GROWTH AND NUTRITIONAL STATUS OF MADRID’S FOREIGN IMMIGRANT YOUTH POPULATION AS AN INDICATOR OF HEALTH

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Abstract
This paper focuses on the nutritional status and nutritional habits of autochthon and immigrant youths in the centre of Madrid, Spain; it will relate nutrition to the growth and development of the adolescent youths in our sample.

Introduction
Growth as a biological process is determined genetically, but it is also sensitive to the environment. Nutrition and migration are key factors affecting human growth and development. On the one hand, a balanced diet and adequate nutrition, helps to prevent diseases in adulthood, like obesity or chronic diseases. On the other hand, people migrate in an attempt to improve their living environment, and in doing so, their living conditions. Migration affects the status of immigrant nutrition and health because migrants will definitely experience dietary and nutritional alterations.

The environment brings about change through daily life factors such as: household variation, socio-economic status, food availability and health status. Following migration environmental change is the primary determinant of biological change in growth and development.

Definition of the research problem
Currently, the migration of people is a phenomenon that affects industrialized countries, of which Spain has only recently become a main port of immigration. In Europe, due to the borders currently being closed and the commitments derived from Schengen’s agreement, immigration has resulted in economic crisis for each nation and simultaneously in a political problem. Between 1996 and 2002 Spain received 2,130,282 immigrants and in 2003 the percentage of immigrants living in Spain was 6.26%.

From the 2,398,289 non-European foreigners registered in Spain at the beginning of the 2004, 845,966 were aged between 15 and 19 years. If we add to this number the 123,398 adolescents in the early stages of adolescence (i.e. those aged among 10 to 14 years), the immigrant adolescent and youth population reaches 40.4% of the total population of non-European immigration.

Madrid is the city with the highest number of foreign citizens in the whole country; official data of June 2002 indicates that there are 291,866 foreigners in Madrid versus 1,301,342 for the whole nation. This data demonstrates that 22.4% of the total number of foreign citizens registered in Spain are currently living in the capital, highlighting Madrid’s profile as the immigration hub within the country.

The immigrant population is on the increase, and this is an important socio-economic aspect for the city. The immigrant population rose from 289,605 to 525,854 in less than two years, which indicates an increase in the rate of illegal immigrants. Due to the new access of foreign workers and the passive growth that comes with it (family re-grouping), the importance of the foreign population versus the autochthon population has progressively increased. The increase as of June 2002 is from around 9.2% in the Madrid Autonomous Community and 10.3% in the capital. Infants and adolescents are the most representative group among this city’s foreign immigrant’s population.

The increase in the number and proportion of immigrant workers at reproductive age together with the high number of women within the foreign population that live in Madrid, is increasing the birth rate. This results in an increase of young people in the immigrant population, which contrasts with the notable aging population of the native inhabitants. This trend provokes considerable impact on education and sanitary conditions within the country.

It is common in the old city centre districts to find public schools where the number of foreign immigrant students is larger compared to the number of native students. This is due to family re-grouping and the increase in birth-rate among immigrants.

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1 http://www.ine.es/
2 http://www.ua.es/coalumnos/actividades/05_ene-abril/Documento_de_trabajo_encuentros_juventud.pdf
3 http://www.ine.es/
Therefore, adolescents were chosen as the sample population in the present study as it is a relevant group among the immigrant population in Madrid. Hereby, one should be reminiscent that migration affects adolescents, as they are undergoing the phase of puberty, which is considered a critical growth period where adolescent diet and living conditions have a profound effect on their growth, development and health.

**Significance of the study**

The world health organisation (WHO) considers infant growth and development processes as a good indicator of the populations’ welfare.

Therefore, the relevance of this study relies on how nutrition influences the growth and development of children. Another significant aspect of this study looks at the health consequences of nutrition.

In Spain, the increase in foreign immigrant population has started to fundamentally influence the national development of policies and processes. It is therefore, important to define the profile of this population, considering that one of the ranges for maximal growth-sensitivity is during adolescence and is related future health problems.

