

Eating habits and use of urban vegetable plants by residents of Balneário Camboriú, Santa Catarina, Brazil

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ABSTRACT

With the increase in technologies and the growth of cities, a large part of the population now lives in urban environments and consumes, mostly, vegetables, fruits, medicinal plants and spices purchased in supermarkets and/or fairs. It is necessary to encourage the use and creation of vegetable gardens in urban spaces, in order to promote better health for their users. The present work aimed to carry out a survey on eating habits and other information of a socioeconomic nature, in a sample of the population located in Balneário Camboriú -SC, through a questionnaire. From this survey, 10 people were randomly selected to participate in an extension program, where homegrown vegetable gardens were implemented in their residences using reused Styrofoam boxes. The present study resulted in the elaboration of homegrown vegetable gardens installed in 10 residences, in order to bring practical and theoretical knowledge about the importance of home gardens in the diet of its users. It was found that most respondents consume vegetables and fruits, so if there is a demand for these products, there is also a need to encourage and increase the number of actions to expand the production and consumption of food produced in urban environments, in order to reduce logistics costs and promote fresh and healthy food for the urban population.

INTRODUCTION

With the growth of the cities, a large part of the population now lives in urban environments and consumes, mostly, vegetables, fruits, medicinal plants and spices purchased in supermarkets and/or fairs located in urban centers. The uncontrolled increase of the population, combined with the rural population decrease, will promote the increase in the rate of urbanization and biodiversity decline. In the next 20 to 25 years, about 70% of the population will live in urban centers of developing countries (MELO, 2022).

Although food production grows considerably, including variety and alternatives for all preferences and interests, there are still entire populations that do not have enough nutritious food. In addition to the questions posed that place the nutrition of the population below the minimum required, social problems must also be taken into account. According to Pires (2016) the increase in the urban population leads to serious social and economic problems of every order, passing through diseases, marginalization, low productivity and others, raising concerns in world organizations to mitigate the devastating effects of the absence or lack of basic food to the entire population of the planet. An effective initiative to mitigate the effects of malnutrition is the use of gardens in residences and commercial environments located in cities.

Urban and peri-urban agriculture (AUP) has been promoted as a solution to a set of social, environmental and

economic problems, faced by various international agencies, national, local governments and various civil society organizations (GIACCHE; PORTO, 2015). From the beginning of this century, support for urban and peri-urban gardens in Brazil became part of the national policy of poverty reduction and food security assurance, acting as agents in improving the food conditions of Brazilian families (BRANCO; ALCANTARA, 2011). In Brazil, urban and peri-urban gardens began to have great emphasis in the 1980, with the support of municipal governments and local institutions (MONTEIRO; MONTEIRO, 2008).

The State of Santa Catarina, has a Law that establishes the state policy of support for urban agriculture and establishes other measures, which proposes a state policy to stimulate urban agriculture, which unites food and nutritional security, humanization of urban space, quality of life of the target population and, in many cases, income generation/improvement (SANTA CATARINA, 2018).

The coast of Santa Catarina state has been influenced by the process of urbanization of the coastal zone, especially the municipality of Balneário Camboriú, which has been affected by this transformation of the landscape, presenting one of the highest rates of demographic and urban growth in the whole state. This growth occurred from the triad construction, tourism and real estate sector leading to the increase of the migration process and population density (PIATTO; POLETTE, 2012). With an accelerated growth and verticalization of the city, there

is little room for the production of food in apartments and offices of commercial buildings, with the need for studies that address the most efficient methods of using space, improvement of the quality of life and food of this population.

There are several ways to make homegrown vegetable gardens, which can be done in vacant lots, squares, schools and hospitals. In this sense, the reuse of recycled materials such as vases, bottles, buckets, water box, wooden boxes or Styrofoam, among others, has great usefulness. The reuse of simple and used materials can even be a cheap and efficient way out for the making of these vegetable gardens. Several studies have pointed out the importance of these food growing spaces in cities, using materials that could only be discarded (FÉLIX et al., 2018; VOIGT et al., 2016). Since the Styrofoam boxes have good resistance and conservation, these can be used for the manufacture of urban vegetable gardens, reusing a material that would be discarded.

