



Places children use for physical activity in peripheral neighborhoods of the city of Córdoba

Lugares donde niños y niñas realizan actividad física en los barrios periféricos de la ciudad de Córdoba

Lavin Fueyo, Julieta¹; Berra, Silvina²

¹Bachelor's Degree in Nutrition, PhD in Health Sciences, Facultad de Ciencias Médicas, Universidad Nacional de Córdoba. Doctoral fellow, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Centro de Investigaciones Epidemiológicas y en Servicios de Salud, Escuela de Salud Pública, Facultad de Ciencias Médicas, Universidad Nacional de Córdoba, Argentina. julietalavin@gmail.com

²Bachelor's Degree in Nutrition, PhD in Life and Health Sciences. Assistant Researcher, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Director, Centro de Investigaciones Epidemiológicas y en Servicios de Salud, Facultad de Ciencias Médicas, Universidad Nacional de Córdoba, Argentina. silvinaberra@gmail.com

ABSTRACT The way neighborhoods are designed can have enormous potential for encouraging physical activity. The aim of this study was to explore the recreational spaces available in peripheral neighborhoods of the city of Córdoba, Argentina, and determine the frequency with which children attending local public primary schools use them for physical activity. In 2011, parents answered self-administered questionnaires in which they reported their proximity to those spaces, the frequency with which children use them for physical activity, the sex of their child and the educational level of the mother. We found that places closer to the home were used more frequently by children for physical activity. Differences by the child's sex and the mother's educational level were observed. The results show the importance of these areas as resources for children's physical activity as well as the social inequalities that exist in access to these spaces.

KEY WORDS Environment; Physical Activity; Recreational Zones; Urban Area; Children; Argentina.

RESUMEN La forma en que se diseñan los barrios tiene un enorme potencial para fomentar la práctica de actividad física. El objetivo de este estudio fue explorar los espacios de recreación disponibles en los barrios periféricos de la ciudad de Córdoba, Argentina, y conocer la frecuencia con la que los niños y las niñas de escuelas primarias municipales los utilizan para realizar actividad física. Padres y madres respondieron en el año 2011 cuestionarios autoadministrados para informar sobre la distancia a dichos espacios, su frecuencia de utilización para realizar actividad física, sexo del menor y nivel de escolaridad de la madre. Se pudo observar que los espacios localizados a menor distancia del hogar de las niñas y los niños son más utilizados para la actividad física. Se detectaron diferencias por sexo y nivel de escolaridad materna. Los resultados muestran la importancia de estos espacios como recursos para la realización de actividad física, así como la presencia de desigualdades sociales en su uso.

PALABRAS CLAVES Ambiente; Actividad Física; Zonas de Recreación; Área Urbana; Niños; Argentina.

INTRODUCTION

The increasing processes of urbanization and globalization have developed in parallel with the increase in the frequency of non-communicable – or chronic – diseases (NCD). In this way, such increase constitutes one of the most important challenges for public health in Latin America. About 80% of the population lives in urban cities in this region and NCD cause around 75% of deaths; whereas, in Argentina, the percentage of urban population amounts to 93%, and the NCD are responsible for 60% of deaths in the country.⁽¹⁾

This process of urbanization brings about a socio-spatial segregation, defined by Sabatini as “the degree of spatial proximity, or territorial agglomeration, of families belonging to the same social class, whether this is defined in terms of age, ethnicity, religious persuasion or socio-economic status.”⁽²⁾ Socio-spatial or residential segregation constitutes a key variable to explain the socio-economic organization of cities since, from that segregation, population groups are “distributed” within the cities. In this sense, it is common to observe that people from less favored social strata concentrate in poorer and more marginalized neighborhoods, with worse qualified and less valuable buildings, and with fewer opportunities of living in supportive environments for health⁽⁴⁾ and, therefore, with higher possibilities of getting ill.

The World Health Organization (WHO) considers that supportive environments:

...for health offer people protection from threats to *health*, and enable people to expand their capabilities and develop self reliance in health. They encompass where people live, their local *community*, their home, where they work and play, including people’s access to resources for health, and opportunities for *empowerment*.^(5 p.31) [italics in the original]

Examples of such supportive environments are those neighborhoods where there are public spaces to do group activities (sport, recreational, cultural or social) or neighborhoods where there is a possibility to develop actions to promote security or foster social networks and community participation.⁽⁶⁾

However, working on supportive environments for health in Latin American countries is complex since, although they have shown an important economic growth, reduced poverty and progress in health in recent years, they continue going through a great structural heterogeneity and social inequality.⁽⁷⁾ This reality limits people’s possibilities of enlarging their abilities, developing their autonomy and their empowerment, which are the core ideas of supportive environments for health.

