CHRONIC CHILD MALNUTRITION IN THE TETE PROVINCE (MOZAMBIQUE)
CASE AND CONTROL STUDY

Autores: Ana Moral Larraz, Gloria González Azpeitia, Loida Maria Garcia Cruz, Irina Hernández Medina, Desiderio Zacarías Reyes Suárez

UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA
Facultad de Ciencias de la Salud

INTRODUCTION

Undernutrition is the pathological situation resulting of a deficient diet for one or several essential nutrients, or a bad food assimilation. Although malnutrition and undernutrition are frequently used interchangeably, the first one includes a wide range of different nature disorders: overnutrition, undernutrition, dietary deficiencies and secondary undernutrition (not related with diet but with certain diseases which stops nutrients from being absorbed, leading to undernutrition).

Taking into account the time of evolution, we can classify undernutrition as acute malnutrition (wasting); if there is a low weight for height, chronic malnutrition (stunting); if there is a low height for age, and acute exacerbation of chronic malnutrition, if there is a low weight with a low height for age. According to WHO (World Health Organization) information from 2014 (1), global prevalence of stunting is 24,5%, affecting approximately 1 out of 4 children. Three quarters of these children are found in Asia and Sub-Saharan Africa,

Mozambique, in south-eastern Africa, is considered as the 9th poorest country in the world (2), showing a life expectancy of 54 years (1) and an under-5 mortality rate of 87,2 (1). It has 11 provinces (4) among which we can find Tete, where this study was done.

According to UNICEF`s theoric framework (5), stunting is the result of the interplay of different determinants. At the same time, its effects have a negative impact on the socio-economic growth of a country.

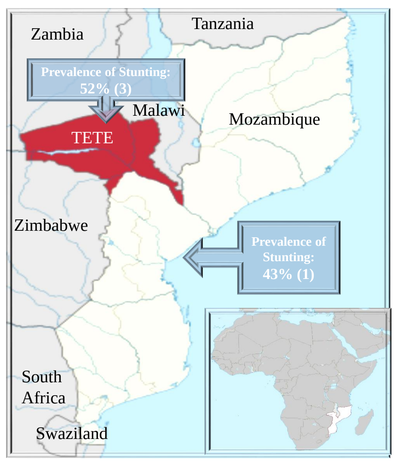


Figure 1.Mozambique stunting prevalence

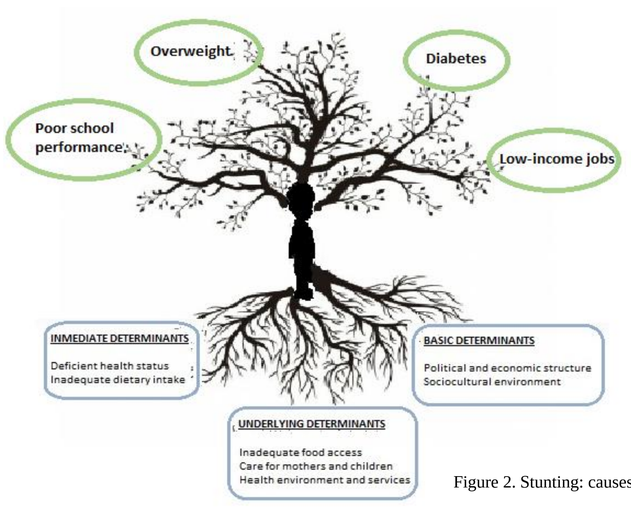


Figure 2. Stunting: causes and efffects

HYPOTHESIS

Knowing that the starting and development of stunting highly depends on the socio-environmental characteristics of the children´s background. Which characteristics have a greater influence? And once we know them, can stunting prevalence be reduced by changing some aspects of their lifestyle?

MATERIAL AND METHODS

A case-control study with a sample of 94 children was done in the Tete Province between 1st and 30th September 2015. The information was recollected from children who attended health centers 2 and 3 in Tete city, for health control or as a consult for any other pathology, and inpatients in Tete Provincial Hospital. Case selection was carried out successively.

Children with chronic malnutrition were considered as cases (n=47), and those with no sign of malnutrition were taken as controls (n=47)

Information was obtained using a survey, which was answered by the mother or other caregiver. The survey included 98 variables, however, after analyzing the bibliography, only those most related to stunting were included.

CHILDREN´S VARIABLES
- -Gender
- -Age
- -Gestational age
- -Birth weight
- -Routine control
- -Complete vaccination calendar
- -Vitamin A
- -Deworming with Mebendazol
- -Breastfeeding time
- -Beiskot introduction at 6 months
- -Order of birth

MOTHER`S VARIABLES
- -Actual age
- -First pregnancy`s age-
- -Gestational control
- -Number of gestations
- -Mother´s literacy
- -Mother´s job

ENVIRONMENTAL VARIABLES
- -House structure
- -Floor type
- -Fuel for cooking
- -Access to safe water
- -Living with other relatives

Figure 3. Analyzed variables

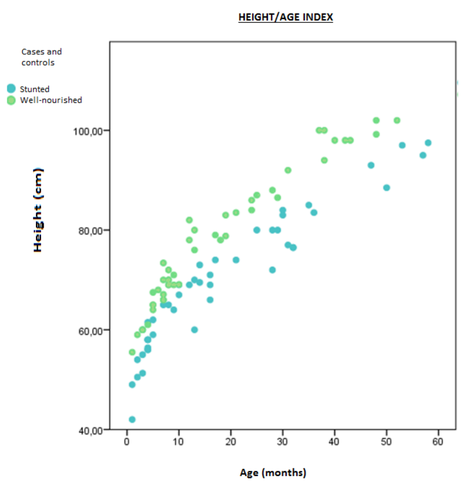
Once the surveys were completed, a full physical exploration and body measurements were done:

- ✓ Weight: Under 2 years old children were weighted naked using an electronic scale. Over 2 years old children were weight using a simple scale, at the health center, or an electronic scale, at the hospital
- ✓ Length: Under 2 years old children and those measuring less than 87 cm were measured recumbent. A rod was available at the hospital, while a measuring tape was used at the health center.
- ✓ Height: It was measured in children 2 years old and over, or with a height over 87 cm.
- ✓ Midd-Upper-Arm-Circunference: it was measured in the left arm, between the end part of the shoulder (acromion) and the beginning of the elbow (olecranon), with the elbow flexed 90º.

Figure 4. Children measurements

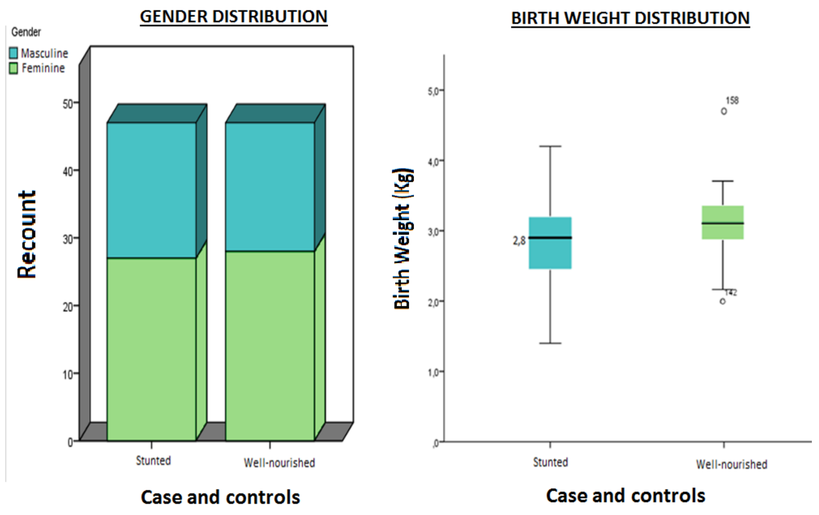
Information was processed and analyzed with the statistical package SPSS®. The association between qualitative variables was explored using Pearson`s chi square or Fisher`s test. Student`s t test was used for quantitative variables

RESULTS



There were 39 boys (41,5%) and 55 girls (58.5%), with an average age of 18 months. No significant relation was found regarding gender

Birth weight proved statistically significant in preventing stunting. [(t: -2,26 IC 95%: (-0,5;-0,3)].



There is a higher proportion of stunting in children living in mudbricks houses, who haven`t been dewormed or have breastfed more tan 12 months. This proportion was also higher in the group of mothers who work outside their homes or with a high number of gestations. However, none of these differences were statistically significant.

ABSTRACT

Objectives: Determinate which factors associate with the starting and development of stunting in the Tete Province, Mozambique.

Material and methods: Case-control study with 94 children who came to health centers 2 and 3 and the Tete Province Hospital during September 2015. Children with chronic malnutrition were considered as cases (n=47), and those with no sign of malnutrition were taken as controls (n=47). Using a survey, different variables related with the mother, the children and the environment were collected. The association of these variables was then analyzed between both groups. Statistical analyses were performed in SPSS using bivariate comparisons and logistic regressions.

Results: In the study population 41,5% were boys and 58,5% girls, being the average age of 18 months. Relationship between birth weight and chronic malnutrition was statistically significant [(p=0,04 OR: 0,25 CI95% (0,06-0,99)].

Conclusion: A higher weight at birth acts as a protector factor for chronic malnutrition.

Gender wasn't related with the possibility of having chronic malnutrition.

A higher percentage of chronic malnutrition was found in those children who hadn't been dewormed, whose mothers had a bigger number of pregnancies and those living in mudbrick houses. However, and probably because of the small sample size, these differences were not statistically significant.

CONCLUSION

This study proved that birth weight is a protecting factor against stunting.

No significant relation was found regarding gender.

A higher percentage of stunting was observed in children who didn't underwent deworming, children born to multiparous women and those who lived on mudbrick houses. However, the former didn't prove statistically significant, probably as a consequence of the small sample size.

STUDY APPLICATIONS

As birthweight was demonstrated to be a protecting factor against stunting, a possible measure could be to improve women´s health. In populations with limited access to food, it would be advisable to analyze the mother´s nutritional status and encourage the implementation of educational campaigns that promote an adequate nutrition for pregnant women

Moreover, multiparous women have a high physical exhaustion, which might affect later pregnancies and birthweight. A possible measure to address this problem would be to educate women on birth control and ensuring access to it.

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Mozambique, in south-eastern Africa, is considered as the 9th poorest country in the world , showing a life expectancy of 54 years and an under-5 mortality rate of 87,2 (1). It has 11 provinces(12) among which we can find Tete, where this study was done. According to UNICEF`s theoric framework, stunting is the result of the interplay of different determinants. At the same time, its effects have a negative impact on the socio-economic growth of a country