The objective of this study was to survey the eating habits and analyze the use of homegrown vegetable gardens in several residences in the city of Balneário Camboriú, located on the Central-North coast of the State of Santa Catarina, Brazil.

MATERIAL AND METHODS

The present study was carried out in the municipality of Balneário Camboriú-SC, a sample of 41 houses selected randomly in several neighborhoods of the city. A survey was conducted on eating habits, use and knowledge of urban gardens by residents, and a questionnaire was prepared with objective questions. The questions referred to the age group of the participants, monthly income, schooling, habit of vegetable consumption weekly by their families, footage of their residences, whether or not there was room for vegetable gardens in small spaces, if they already practiced urban horticulture, public urban vegetable gardens were known in their municipality and the origin of the fruits and vegetables consumed by the family (whether they are bought or planted by them and/or relatives and neighbors). Questionnaires were applied in person to people over 18 years old, from July 15th to 30th, 2022. And all the protocols of spacing and hygiene of COVID-19 were followed. After the application of the questionnaires the data were tabulated in the Excel program, and then were elaborated graphics for visual representation of the data, not being identified the participants of the research.

Based on the information collected, 10 people were randomly selected who showed interest to conduct the homegrown vegetable gardens in their homes. 20 Styrofoam

boxes were made and distributed, with dimensions of 90 cm x 42 cm x 26 cm (length, width and depth), totaling 2 boxes per participant family (Figure 1).

The boxes used in this project are residues of the fish trade in the region, and would be discarded by the restaurants, since they have no practical use of reuse. They were donated by local restaurants, washed and disinfested with 1% sodium hypochlorite. It is possible to get them free of charge and use the caps themselves cut into small cubes for the drainage system. They are suitable in size and are resistant to various crops. They are practically weightless which makes it possible to insert them into slabs or on simple structures. In addition, obtaining data about the studied population, such as monthly income and schooling, helps understand behaviors and parameters that can point out possible eating behaviors and create improvements in the feeding of residents in urban environments.

The vegetable gardens were made with the following materials: boxes caps cut into cubes for drainage along with a layer of bidin blanket. On the drainage was added substrate composed of land, tanned bovine manure and commercial substrate (ratio 1:1:1). The substrate used had in its composition: pine bark, ash, vermiculite, sawdust and bio stabilized, with acidity corrective additives (0.50%), phosphate (0.50%) and NPK (0.50%). Its guarantees are: electrical conductivity of 0.50 +/- 0.30 mS/cm; pH 6 +/- 0.5; humidity 58%; CRA (water retention capacity) 90% and density (kg/m³) of 310.

The crops chosen for the homegrown vegetable garden, using Styrofoam boxes were according to the preference of the families contemplated by the project, which were selected from the application of questionnaires. The participants opted for plants from a previously elaborated list, containing: lettuce (*Lactuca sativa* L.), arugula (*Eruca sativa* Mill.), radish (*Raphanus sativus* L.), beet (*Beta vulgaris* L.), parsley (*Petroselinum crispum* (Mill.) Fuss), chives (*Allium schoenoprasum* L.), rosemary (*Rosmarinus officinalis* L.), basil (*Ocimum basilicum* L.), oregano (*Origanum vulgare* L.), capuchinha (*Tropaeolum majus* L.), marjorana (*Origanum Majorana* L.), thyme (*Thymus vulgaris* L.), ora-pro-nobis (*Pereskia aculeata* Mill.). The vegetable gardens were placed in the most appropriate spaces of each residence, aiming at the best use of solar radiation, ease of access to the garden for managements and harvests and proximity of access points to water, for irrigation. The monitoring and conduction of the vegetable gardens consisted of a period of six months.