Obesogenic environments appear in these contexts. They are characterized by a wide accessibility to foods with highly energetic content and by low levels of physical activity. Individual factors – such as food preferences and levels of physical activity – and interpersonal factors – such as parental influence – are determined by political and socio-economic factors, either in supportive environments for health or in *obesogenic* environments.⁽⁸⁾ Therefore, those individuals who suffer residential segregation, determined mainly by their socio-economic level, will live in less healthy environments and will be prone to greater probabilities of getting sick. This fact increases social inequality in health.

There is still little evidence to account for the fact that living or developing in supportive environments for health can provide benefits to public health in Latin America. A research study conducted in Bogotá, Colombia, found that park density and the use of bike lanes were associated with a better quality of life for adults. In Curitiba, Brazil, the accessibility, availability and use of such areas were associated with higher levels of physical activity.⁽⁹⁾ These results show that the availability of recreational public areas and an easy access to them may encourage people to participate in physical activities more often also in our region, which contributes to the creation of supportive environments for health.

Meanwhile, in Argentina, Velázquez and Celemín go further and point out that man-made recreational resources (cultural, commercial and sports centers, among others) as well as natural resources (beaches, coastal resorts, green areas, parks, among others) are scattered with a certain market logic, as they are usually located in areas inhabited by social strata with a higher consumption capacity. Thus, these resources are out of reach for many people.^(10,11)

In the city of Córdoba, the areas that show higher percentages of poor population are located in the city suburbs. These zones of segregated poverty present a scarce offer of green areas appropriate for public use as well as lack of sports, recreational or service spaces.⁽¹²⁾ For that reason, as long as these resources follow an unequal geographic distribution within the city, those sectors that belong to less favored socio-economic strata and that are segregated in the urban space will have fewer possibilities to access to supportive environments for health.⁽¹³⁾

An important policy introduced into Latin America has been the one referring to *healthy municipalities and communities*, which has been widely accepted in our country. It is a policy anchored in the health area that takes as its main idea the concept of supportive environment for health. In 2008 a regional survey was conducted to evaluate the performance of such policy and it was found that most strategies referred to promotion of healthy lifestyles related to food and physical activity. On the other hand, strategies related to the improvement of urban development (accessibility and friendliness of public spaces, for example) appeared among the less common issues.⁽¹⁴⁾ Therefore, it can be seen that there is no awareness yet regarding integration between health and the places where people live.

Up to here there are three fundamental issues: a) the availability of public spaces favors the practice of physical activity, which is inherent to a supportive environment for health; b) its distribution in the cities follows a non-equitable logic; and c) there is not an overall understanding of what living in a supportive environment for health implies.

Because of this, it is necessary to make a first approach to the study of the environment in which schoolchildren in the suburban areas of the city of Córdoba live and develop, addressing three aspects: 1) how far the recreational spaces are from where children live; 2) which of these recreational spaces are used more frequently to do physical activity; and 3) what the association is between frequency of use of such spaces with the sex of the child and the mother's educational level.

MATERIAL AND METHODS

A descriptive cross-sectional study was conducted in children population attending municipal schools in peripheral neighborhoods in the city of Córdoba within the framework of a project called "Study of the relationships between the urban environment, the level of physical activity and overweight in children population in the city of Córdoba [*Estudio de las relaciones entre el entorno urbano, el nivel de actividad física y el exceso de peso en la población infantil de la ciudad de Córdoba*]," which was approved by the Ethics Committee from the Municipal Child Hospital in the City of Córdoba.

A random stratified sampling was carried out in the schools according to the data available regarding parents' level of education to ensure the inclusion of at least some schools with a high illiteracy rate. Nineteen schools out of thirty-seven were selected (Figure 1).

