina), 2018. Revista Latinoamericana de Antropología del Trabajo, 3(6), 1–31. From http://www. memoria.fahce.unlp.edu.ar/art_revistas/pr.11843/pr.11843.pdf. Last access: 14 Nov 2022.
- Atalah, E., Amigo, H., & Bustos, P. (2014). Does Chile's nutritional situation constitute a double burden? *American Journal of Clinical Nutrition*, 100(6), 1623S–1627S. https://doi.org/10.3945/ ajcn.114.083790. Last access: 14 Nov 2022.
- Balán, J. (1985). Las Migraciones Internacionales en el Cono Sur. CIM. From http://repositorio. cedes.org/handle/123456789/3984. Last access: 14 Nov 2022
- Barsky, A. (2015). Las producciones familiares bolivianas y el rol del Estado: Análisis de las políticas públicas para el sostenimiento de la agricultura periurbana en la Región Metropolitana de Buenos Aires (2000–2015). Revista de Ciencias Sociales, Segunda Época, 28, 33–47. From http://ridaa.unq.edu.ar/handle/20.500.11807/1631. Last access: 14 Nov 2022.

- Bergel Sanchís, M. L. (2014). Malnutrición, Condiciones Socio-ambientales y Alimentación Familiar. Un Estudio Bio-socio-antropológico en Población Escolar de Villaguay (Provincia de Entre Ríos, Argentina). [Doctoral thesis]. Facultad de Ciencias Naturales y Museo. Universidad Nacional de La Plata. https://doi.org/10.35537/10915/43346. Last access: 14 Nov 2022.
- Bergel Sanchís, M. L., Cesani, M. F., & Oyhenart, E. E. (2017). Contexts of occurrence of child malnutrition in the district of Villaguay, Entre Ríos, Argentina. A multivariate analysis. *PLoS ONE*, 12(4), e0176346. https://doi.org/10.1371/journal.pone.0176346. Last access: 14 Nov 2022.
- Bergel Sanchís, M. L., Quintero, F. A., Navazo, B., Cesani, M. F., Garraza, M., Torres, M. F., Luna, M. E., Luis, M. A., Castro, L. E., & Oyhenart, E. E. (2016). Caracterización del estado nutricional en relación con factores socio-ambientales de la población escolar del partido de Punta Indio (provincia de Buenos Aires, Argentina). *Revista Argentina de Antropología Biológica*, 18(2), 1–13. https://doi.org/10.17139/raab.2016.0018.02.09
- Bogin, B., & Varea, C. (2020). COVID-19, crisis, and emotional stress: A biocultural perspective of their impact on growth and development for the next generation. *American Journal of Human Biology*, 32(5), e23474. https://doi.org/10.1002/ajhb.23474
- Bustamante, M. J., Alfaro, E. L., Dipierri, J. E., & Román, M. D. (2021). Excess weight and thinness over two decades (1996-2015) and spatial distribution in children from Jujuy, Argentina. BMC Public Health, 21, 196. https://doi.org/10.1186/s12889-021-10239-4
- Canales, A. I. (2016). La migración en la reproducción de la sociedad. Elementos para una teoría de las migraciones. In: Canales A (coordinador). Debates Contemporáneos sobre Migración Internacional. Una Mirada desde América Latina (pp. 21–63). Universidad de Guadalajara-Miguel Angel Porrúa Editor.
- CEPAL. (2018). Estudio Económico de América Latina y el Caribe. Evolución de la Inversión en América Latina y el Caribe: Hechos Estilizados, Determinantes y Desafíos de Política. In *Comisión Económica para América Latina y el Caribe (CEPAL)*. ISBN 978-92-1-121996-8 (Printed).
- Cerrutti, M. (2010). Salud y Migración Internacional: Mujeres Bolivianas en la Argentina. Fondo de Población de las Naciones Unidas (UNFPA)-Centro de Estudios de Población (CENEP).