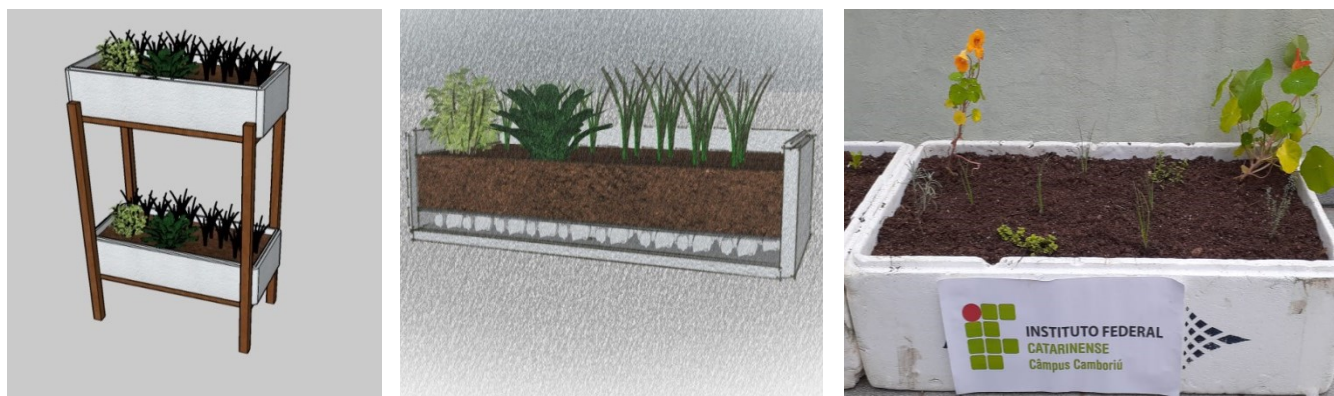


Figure 1. Material used for the construction of homegrown vegetable gardens in Styrofoam boxes for residents of the municipality of Balneário Camboriú

At the end of the project, data were collected about the use of vegetable gardens by users, changes in eating habits with the use of vegetables, unconventional food plants (PANCs), medicinal plants and condiments from the garden, and other benefits that the project has provided to families. The collected data were analyzed and served as a basis for the conclusions of the present study.

RESULTS AND DISCUSSION

Of the 41 participants who answered the questionnaire, almost one-third is aged between 18 and 30 years (31.71%) and approximately one-quarter of the respondents are aged between 51 and 60 years (24.39%) (Figure 2A).