Informative notes were sent to the adults in charge of the schoolchildren through their communication notebooks and meetings were held to inform about the objectives, characteristics, ethical aspects of the study and confidentiality in regards to the data, prior to asking for their participation. Trained staff explained the study to schoolchildren in their classrooms and the children were given an envelope to be handed in to the adults in the family. This was so that a guardian of the child could answer a self-administered questionnaire and later return it to the school. Next, teachers would place it in a box set apart for that purpose. Filling in the questionnaire implied the adults' consent to participate in the study.

Variables of interest for this study were the following:

- 1) Distance from the recreational spaces available in the neighborhoods (near: < 10 blocks; far: > 10 blocks).
- 2) Frequency of use of such spaces (high: once a week or more; low: once a fortnight or less).
- 3) Sex of the child.
- 4) Mother's educational level (low: up to complete primary school; medium: up to complete secondary school; high: complete tertiary or university studies).

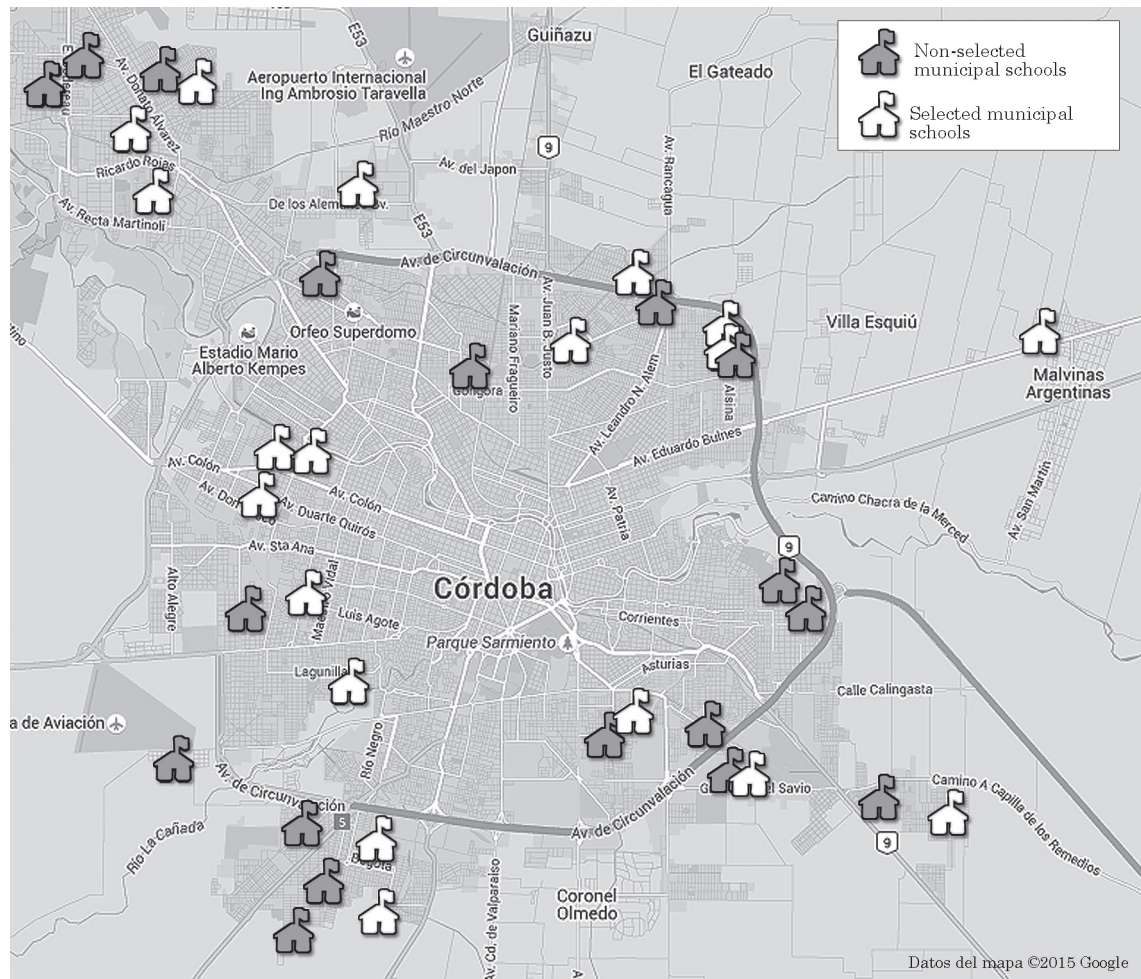


Figure 1. Location of municipal schools in peripheral neighborhoods in the city of Córdoba, Argentina, 2011.