- CHFBA (2005). *Censo Hortiflorícola. Provincia de Buenos Aires 2005*. Gobierno de la Provincia de Buenos Aires. Ministerio de Economía, Dirección Provincial de Estadística. Ministerio de Asuntos Agrarios, Dirección Provincial de Economía Rural, Buenos Aires, Argentina.
- Contreras, J. (2007). Alimentación y Religión. *Humanitas, Humanidades Médicas, 16*, 1–31. ISSN-e 1886-1601.
- Cordero, M. L., & Cesani, M. F. (2018). Sobrepeso, obesidad y salud percibida en contextos de pobreza de Tucumán, Argentina. *Salud Colectiva*, 14(3), 563–578. https://doi.org/10.18294/ sc.2018.1309. Last access: 14 Nov 2022.
- Cordero, M. L., & Cesani, M. F. (2019). Nutritional transition in schoolchildren from Tucumán, Argentina: A cross-sectional analysis of nutritional status and body composition. *American Journal of Human Biology*, 31, e23257. https://doi.org/10.1002/ajhb.23257
- Courtis, C., & Pacecca, M. I. (2010). Género y trayectoria migratoria: Mujeres migrantes y trabajo doméstico en el Área Metropolitana de Buenos Aires. *Papeles de Población*, 16(63), 155–185. ISSN-e 2448-7147.
- Durán, P., Mangialavori, G., Biglieri, A., Kogan, L., & Abeyá Gilardon, E. (2009). Estudio descriptivo de la situación nutricional en niños de 6–72 meses de la República Argentina. Resultados de la Encuesta Nacional de Nutrición y Salud (ENNyS). Archivos Argentinos de Pediatría, 107(5), 397–404. From https://www.sap.org.ar/docs/publicaciones/archivosarg/2009/v107n5a06.pdf. Last access: 14 Nov 2022
- Durán Monfort, P. D. (2006). ¿Estamos ante un nuevo orden alimentario en Túnez? La obtención y el consumo de carne como indicador de globalización. *Contra/Relatos desde el Sur. Apuntes* sobre África y Medio Oriente, 3, 45–66. ISSN 1669-953X.
- FAO. (2011). El Estado de la Inseguridad Alimentaria en el Mundo ¿Cómo Afecta la Volatilidad de los Precios Internacionales a las Economías Nacionales y la Seguridad Alimentaria? FAO. ISBN 978-92-5-306927-9.

- Feito, M. C. (2018). Problemas y desafíos del periurbano de Buenos Aires. Estudios Socioterritoriales. *Revista de Geografía*, 24, e002. From http://hdl.handle.net/11336/97356. Last access: 14 Nov 2022
- Fernández, L. (2018). La exclusión social de los agricultores familiares de La Plata. Un análisis del período 2005-2018. *Revista Pilquen – Sección Ciencias Sociales*, 21(2), 109–128. From https://www.redalyc.org/articulo.oa?id=347558973009. Last access: 14 Nov 2022.
- Fischler, C. (1988). Food, self and identity. *Social Science Information*, 27(2), 275–292. https:// doi.org/10.1177/053901888027002005. Last access: 14 Nov 2022.
- Fischler, C. (1995). El (h)omnívoro. El Gusto, la Cocina y el Cuerpo. Editorial Anagrama.
- García, M. (2015). Horticultura de La Plata (Buenos Aires). Modelo productivo irracionalmente exitoso. *Revista de la Facultad de Agronomía, 114*(Núm. Esp. 1), 190–201.
- García Canclini, N. (1995). Consumidores y Ciudadanos. Conflictos Multiculturales de la Globalización. Grijalbo.
- Garraza, M., & Oyhenart, E. E. (2020). Doble carga de malnutrición, composición y proporción corporal en escolares del periurbano de Guaymallén, Mendoza. *Nutrición Clínica y Dietética Hospitalaria*, 40(4), 99–107. https://doi.org/10.12873/404garraza
- de Gorban, M. K (2014) La crisis mundial y la problemática alimentaria. In: de Gorban MK, Carballo C, Paiva M, Abajo V, Filardi M, Giai M, Veronesi G, Graciano A, Risso Patrón V, Broccoli AM, Gilardi R Seguridad y Soberanía Alimentaria. : Akadia. p 97–112.