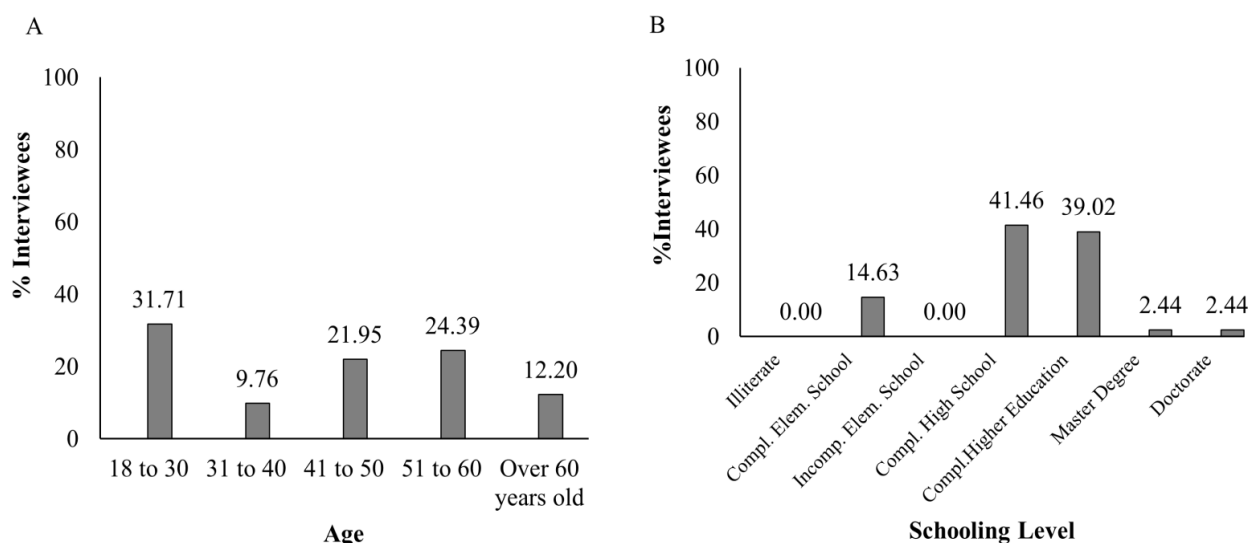


Figure 2. Age range (A) and schooling (B) of the interviewees who live in Balneário Camboriú, Santa Catarina.

Linked to the level of education is also the monthly income of the interviewed families, thus creating a possible correlation between how much people acquire education level and their monthly income. It is observed that the monthly family income of more than half of the population is above four minimum wages, then 26.83% have income between three and four minimum wages, 12.20% between two and three minimum wages, and only 7.32% and 2.44% with family income between 1 and 2 minimum wages and up to a minimum wage, respectively (Figure 3A).

In recent decades, food expenditure has undergone considerable changes in Brazil, due to demographic, economic and behavioral changes, which affect the decisions and preferences of families about what to consume and where to consume (VAZ; HOFFMANN, 2020). Unlike what is observed in the municipality of Balneário Camboriú, data observed by Araújo et al. (2020), they point out that in Brazil the estimate of the prevalence of food insecurity is high, being associated with poor living conditions of families. These conditions are related to economic aspects and unsatisfactory living conditions, as well as problems in the residence and the surrounding area. Balneário Camboriú has one of the best Human Development Index (HDI) in Brazil, which is reflected in the lifestyle and food of the interviewed residents, pointing out as a majority those who earn more than 4 minimum wages.

Regarding the area of the residences, it is observed that 65.85% of the interviewees have residences with more than 80

Regarding schooling, 41.46% have completed high school and 39.02% have a completed higher education course (Figure 2B). In a study conducted by Moura and Masquio (2014), it was found that the level of education of a population has interference in the choices of healthy foods, or not. They observed that there is a significant association on the consideration of processed foods as indispensable to healthy eating and the level of schooling. They also suggest that the less educated population may be more susceptible to erroneous interpretations of concepts of food and nutrition. In a similar study carried out in Fortaleza, inter-relationship between food practices and the degree of knowledge in nutrition, Rodrigues et al. (2012) observed that the low level of knowledge in nutrition is linked to nutritional deviations in low-income populations.

m² and none have footage less than 50 m² (Figure 3B). Among the obstacles for the manufacture of urban vegetable gardens, one of the main ones would be the lack of physical space. Although the interviewees have, in large part, residences with footage above 80 m², it is necessary to take into account the distribution of vegetable gardens in these places to the detriment of the demand for solar radiation and irrigation. However, several studies have shown that even in very small spaces it is possible to grow food in residences. One of these studies was carried out in the municipality of Pelotas in Rio Grande do Sul State, where the cultivation spaces were plasters (34 cm x 53 cm x 11 cm), several buckets and small flower pots (34 cm x 15 x 14 cm), several vegetables were grown in urban environments (VENZKE, 2020), although in small containers, thus occupying little space in the residences. In our work the dimensions of urban vegetable gardens produced in Styrofoam boxes contained dimensions of 90 cm x 42 cm x 26 cm.

The food expenditures has undergone changes, due to demographic, economic and educational and behavioral changes, which affect the decisions and preferences of families about what to consume and where to consume. The increase in the average education of the population, the decrease in fertility, the increase in longevity, the processes of industrialization and urbanization and the increasing entry of women in the labor market disseminated new customs and consumption habits (VAZ; HOFFMANN, 2020).