**Objectives**

*General Objectives:*
- To describe the nutritional status and habits of a foreign and autochthon student population enrolled in a public secondary school in centre of Madrid City, during the school year 2004-2005.
- To study the impact of migration on food habits and nutritional status.

*Specific Objectives*
- To evaluate the nutritional status of this population by anthropometric measurements.
- To compare the quality of the children’s diet to the Mediterranean diet.
- To analyse the relevance of breakfast in the quality of their diet.
- To relate which, and to evaluate how, different variables of the adolescent life style affect their body mass and the quality of their diet.
- To contribute to the education of nutrition and health.

**Methodology**

*Study design*

It is an observational and descriptive epidemiologic pilot study with transversal design. It is concerned in migration’s effect on the changes that take place in the nutritional patterns; on its possible influence in both the morbidity or morbi-mortality patterns; and on the health-illness processes that will take place during adulthood.

*Sample*

The sample population was composed of all the students (*nationals*/*autochthons* and immigrants) enrolled in the fist cycle of the Compulsory Secondary Education from a particular public secondary school in a centre district of Madrid City.

The size was set at 157 students from the total number of 319 students that were enrolled in the fist cycle of the Compulsory Secondary Education. The participation rate was 49.21% of the total sample size. Among the 2 cycles that compose Compulsory Secondary Education the first cycle was focused on because most of the immigrant students of this school were enrolled in it.

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*Compulsory Secondary Education (Educación Secundaria Obligatoria, E.S.O) in Spain last four years. It is divided in 2 educational cycles of 2 years each. On the Compulsory Secondary Education students from 12 to 16 years old that have already completed the Primary Education are enrolled in. In the case of immigrant students they are enrolled in no matter of their previous educational background but their age. Therefore to adapt to the new system and to catch up it is difficult for them when they do not have the previous required knowledge that will help them to fit in this educational period. This is the reason why most of the immigrant students are enrolled in the first cycle in this school as they are failing the courses. In fact they wait until they are 16 years old in order to be allowed to leave the school.*
Instruments

I) Face to face questionnaire divided into different sections to ensure the information gathered was as complete as possible. It is comprised of 3 dietetic retrospective questionnaires and a global questionnaire, these incorporate questions related to socio-economic status, education level and lifestyle factors. The questionnaires were designed from the enKid Study’s questionnaire7, and other already validated questionnaire models used by both the researcher’s PhD promoters at the Vrije Universiteit Brussel (VUB) and the Universidad Autónoma de Madrid (UAM) Anthropology departments.

The three dietetic questionnaires were; Food consumption’s modification after migration questionnaire, a KIDMED Index questionnaire6 and a Food Frequency questionnaire.

II) Anthropometric measurements; the relevance of these measurements is based on the fact that the body composition of an individual is more related to environmental conditions, as in the case of nourishment. Anthropometric parameters are also, very useful for controlling children’s growth, as well as for evaluating the effects of nutritional interventions (Ortega and Requejo, 2000). All anthropometric measurements were collected in accordance with the procedures described by the International Biological Program (IBP) (Weiner and Lourie, 1969). The main anthropometric variables collected were: Weight (W), Height (H) and Body Mass Index (BMI). It should be mentioned that for this last variable there is widespread agreement that for adults a body mass index of 25 kg/m^2 constitutes overweight and a 30kg/m^2 obesity; but there are no internationally agreed upon definitions for children, as BMI in childhood changes substantially with age 9. For the present study the definitions for children proposed by Cole et al. were used10.

III) Analysis of the data survey was been carried out using the statistical package SPSS for Windows version 11.0. The data was analysed per sex, age, and by nationality, to show the frequency and proportion relative to the variables in the survey following the general methods used in nutrition surveys (Serra Majem and Aranceta Batrina, 2000).

Results and Discussion

Sample’s profile

Through the results and the discussion a general overview that will integrate all the gathered information in a general picture will be provided.

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7 The enKid Study is a population based cross-sectional survey carried out in Spain between 1998 and 2000. This study was developed in order to explore the nutritional intakes of Spanish children and the factors influencing the risk of nutritional inadequacy. (Serra Majem and Aranceta Batrina, 2000)

8 The quality of the Mediterranean diet for children and adolescents index, the KIDMED Index, was elaborated by Serra et al. for Spanish infants and youth within the enKid Study. The KIDMED Index has been developed on the bases that sustain and spoil the Mediterranean food model (Serra Majem and Aranceta Batrina, 2002).

