

Dietary pattern of sugar canne cutters in a city of the northwest of Sao Paulo

Alfredo Bosquero Piacentin¹,
Heitor Vieira Nogueira¹,
Henrique Garcia Pedigoni¹,
Renan Cenize Guardia¹,
Durval Ribas Filho²

¹ Academic Medical Student Integrated Colleges Padre Albino – Catanduva (SP)

² Professor of Nutrology of the Integrated College Padre Albino – Catanduva (SP)

ABSTRACT

Background: Sugar cane used for alcohol production is a very important economic activity in rural areas of Sao Paulo state. There is still a population of workers that are essential for cutting the plants. Therefore, the investigation of their eating habits, and the quantification of nutrient intake might help the government to develop public health and nutrition intervention programs.

Methods: This was a descriptive, observational, and transversal study. The instrument used on the study was the 24-hour dietary recall applied to 71 sugar cane cutters, which was fulfilled by the researchers at the farm. Everything ingested by the workers was registered and split into portions, in every meal. Subsequently, the food ingested was analyzed as to quantities and compared to the traditional Brazilian feeding pyramid.

Results: Eleven percent of the workers had 6 daily meals, prevailing 4 to 5 meals a day. Regarding the food groups, the number of portions (mean \pm SD) were: bread, rice, pasta and potato, 8 ± 2 ; fruits $1\pm 1,2$; vegetables $1,33\pm$; beans $3,6\pm 1,6$; meat and eggs $4,3\pm 1,8$; milk cheese and yogurt $0,92\pm 0,9$; sugar and sweets $0,64\pm 1,16$; oil and fat $0,79\pm 0,51$.

Conclusions: Based on the present data, it was possible to conclude that rural workers that work on sugar cane crops have an inadequate dietary pattern with reduced food variety, consisting basically of bread, rice, beans and cattle meat.

INTRODUCTION

Unemployment and the demand for alcohol are considered the main reasons of the excessive search for work positions and job opportunities in the field.

Concomitant to this, the development of agricultural machines capable of gathering the sugar cane diminishes labor in rural areas. Although there is such a developed technology, it is still possible to find rural workers that migrate in certain seasons, seeking for work in the southeast of Brazil, proceeding from northeastern states¹. These rural workers see themselves obliged to compete with machine, for this may take possession of their place in the field. To avoid that from happening, the workers abuse of their own physiological conditions in order to guarantee their nourishment². There are researches comparing the decades of 1950 and 1960, when the average was 3 tons per person per day of cut sugar cane, with present days, when it is close to 12 tons per person per day. These researches also corroborate to the hypothesis that the necessity of nowadays productions causes excess of

fatigue². As a result of low salaries, there is a reflection in habitation, hygiene and, mostly, alimentation conditions, which is necessary for daily physical effort and goal of our study. Its main guiding is the offer of 1400Kcal daily by the company, varying accordingly to the level of physical activity of the occupation: from 1200Kcal for light activities to 1600Kcal for heavy ones²⁰.

Feeding is often unsatisfactory and the excess of work is harmful at the long term for the cane cutters. Studies developed all around the world have proved the relation between caloric ingestion and productivity, making evident the implication of an inadequate feeding supply to the vital necessities on work efficiency⁹. This will diminish their quality of life in the future, making their production decrease along harvest season. Examples are shown when work position analysis indicates that cane cutters rarely remain on the job for 12 years. The significance of feeding on organic balance, not only as a factor for maintenance of health, but also on the economic point of view, is a condition for higher energy consumption and consequently for higher work capacity¹⁹.

Dietary inquiries constitute the best instrument to determine feeding patterns of a population and its evolution with time. Health care in the field are worse than in urban centers, in developed and developing countries, according to ILO²² (International Labor Organization). In Brazil, these inquiries are always conducted in state capitals and metropolitan areas. As a result, feeding patterns of the countryside are practically unknown¹¹.

There is an insufficient amount of studies accomplished and published in literature concerning feeding habits of rural workers, being necessary a higher emphasis in this sort of studies. Despite media wide promotion of the conditions these people live in, little is known about the habits of this population.

Impelled by curiosity, reporters and journalists publish their objections, but, it is also necessary to make studies approaching social, cultural and nutritional aspects. Other aspects to be studied are: the resistance of the workers in adopting healthy feeding habits, the feeding behavior of the worker before free nourishment and the real feeding necessities of the workers in different social contexts²⁰. The studies published by researchers are primordial to the supply of information necessary to elaborate multidisciplinary program interventions which may improve life conditions of rural workers.