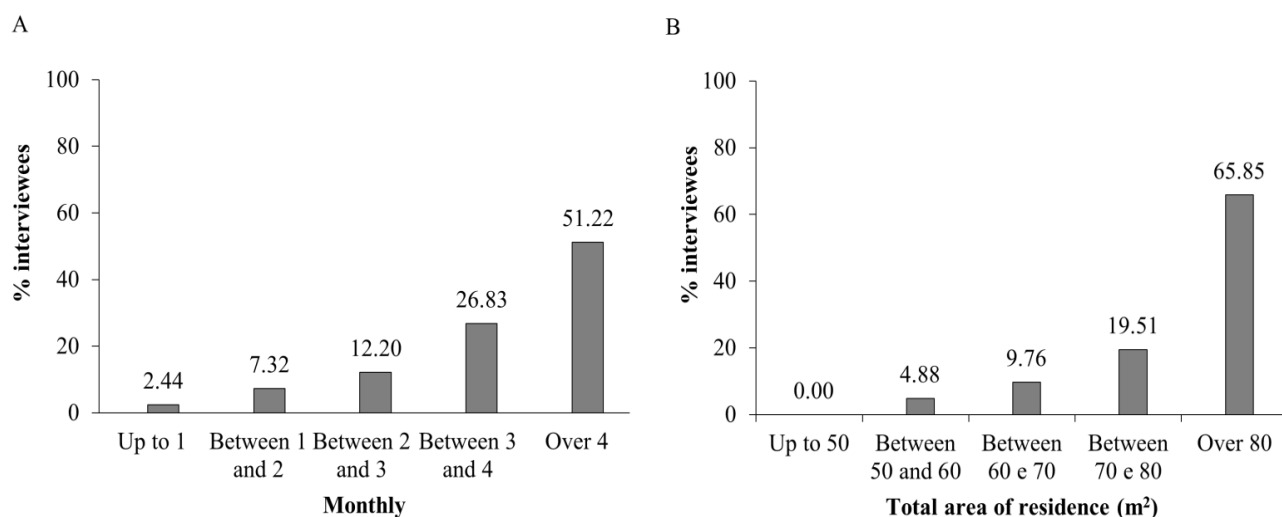


Figure 3. Monthly income (A) and total area of residence (B) of the interviewees who live in Balneário Camboriú, Santa Catarina.

Regarding the eating habits of the interviewees, it is noticed that almost 80% consume fruits and vegetables every day and more than half have homegrown fruit and vegetables cultivations (Figure 4A and 4B). The data found corroborate with the survey carried out by Figueiredo et al. (2008), who studied the factors associated with fruit and vegetable intake in Brazil, observed that this consumption varied among the cities studied and increased with age and schooling. Balneário Camboriú, in its last census (IBGE, 2010), showed that 98.3% of the population between 6 and 14 years is educated, the profile of high consumption of this type of food is understood by the interviewees.

The cultivation of vegetables in the urban area of large centers is already a reality. This model of food production makes it possible to the population to have greater contact with producers, thus valuing and seeing them in a positive way (ARAÚJO et al., 2021). It is noticed that most of the interviewed population has knowledge about community vegetable gardens, however, according to the data collected the existence of community vegetable gardens for residents use is still very low in Balneário Camboriú (Figures 5A and 5B).

Among the many benefits that urban homegrown vegetable gardens, we highlight: the improvement of the quality of life of urban vegetable garden users, access to quality food, social interaction, civic engagement, sustainable use of natural resources, leading to self-sufficiency, self-regulation, sustainability and environmental protection (CRUZ-PIEDRAHITA et al., 2020; SOFO; SOFO, 2020; NOVA et al., 2018).