This index ranges among 0 to 12. It is based on a test of 16 questions. Questions with a negative connotation as regards the Mediterranean diet cost-1 points, while those who take a positive aspect are +1 points. The sum of the values of the above mentioned test qualifies in three levels:

1: 0 to 4: Mediterranean ideal diet; 2: 4 to 7: need of food patterns amelioration to adapt the Mediterranean model; 3: 8: diet of very low quality.

9 In here Adulthood is considered from 18 years old on, while childhood is considered from 2 to 18 years old.

10 Cole et al. developed age and sex specific cut off points for body mass index for overweight and obesity in children using dataset specific centil linked to adult cut off points. Those cut off points based on a heterogeneous worldwide population can be applied widely to determine whether the children and adolescents they identify (from 2 to 18 years old) are at increased risk of morbidity related to obesity. These cut off points therefore help to provide internationally comparable prevalence rates of overweight and obesity in children. (Cole et al., 2000)
It will allow us to understand more about how these factors affect these children's nutritional status. Within the 2 first grades of the compulsory secondary education in the sample 18 nationalities were found and were classified in 5 subgroups depending on their geographical region; one of these groups was the control group formed by the native students from Spain.

**Demographic related variables**
Family and social networks are considered to be the fundamental determinants of immigrants’ adaptation to their new environment.

When considering the context in which they live in the foster country it was found that their parents have a low or medium level of education attained in their former country, but they work as non-qualified labourers in Spain.

In general almost all of these immigrant children are living in Spain for no more than 5 years; living in old rented apartments shared with people that do not always belong to their families.

As a consequence of their living environment a high prevalence of students failing previous school years was found (46.5%).

**Anthropometric variables**
No relevant differences from the anthropometric measurements were found. These children no matter their nationality were classified as normo weight, although almost 25% of them were overweight. Nevertheless the prevalence of obesity is very low.

An interesting observation noted from this study is the trend in which the mother’s occupation brought significant differences in all anthropometric variables for boys but not for girls.

From these results it is clear that people migrate to improve their living conditions and opportunities; nevertheless adapting themselves to their new environmental conditions exposes them to different risk factors in comparison to the ones in their former countries.

**Nutritional variables**
The remainder of the paper presents and discusses the nutritional variables.

**A) Food Frequency Questionnaire**
When considering the results obtained from the Food frequency questionnaire it was found that all these children follow a western pattern of nutrition.

A low consumption of legumes but a high consumption of patisserie, candies, milk, and related products and meat was found. This translated into nutritional terms means a diet consisting of high animal origin proteins and saturated fats consumption; and low vegetable origin proteins consumption. Although fish is a source of protein with high biological value it is an important meat, but with less saturated fats, its consumption in our sample is low. It is necessary to make a recommendation of increasing its consumption while reducing the consumption of meat.
In regards to the modification suffered in their nutritional manners after migration it comes out again that they all are almost adapted to a western society’s nutritional pattern; because the change in environment has moved their food habits closer to the that of wealthier countries.

In the obtained results there were marked observations; an increase in meat, patisserie and milk and related products, followed by an increase in fruits and vegetables consumption. Again in nutritional terms this means an increased consumption in animal origin proteins and saturated fats. Interesting is the trend observed among Latin American students where a decrease in their fish consumption was found in comparison to its consumption in their former countries.