Source: Own elaboration based on data from the Education Secretariat of the Municipality of Córdoba.⁽¹⁵⁾

All the questions included as options eight different places that could be found in the neighborhoods: club, football pitch, other sports courts, other closed sports facilities or gymnasiums for recreational and practice purposes (different from the club), schools with recreational facilities open to the public, bike lanes or walking paths, park or square, vacant lots and other open-air spaces. In regards to the distance from such places, they inquired: *How far is your home from the recreational places mentioned in the list, even though the children do not attend them?* This variable was re-coded to be analyzed according to the distance declared by the parents: near (10 blocks or less) or far (more than 10 blocks).

On the other hand, the frequency of use of such places to do physical activity was asked in the following way: *How often does the child go to these places to do physical activity?*, and a list of the places was included below. Answer options were: *never; once a month or less; once every 15 days; once a week or more*. Later, this variable was re-coded, grouping the first three options in *once every 15 days or less*.

These questions were created based on the *Active where? Survey*, designed to be answered by parents of children from the United States in 2006. To make it culturally-relevant in Argentina, the items that were of interest for the research were chosen and a process of cultural adaptation was

Table 1. Socio-demographic data of the children and the participants involved in the study. Peripheral neighborhoods in the city of Córdoba, Argentina, 2011 (N=1268).

Variables	n	%
Sex (boy/girl)		
Female	673	53.1
Male	595	46.9
Participants¹		
Mothers	1.077	85.9
Fathers	81	6.5
Other	96	7.6
Mother's educational level²		
Low	882	72.4
Medium	274	22.5
High	62	5.1
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	\bar{x}	SD
Average age (child)	10,6	1.1

Source: Own elaboration.

¹No answer: 14. ²No answer: 50.

carried out. Such process included translation and a test of adequacy and language comprehension.⁽¹⁶⁾ The survey also inquired about the child's sex and the mother's educational level to analyze social and gender inequalities.

The statistical analysis included the description of frequencies about characteristics of the sampling, with a 95% confidence interval. Chi-square test was used to analyze the relationship between the frequency of use of recreational spaces to do physical activity and the proximity to such spaces, its relationship with the sex of the child and the mother's educational level. Tests were carried out with SPSS software, with a level of statistical significance of $p < 0.05$.

RESULTS

There were 1268 people in charge of the school-children who participated in the study in the 19 selected schools. Of the people who answered the questionnaire, 85.6% were the children's mothers.

Of such mothers, 72.4% had a low educational level, and 53.1% of their children were girls who had an average age of 10.6 years old (Table 1).

Proximity to the different recreational spaces

Among the different spaces available in the neighborhoods, 65.9% of parents stated that the *square* or *park* was less than 10 blocks far from their homes (average of 4.4 blocks; SD=5.3); it was followed by the *football pitch* with a 45.9% of parents reporting that it was less than 10 blocks far (average of 4.3 blocks; SD=4.9); and thirdly, *vacant lots* and *other open-air spaces* with a 39.7% (average of 2.1; SD=2.3) (Figure 2). Besides, parents said they had a nearly 3.2 average (SD=1.9) of places at less than 10 blocks from their homes.

Frequency of use of spaces to do physical activity

The three most used spaces to do physical activity (once a week or more) were, first, the *square* or *park* (34.8%); second, the *football pitch* (19.7%); and third, *vacant lots* or *other open-air spaces* (19.4%). Only 3.6% of parents considered the use of school facilities during extracurricular activities as a resource to do physical activity (Figure 3).

It can be observed that, in spite of the proximity of the places available, they are not used much indeed. For example, in the case of the square or park, 835 parents pointed out that such place was less than 10 blocks from their homes; however, only 53% (n=441) mentioned a frequent use by their children to do physical activity.