- Guimarey, L. M., Castro, L. E., Torres, M. F., Cesani, M. F., Luis, M. A., Quintero, F. A., & Oyhenart, E. E. (2014). Secular changes in body size and body composition in schoolchildren from La Plata City (Argentina). *Anthropologischer Anzeiger*, 71(3), 287–301. https://doi.org/1 0.1127/0003-5548/2014/0364
- Hun, N., & Urzúa, A. (2019). Comportamiento alimentario en inmigrantes, aportes desde la evidencia. *Revista Chilena de Nutrición*, 46(2), 190–196. https://doi.org/10.4067/ S0717-75182019000200190. Last access: 14 Nov 2022.
- Instituto Nacional de Estadística y Censos (INDEC). (2018). Indicadores de condiciones de vida de los hogares en 31 aglomerados urbanos. Primer semestre de 2018. Condiciones de vida. Vol. 2, N° 1. Ministerio de Hacienda. Presidencia de la Nación. ISSN 2545-6660. From http:// www.indec.gob.ar/uploads/informesdeprensa/eph_indicadores_hogares_01_18.pdf. Last access: 14 Nov 2022.
- Koc, M., & Welsh, J. (2014). Alimentos, prácticas alimentarias y experiencia de la inmigración. In L. R. Piaggio & A. M. Solans (Eds.), *Enfoques Socioculturales de la Alimentación* (pp. 212–229). Librería Akadia Editorial. ISBN 978-987-570-239-4.
- Lohman, T. G., Roche, A. F., & Martorell, R. (1988). Anthropometric standardization reference manual. Human Kinetics Books.
- Magliano, M. J., & Mallimaci Barral, A. I. (2015). Las edades de la migración boliviana en Argentina: Córdoba y Ushuaia como destino. Si Somos Americanos. *Revista de Estudios Transfronterizos, XV(1)*, 141–167. https://doi.org/10.4067/S0719-09482015000100006. Last access: 14 Nov 2022.
- Navazo, B., Dahinten, S. L., & Oyhenart, E. E. (2018). Malnutrición y pobreza estructural. Comparación de dos cohortes de escolares de Puerto Madryn, Argentina. *Revista de Salud Pública*, 20(1), 60–66.
- Navazo, B., Oyhenart, E. E., & Dahinten, S. L. (2019). Doble carga de malnutrición y nivel de bienestar socio-ambiental de escolares de la Patagonia Argentina (Puerto Madryn, Chubut). *Nutrición Clínica y Dietética Hospitalaria*, 39(2), 111–119. https://doi.org/10.12873/392navazo
- Ortale, M. S. (2003). Prácticas y Representaciones sobre Desnutrición Infantil de Causa Primaria en Familias Pobres Urbanas del Gran La Plata [Doctoral thesis]. Facultad de Ciencias Naturales y Museo. Universidad Nacional de La Plata. https://doi.org/10.35537/10915/4585. Last access: 14 Nov 2022.
- Oyhenart, E. E., Castro, L. E., Forte, L. M., Sicre, M. L., Quintero, F. A., Luis, M. A., Torres, M. F., Luna, M. E., Cesani, M. F., & Orden, A. B. (2008). Socioenvironmental conditions and nutritional status in urban and rural schoolchildren. *American Journal of Human Biology*, 20(4), 399–405. https://doi.org/10.1002/ajhb.20738. Last access: 14 Nov 2022.