Therefore, this study aimed to investigate the dietary pattern of sugar cane cutters from northwest of Sao Paulo state.

A food pyramid was elaborated based on the data obtained during the study, and after that, it was compared to the Brazilian food pattern proposed in literature.

METHODS

Descriptive, observational, cross-sectional study. The instrument used on the study was the 24-hour dietary recall applied to 71 sugar cane cutters, which was fulfilled by the researchers at the farm. All ingested foods were registered and afterwards split into portions in agreement to what is proposed by the Health Ministry Feeding Guide for every meal¹. This study was approved by the Ethics on Research Committee of the School of Medicine of Catanduva, approval registry n°28/10.

The information regarding food ingestion referring to the last 12 months was obtained through the method of 24-hour dietary recall. Photography albums were used to avoid memory related issues and improve the quality of the information concerning the size of the meals that were served. The interviews, done directly with the workers at the farm, with previous consent from the workers that took part of the study, had an average duration of 10 minutes each. The interviewers, graduation students from the School of Medicine of Catanduva, were properly trained for the study¹¹.

The aliments were divided into portions accordingly to their energy values. Energetic values converted are found in the Health Ministry Food Guide⁶. From those data, the standard-deviation of each food group was calculated, based on statistic principles.

Rice, Bread, Paste, Potato and Manioc(1 portion = 150 kcal)	
1 portion:	
White rice	4 tablespoons
Cooked potatoes	1 e ½ units
Cream cracker biscuits	5 units
Manioc flour	2 tablespoons
Cooked macaroni	3 e ½ tablespoons
Bread loaf	2 slices
Bread roll	1 slice

Beans (1 portion = 55 kcal)	
1 portion:	
Dry cooked peas	2 e ½ tablespoons
Cooked beans	1 scoop
Cooked soy	1 spoon

Dairies (1 portion = 120 kcal)	
1 portion:	
Type C milk	250mL
mozzarella cheese	3 slices

Fruits (1 portion = 70 kcal)	
1 portion:	
pineapple	1 slice
banana	1 unit
persimmon	1 unit
guava	½ unit
orange	1 unit
apple	1 unit
papaya	½ unit
watermelon	2 slices

Greens and Vegetables (1 portion = 15 kcal)	
1 portion:	
cooked pumpkin	1 e ½ tablespoons
lettuce	15 leafs
grated raw beetroot	2 tablespoons
cooked broccoli	4 e ½ tablespoons
grated raw carrots	1 spoon
grated cucumber	4 tablespoons
arugula	15 leafs
tomato	4 slices

Oil and Fat (1 portion = 73 kcal)	
1 portion:	
butter	½ tablespoon
margarine	1/2 tablespoon