Proximity to the different spaces was associated with the frequency they were used. Frequency of high use of a *square* or *park* among people who lived near (50.3%) was higher than among those who lived far (31.2%; $p=0.001$); and the use of *walking paths* or *bike lanes* at least once a week was higher among people who lived near than among people who lived far from them (35.8% versus 20.4%; $p=0.025$). Furthermore, the low frequency of use of *gymnasiums* or *other closed sports facilities* and a *football pitch* was higher when the children lived farther than 10

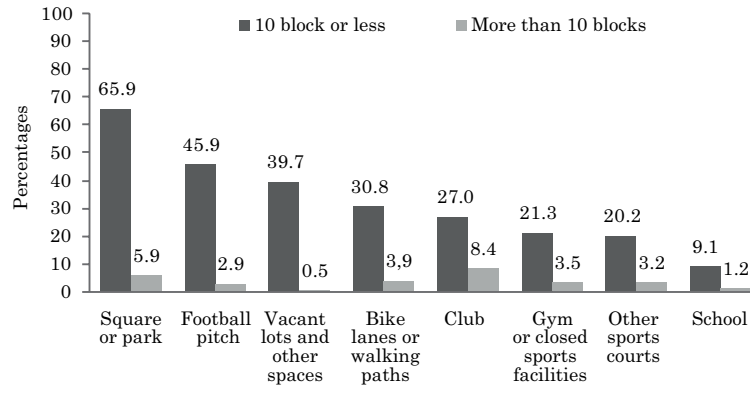


Figure 2. Distance from the homes to the different recreational spaces available in peripheral neighborhoods in the city of Córdoba, Argentina, 2011.

Source: Own elaboration.

blocks, but this association did not reach statistical significance. Significant statistical associations between the distance and the frequency of use of the rest of the places could not be confirmed (Table 2).

Frequency of use of spaces in accordance with sex and mother’s educational level

The analysis of the frequency of use of the different spaces to do physical activity in accordance with the sex of the child showed that boys used more

frequently *squares or parks, football pitches, vacant lots or other open-air spaces, clubs, and other sports courts*; whereas girls more frequently attended *gymnasiums or other sports facilities* (Figure 4).

Frequency of use of most places to do physical activity was not associated with mother’s educational level, except in the case of *gymnasiums or closed sports facilities*, whose use by children increased whenever the mother’s educational level increased: 8.7% of high frequency with mothers with low educational level; 13.9% with medium educational level; and 16.3% with high educational level (Table 3).

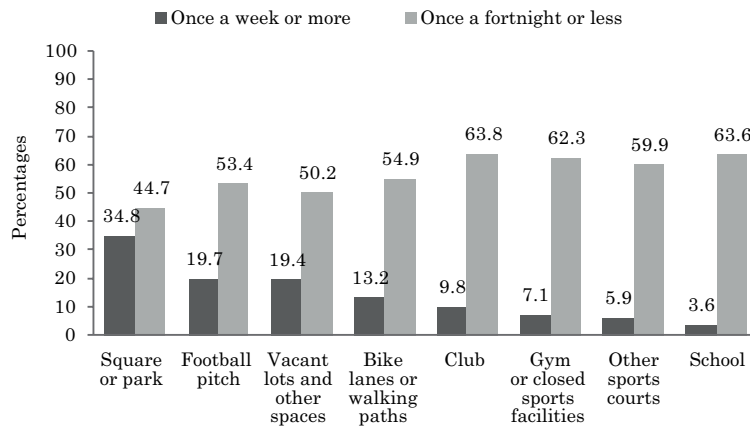


Figure 3. Frequency of use of recreational spaces available in peripheral neighborhoods in the city of Córdoba, Argentina, 2011.

Source: Own elaboration.

Table 2. Relationship between proximity from the homes to the recreational spaces and frequency of use by schoolchildren in peripheral neighborhoods in the city of Córdoba, Argentina, 2011.

Recreational spaces	Frequency of use of recreational spaces				p-Value
	High		Low		
	n	%	n	%	
Square or park					
Near	432	50.3	427	49.7	0.001
Far	25	31.2	55	68.8	
Football pitch					
Near	237	38.4	380	61.6	0.090
Far	10	25.0	30	75.0	
Vacant lots and other open-air spaces					
Near	218	43.0	289	57.0	0.445
Far	3	60.0	2	40.0	
Walking paths or bike lanes					
Near	134	35.8	240	64.2	0.025
Far	11	20.4	43	79.6	
Sports clubs					
Near	90	23.8	288	76.2	0.629
Far	26	21.7	94	78.3	
Gym or other closed sports facilities					
Near	61	21.6	221	78.4	0.065
Far	5	10.2	44	89.8	
Other sports courts					
Near	51	19.8	206	80.2	0.469
Far	6	15.0	34	85.0	
Schools with facilities open to the public					
Near	20	20.2	79	79.8	0.136
Far	1	5.6	17	94.4	