- Oyhenart, E. E., Luis, M. A., Torres, M. F., Forte, L. M., Garraza, M., Quintero, F. A., Bergel Sanchís, M. L., Navazo, B., Luna, M. E., & Cesani, M. F. (2021). El periurbano productivo de la ciudad de La Plata (Buenos Aires, Argentina). Un espacio propicio para la malnutrición infanto-juvenil. *Revista Argentina de Antropología Biológica*, 23(1), 1–14. https://doi. org/10.24215/18536387e026
- Patel, R. (2008). Obesos y Famélicos. El Impacto de la Globalización en el Sistema Alimentario Mundial. Marea Editorial. ISBN 978-987-1307-18-0.
- Pavez-Soto, I., Durán-Agüero, S., & Valladares, M. (2017). Infancia migrante y alimentación: Desafíos culturales y sanitarios. *Revista Médica de Chile*, 145(1), 135–136. https://doi. org/10.4067/S0034-98872017000100019. Last access: 14 Nov 2022.
- Peña Sánchez, E. Y. (2012). Enfoque Biocultural en Antropología. Alimentación-Nutrición y Salud-Enfermedad en Santiago de Anaya, Hidalgo. Instituto Nacional de Antropología e Historia, México, D.F. ISBN 978-607-484-258-6.
- Piaggio, L., Concilio, C., Rolón, M., Macedra, G., & Dupraz, S. (2011). Alimentación infantil en el ámbito escolar: Entre patios, aulas y comedores. *Salud Colectiva*, 7(2), 199–213.
- Quintero, F. A., Cesani, M. F., Luis, M. A., Torres, M. F., Garraza, M., Navazo, B., Luna, M. E., Forte, L. M., & Oyhenart, E. E. (2021). Distribución geográfica de la presión arterial elevada en relación al exceso ponderal en niños y niñas que viven en el cinturón productivo de La Plata (Buenos Aires, Argentina). *Revista Argentina de Antropología Biológica*, 23(2), 1–15. https:// doi.org/10.24215/18536387e039
- Rosique Gracia, J., García, A. F., & Villada Gómez, B. A. (2012). Estado nutricional, patrón alimentario y transición nutricional en escolares de Donmatías (Antioquia). *Revista Colombiana de Antropología*, 48(1), 97–124. ISSN 0486–6525.
- Scheffler, C., Hermanussen, M., Bogin, B., Liana, D. S., Taolin, F., Cempaka, P. M. V. P., Irawan, M., Ibbibah, L. F., Mappapa, N. K., Payong, M. K. E., Homalessy, A. V., Takalapeta, A., Apriyanti, S., Manoeroe, M. G., Dupe, F. R., Ratri, R. R. K., Touw, S. Y., K, P. V., Murtani, B. J., Nunuhitu, R., Puspitasari, R., Riandra, I. K., Liwan, A. S., Amandari, P., Permatasari, A. A. I., Julia, M., Batubara, J., & Pulungan, A. (2019). Stunting is not a synonym of malnutrition. *European Journal of Clinical Nutrition*, 74(3), 377–386. https://doi.org/10.1038/ s41430-019-0439-4
- Salva, M. C. (2000). Cotidianeidad en la horticultura: Cuerpo, trabajo y salud. In R. Ringuelet (Compilador), *Espacio Tecnológico, Población y Reproducción Social en el Sector Hortícola de La Plata* (vol. 39, pp. 103–114). Facultad de Humanidades y Ciencias de la Educación. UNLP.
- WHO. (2006). Multicentre growth reference study group. WHO child growth standards: Length/ height-for-age, weight-for-length, weight-for-height and body mass index-forage: Methods and development. World Health Organization. ISBN 924154693X.
- WHO. (2008). Obesity and overweight. World Health Organization.
- WHO. (2021). Malnutrition. World Health Organization. From https://www.who.int/news-room/ fact-sheets/detail/malnutrition. Last access: 14 Nov 2022.
- Zhou, Y., von Lengerke, T., Walter, U., & Dreier, M. (2018). Migration background and childhood overweight in the Hannover Region in 2010–2014: A population-based secondary data analysis of school entry examinations. *European Journal of Pediatrics*, 177, 753–763. https://doi. org/10.1007/s00431-018-3118-x. Last access: 14 Nov 2022.