Sugar and Candies (1 portion = 110 kcal)	
1 portion:	
Crystal sugar	1 tablespoon

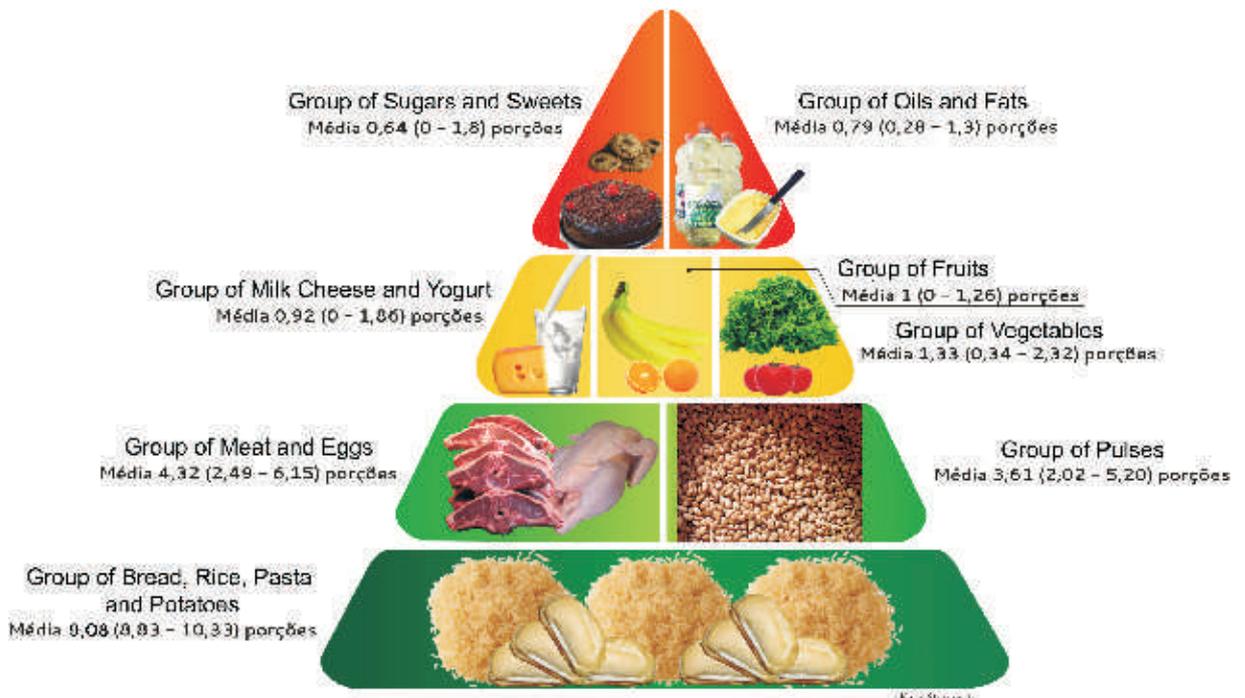
Meat, fish, eggs (1 portion = 190 kcal)	
1 portion:	
grilled steak	1 unit
roast meat	1 small slice
grilled chicken steak	1 unit
omelet	1 unit

The above listing (Health Ministry Food Guide) shows only the aliments most frequently found in the present study. From the portions consumed by the workers, the averages and their respective standard-deviations were calculated, to each food group established in literature. A food pyramid¹³ was elaborated based on the real consumption of these workers in order to establish a comparative board to the ideal Brazilian food pyramid³. Afterwards, the ingested aliments were compared (in terms of quantity) to the traditional Brazilian food pyramid.

RESULTS

The results of the sugar cane cutters feeding habits profile are shown on picture 1.

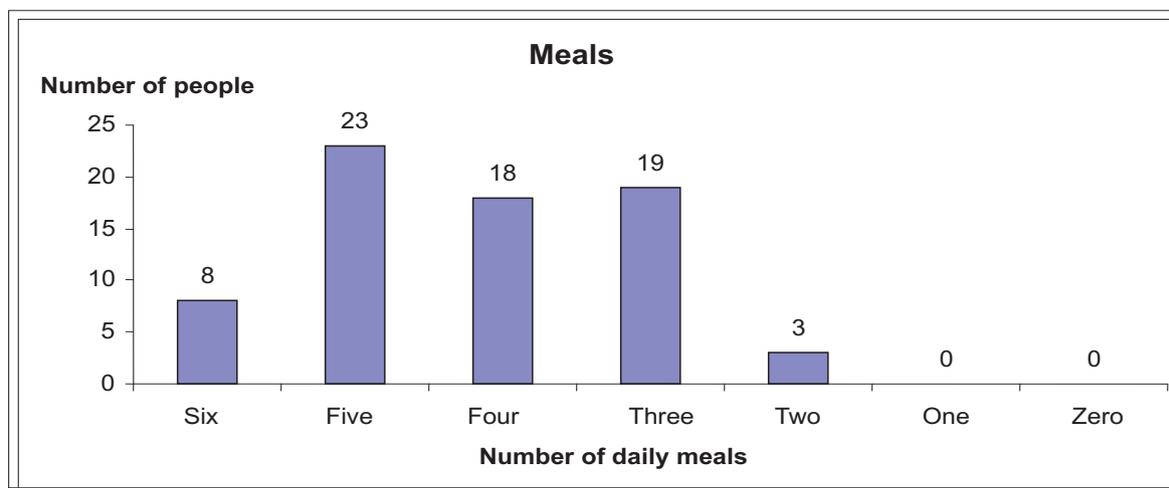
Food pyramid of sugar cane cutters from the 24-hour recall





Brazilian population's food pyramid

The eating frequency data are shown on the graphic bellow. The workers have on average 4 to 5 meals a day. Eleven percent has 6 meals a day.