### B) Modification after migration

<table>
<thead>
<tr>
<th>Item</th>
<th>Asians</th>
<th>North-West Africans</th>
<th>Latin Americans</th>
<th>Eastern Europeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread</td>
<td>-</td>
<td>+</td>
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<td>=</td>
</tr>
<tr>
<td>Potatoes</td>
<td>+</td>
<td>not clear trend</td>
<td>quite +</td>
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</tr>
<tr>
<td>Pasta</td>
<td>not clear trend</td>
<td>+</td>
<td>not clear trend</td>
<td>not clear trend</td>
</tr>
<tr>
<td>Legumes</td>
<td>-</td>
<td>not clear trend</td>
<td>not clear trend</td>
<td>=</td>
</tr>
<tr>
<td>Fruits and Vegetables</td>
<td>+</td>
<td>not clear trend</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Meat</td>
<td>+</td>
<td>not clear trend</td>
<td>+</td>
<td>=</td>
</tr>
<tr>
<td>Fish</td>
<td>not clear trend</td>
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<td>-</td>
<td>not clear trend</td>
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<tr>
<td>Eggs</td>
<td>+</td>
<td>not clear trend</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Milk</td>
<td>not clear trend</td>
<td>+</td>
<td>not clear trend</td>
<td>-</td>
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<tr>
<td>Milk related products</td>
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<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Patisserie</td>
<td>+</td>
<td>+</td>
<td>quite +</td>
<td>+</td>
</tr>
</tbody>
</table>

Legend: “+” Increase; “-” Decrease; “=” no modification; “not clear trend”
C) Food Habits

About the food habits when relating them to the quality of their diets, a strong relationship among the quality of their diets was observed in both the breakfast (p=0.00 for boys and girls) and the morning snack intake (only observed in boys p=0.007).

Breakfast consumption has an important role in the nutritional balance. Its omission or incorrect intake limits children’s mental and physical capacity and implies a predisposition to educate an incorrect way in the youth’s food habits through the day and during life.

Other variables found that are interesting are trends related to the quality of these children’s diets that should be studied in detail in the future such as:
- Who cooks at home (p=0.012 for girls)
- The kind of meals prepared at home (p=0.092 for boys; p=0.03 for girls)
- The olive oil consumption (p=0.065 for girls)
- The kind of food that they reject (p=0.098 for boys)

D) Quality of these students’ diets

Finally in order to define the quality of these children’s diet the KIDMED Index was used.

From the obtained results we observed a high number of children with a good quality diet. But apart from it a general trend where these children’s diet should be improved was observed. Nevertheless, no significant differences were found among nationalities.

As these are interesting findings comment needs to be made on the trend observed among Asian students; Asian students are so distant from the optimal diet; while North-West African students have high values for the KIDMED Index and, therefore, among the immigrants have a better quality diet.

Other related variables were the mother’s level of education; the age of these children and the father’s occupation, although for these two last questions there was no significance but relation was found.

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Conclusions

From all the observed results it can be conclude that:

1. In Spain immigration has a selective nature.
2. The population of the study no matter their nationality was characterized by a good nutritional status.
3. The quality of the diet depends not in the immigration itself but in the conditions in which it takes place; as observed, the parent’s level of studies do not match with their occupation in the foster country.
4. Despite the fact that a high proportion of them have an acceptable quality of diet, most of them need to improve it. The bad quality of their diet is related to their food habits no matter their nationality.
5. There is also an evident change in the food habits towards a western nutritional model. As stated previously, there is an increase in meat, patisseries, candies and milk and related products. All of these are rich in saturated fats which a high consumption increases the risk of overweight, obesity and cardiovascular diseases in the adulthood.
6. In general the quality of these students’ diets is affected by the mother’s occupation (important role of the mother).
7. When comparing the quality of the diet between the Spanish and the immigrant students of the sample the quality of their diet is related with their nationality.

8. Breakfast comes out as a decisive meal in these children’s diet. Therefore, and in order to influence positively in the children’s food habits and status, it is the best daily meal to do so.

9. As a consequence what is stated above, there is a need for promotion of the nutritional education in order to have healthy adults.

10. In any case, because of the heterogeneity of the sample and the small size of each of the subgroups, there is a need of further studies in order to provide a better profile of the issues that matters to this population.

References


Hernández Rodríguez, M. Alimentación infantil, 2ª ed, Madrid: Díaz Santos, 1993


Lytle, L. Nutritional issues for adolescents. J Am Diet Assoc 2002; 102; 102 (Supl.): S8-S12


Mul, D., Oostdijk, W., and Drop, S. Early Puberty in Adopted Children. Horm Res 2002;57:1


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