In addition to the above benefits, homegrown vegetable gardens have an important function in providing environmental services, providing thermal, visual, auditory and air quality comfort. The significant concentration of the global agricultural matrix in polluting sources (fertilizers and fuels of fossil origin, for example) and prices subject to instabilities, has demanded the search for alternative agroecological techniques, including urban vegetable gardens, as a way to increase the food and nutritional security of the country (SÁ FILHO et al., 2021). In the present study, it was found that almost 80% of the interviewees depend solely on supermarkets for their food (Figure 6), and this single source may become an obstacle in the coming years, if the residents of urban centers do not also start planting food in their residences.

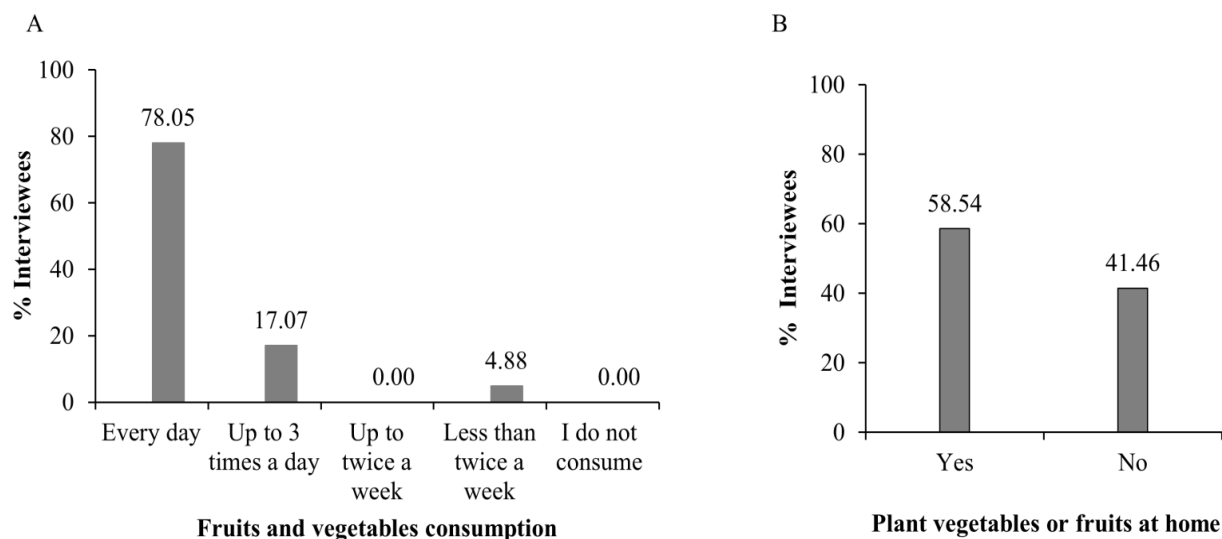


Figure 4. Consumption (A) and cultivation of vegetables and fruits (B) of residents of Balneário Camboriú, Santa Catarina.