This research verified that 11,26% of the interviewed cane cutters fraction their alimentation into 6 meals a day. There is also a reduced variety of nutrients among the groups of the feeding pyramid. The ingestion of fruits, vegetables and dairies was found below recommended by literature. The groups of carbohydrates (bread, cereals and roots), meat and greens were found above the recommended by the feeding pyramid

DISCUSSION

Firstly, it was possible to perceive that a small number of the workers eat six meals a day. This reduced number of meals might be attributed to the fact that workers eat in different times of the day when compared to the rest of the population²³. It was verified that in most cases, the first meal of the day (breakfast) was consumed still at dawn,

the second meal (brunch) in the morning (when the rest of the population is usually having breakfast), the third meal (lunch) between 9 and 10 in the morning. The afternoon snack does not happen most times, dinner is often eaten between 3 and 4 in the afternoon and the evening snack, when it happens, in variable timings. Besides, most times all meals were composed of the same aliments, that is, the food cooked for lunch is consumed in all meals. The pyramid proposed by this study was compared with the Brazilian food pyramid. At the pyramid's base, in both cases, are seen the group of bread, rice, pasta and potatoes, but with a reasonable increase in the worker's pyramid. As this group has large quantities of calories, it has great importance for the workers and their heavy work. Besides having carbohydrates there are smaller quantities of proteins, cholesterol and fibers⁵.

Above it is the group of dairies (milk, cheese and yogurt) along with the group of fruits and the group of greens and vegetables. These three groups are noticed in quantities much smaller than recommended by the Brazilian food pyramid. Lower ingestion of these groups means there is a reduced intake of proteins, fibers, vitamins and minerals that are vital to an adequate metabolism.

At last, at the top of the pyramid are found the group of sugar and candies and the group of oil and fat. These two groups were also found in smaller quantities than recommended, accusing smaller admission of carbohydrates and complex B vitamins, from the group of sugar and candies, and energy, from the group of oil and fat⁵.

With all these information, it is possible to see an inversion of the food chart, even if the excess of one type of aliment compensate the lack of another.

New investigations that use the same instrument to determine feeding patterns are recommended, in order to determine if the results of this study are common to other populations in the countryside¹¹.

CONCLUSION

Sugar cane cutters from northwest of Sao Paulo have an inadequate dietary pattern, with high intake of carbohydrate rich foods and low intake of vitamins, minerals, fibers and protein.