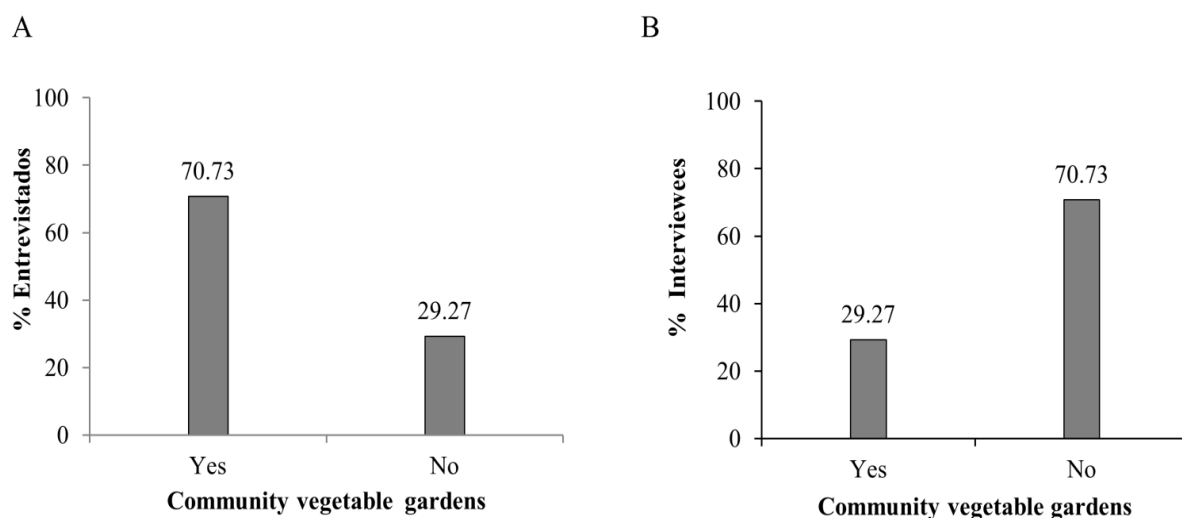


Figure 5. Knowledge (A) and existence of community vegetable gardens (B) for use of residents of Balneário Camboriú, Santa Catarina.

Although most of the interviewees have space in their homes, 36.59% do not cultivate any type of food and 31.71% have no interest in cultivating (Figure 7A and 7B), which indicates that 68.29% have interest and 63.41% have specific place to grow vegetables or are interested in cultivating vegetables, respectively, showing that more than half of the participants have the potential to own homegrown vegetable gardens, which facilitates access to fresh and quality food, improving the food conditions of the users of these urban cultivation spaces.

In conducting the project, 100% of the participating families showed interest in homegrown horticulture in Styrofoam boxes and in the continuity of vegetable cultivation in their residences. The participants learned to develop the ability to plant, cultivate and consume food produced by

themselves, and can reuse materials, such as Styrofoam boxes, to obtain vegetable gardens at home, providing well-being and sustainability, as the main positive point presented in the implementation of vegetable gardens in Styrofoam boxes (Figure 8).

According to the survey carried out with the users of homegrown vegetable gardens, 70% observed changes in eating habits. Thus, several benefits were reported that homegrown gardens contributed to residents, both in health, as in economics, knowledge and quality of life. Thus, the possibility of varying the daily diet of the participants, in addition to access to fresh foods, to know different crops and to acquire knowledge about plant management and also to generate savings by producing their own spices, medicinal plants or food.

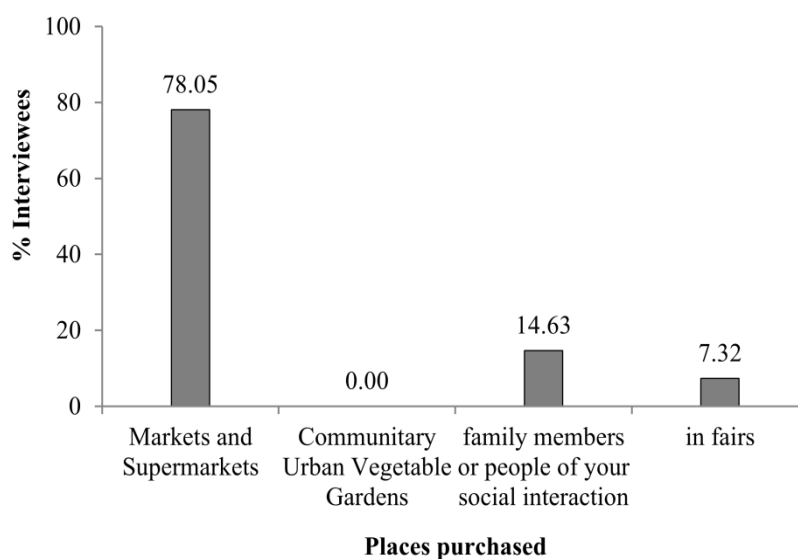


Figure 6. Place where the vegetables, spices and medicinal plants are purchased by the residents of Balneário Camboriú, Santa Catarina.

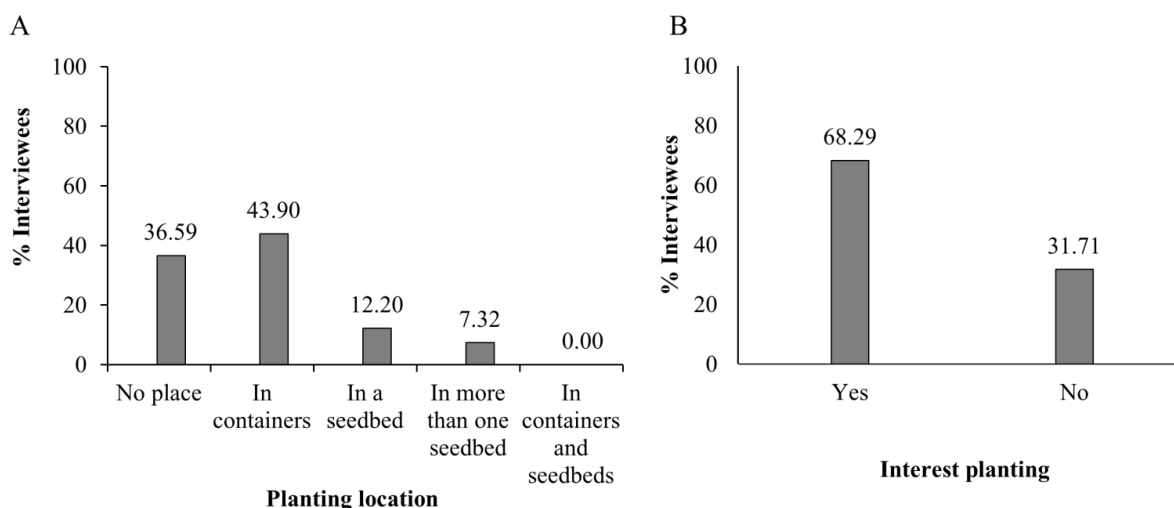


Figure 7. Reserved place for cultivation (A) and interest in growing vegetables by residents of Balneário Camboriú, Santa Catarina.

In a study carried out by Siviero et al. (2011), with the cultivation of food species in urban vegetable gardens of Rio Branco, in the State of Acre, it was observed that the use of species for feeding plays an important role in the diet complementation. Besides that the maintenance of the vegetable garden in the residence has intangible values, such as the pleasure of cultivating, leisure space, well-being provided by the improvement of the environment (shade) and the landscape provided by the tree species. As well as the results found by Venzke (2020), as an agroecological contribution, this experience of urban vegetable gardens, provided the cultivation of an interesting agrobiodiversity of vegetables of food value, for seasoning and medicinal use,

improving food and promoting health to users of urban vegetable gardens.

Having regard to the disorderly growth of urban centers and the distance created from nature, through this artificial system (with heavy air and noise pollution, reduced green spaces, long distance and out of system based on seasonal food and limited access to the sun) it has led to multiple public health challenges in recent times (NOVA et al., 2018), and urban homegrown vegetable gardens emerge as a way out that benefits the entire population, not only by the production of food within cities, but also by conferring numerous benefits. This habit must be fostered through new studies and government support, bringing health and quality of life to the inhabitants of urban centers.



Figure 8. Homegrown vegetable gardens in Styrofoam boxes made by residents of Balneário Camboriú, Santa Catarina.

CONCLUSIONS

The population of Balneário Camboriú-SC consume vegetables and fruits daily, however, their obtaining is done in markets and supermarkets, that is, they do not have the habit of planting their own food.

The use of homegrown vegetable gardens provided advantages both in health, knowledge and quality of life, as well as encouraging the cultivation of their own food and thus contributing to better eating habits.

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