REFERÊNCIAS

- 1- Frederico, NT; Marchini, JS; Oliveira, JED. Alimentação e avaliação do estado nutricional de trabalhadores migrantes safristas na região de Ribeirão Preto, SP (Brasil). Rev. Saúde Pública, 1984, vol.18, nº.5
- 2- Ribeiro, H; Ficarelli, TRA. Queimadas nos canaviais e perspectivas dos cortadores de cana-de-açúcar em Macatuba, São Paulo. Saude soc, 2010, vol.19, nº1.
- 3- Gonzales, EM; Bastos, M. I. *Migração rural e o trabalho volante na agricultura brasileira*. Universidade de Brasília, Brasília. 1979. p.1-3
- 4- Shils, ME; Olson J A; Shike M; Ross C. Tratado de Nutrição Moderna na Saúde e na Doença. São Paulo: Manole, 2009.
- 5- Philippi, ST. Nutrição e Técnica Dietética - 2ª Ed. 2006
- 6- Guia alimentar para a população brasileira : promovendo a alimentação saudável / Ministério da Saúde, Secretaria de Atenção à Saúde, Coordenação-Geral da Política de Alimentação e Nutrição. – Brasília: Ministério da Saúde, 2005.
- 7- Laaf, EF; Vilela, RAG; Desgaste fisiológico dos cortadores de cana-de-açúcar e a contribuição da ergonomia na saúde do trabalhador. Rev Digital Buenos Aires, 2007; ano 12, nº111.
- 8- Alves F; Por que morrem os cortadores de cana? Rev Saúde e Sociedade, 2006; vol 15, nº3: pag 90-98
- 9- Gomes, CRA; Araújo, SAF; Carrilho, NAT; Bagattini, L. Avaliação nutricional de cortadores de cana e a relação do índice de massa corporal (IMC) e a relação cintura/quadril (RCQ). OMNIA SAÚDE. 2004 v.1 p. 37
- 10- Cássia, RAG; - Mariana, MTF; Neide, ATC; Lucíola B. Consumo alimentar da população de cortadores de cana na região da nova alta paulista – São Paulo/Brasil. OMNIA SAÚDE - FAI - Faculdades Adamantinenses Integradas, 2004; edições Omnia v.1, p 106.
- 11- Éldio B; Waleska TC; Cibele CC; Aline CSL; Maria FLC. Consumo alimentar da população adulta segundo perfil sócio-econômico e demográfico: Projeto Bambuí. Cad. Saúde Pública, 2003; vol.19 no.5
- 12- Zibechi R. O Horror da “Califórnia brasileira”. Disponível em: <<http://www.cipamericas.org/pt-br/archives/1007>> acesso em: 08 de junho de 2011
- 13- Cruz A. T. R.; Latterza A. R.; Philippi S. T.; Ribeiro L. C. Pirâmide Alimentar Adaptada: Guia para escolha dos alimentos. Rev. Nutr., Campinas, 12(1): 65-80, jan./abr., 1999
- 14- Alves F. Processo de Trabalho e Danos à Saúde Dos Cortadores de Cana. INTERFACEHS – Revista de Gestão Integrada em Saúde do Trabalho e Meio Ambiente - v.3, n.2, Artigo 2, abr./agosto. 2008
- 15- Angeleli, W. A.; Vichi, F. L.; Vannuchi, H.; Desai, I. D. & Dutra de Oliveira, J. E. Dietary supplementation and improvement in physical work performance of agricultural migrant workers of Southern Brazil. Arch. lat. amer. Nutr., 33: 158-69, 1983
- 16- Cruz, S. M. M. da & Dutra de Oliveira, J. E. Considerações sobre programa de intervenção alimentar para trabalhadores volantes rurais ou "Bóias-Frias". In: "Bóias-Frias": uma realidade brasileira. São Paulo, ACIESP/CNPq, 1981. p. 255-69.
- 17- Tabela de composição de alimentos. Ribeirão Preto, Disciplina de Nutrição. Departamento de Clínica Médica. Faculdade de Medicina de Ribeirão Preto USP, 1976
- 18- Angeleli, W. A.; Duarte, F. A. M. & Dutra de Oliveira, J. E. Estado nutricional, alimentação e capacidade física de trabalhadores volantes rurais ou "Bóias-Frias". In: "Bóias-Frias": uma realidade brasileira. São Paulo, ACIESP/CNPq, 1981. p. 8-85
- 19- Moura, J.B. de Avaliação do programa de alimentação do trabalhador, no Estado de Pernambuco, Brasil, Rev. Saúde públ., S. Paulo, 20:115-28, 1986
- 20- Veloso I. S.; Santana V. S.; Oliveira N. F. Programas de alimentação para o trabalhador e seu impacto sobre ganho de peso e sobrepeso. Rev Saúde Pública 2007;41(5):769-76
- 21- Lopes A. C.; Tratado de Clínica Médica. 2ª Ed. 2009 vol I pg 302-303
- 22- OIT. 89ª reunião - Genebra 2001 - Convenção 184. acesso em 15 de julho de 2011 http://www.mte.gov.br/legislacao/convencoes/cv_184.asp
- 23- Alessi, N. P. & Scopinho, R. A., 1994. A saúde do trabalhador da cana de açúcar. In: Saúde e Trabalho no Sistema Único de Saúde (N. P. Alessi; A. Palocci Filho; S. A. Pinheiro; R. A. Scopinho & G. B. Silva, orgs.). pp. 121-151, São Paulo: Hucitec
- 24- Blundell, JE; Burley, VJ; Cotton, JR; Lawton, CL. Dietary fat and the control of energy intake: evaluating the effects of fat on meal size and post-meal satiety. Am J Clin Nutr. v.57 (suppl) p. 772S-778S, 1993.
- 25- Medeiros M. A. T.; Cordeiro R.; Zangirolani L. T. O.; Garcia R. W. D. Estado nutricional e práticas alimentares de trabalhadores acidentados. Rev. Nutr. vol.20 no.6 Campinas Nov./Dec. 2007

Recebido: May 15th 2011

Revisado: June 21st 2011

Aceito: July 1st 2011

Corresponding Author:

Renan Cenize Guardia

(17) 9144-1245 (17) 3572-1553

end R: Engenheiro Balduino, 691 - Cep 15830-000

renan_guardia@hotmail.com