Source: Own elaboration.

p-Value = <0.05

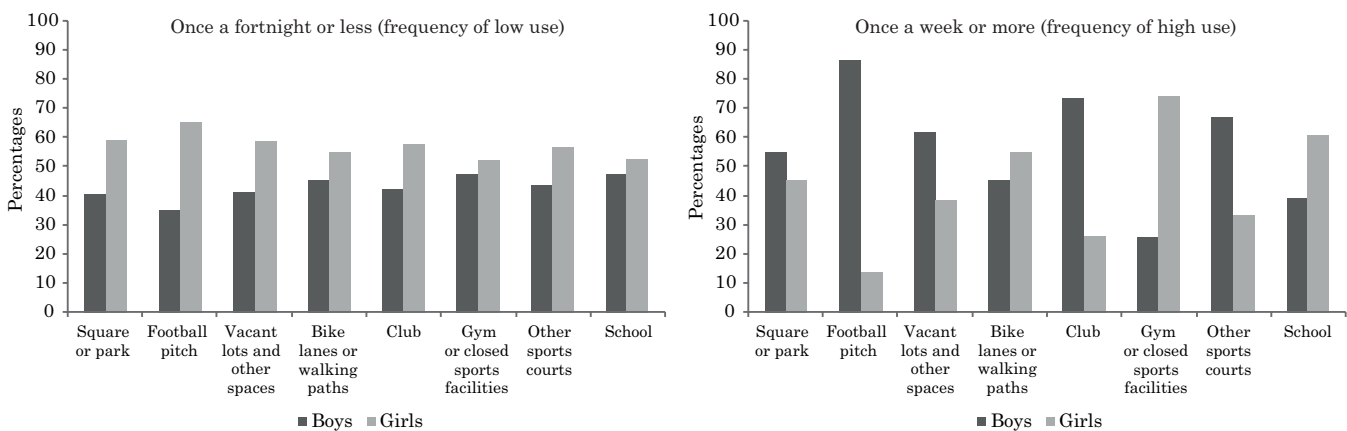


Figure 4. Frequency of use of recreational spaces in accordance with sex, in schoolchildren in peripheral neighborhoods in the city of Córdoba, Argentina, 2011.

Source: Own elaboration.

Table 3. Frequency of use of recreational spaces by children, in accordance with their mothers' educational level. Peripheral neighborhoods in the city of Córdoba, Argentina, 2011.

Recreational places	Mothers' educational level						p-Value
	Low		Medium		High		
	n	%	n	%	n	%	
Square or park							
Low	392	57.0	126	53.6	31	57.4	0.658
High	296	43.0	109	46.4	23	42.6	
Football pitch							
Low	465	72.7	150	71.1	37	75.5	0.803
High	175	27.3	61	28.9	12	24.5	
Vacant lots and other open-air spaces							
Low	441	73.3	149	71.6	33	67.4	0.637
High	161	26.7	59	28.4	16	32.6	
Walking paths or bike lanes							
Low	478	80.5	168	82.3	35	72.9	0.332
High	116	19.5	36	17.7	13	27.1	
Sports clubs							
Low	554	86.7	184	86.0	47	82.5	0.666
High	85	13.3	30	14.0	10	17.5	
Gym or closed sports facilities							
Low	547	91.3	180	86.1	41	83.7	0.039
High	52	8.7	29	13.9	8	16.3	
Other sports courts							
Low	518	91.4	176	90.7	44	89.8	0.912
High	49	8.6	18	9.3	5	10.2	
Schools with facilities open to the public							
Low	551	94.8	188	94.5	46	93.9	0.947
High	30	5.2	11	5.5	3	6.1	

Source: Own elaboration.

p-Value = <0.05

DISCUSSION

The present study attempted to describe the proximity of available recreational spaces in peripheral neighborhoods of the city and their frequency of use to do physical activity by children from their mothers' perspective. It was confirmed that there are situations that can be taken into account to promote children's health and the creation of supportive environments for health in the cities.

Squares, parks, football pitches and vacant lots and other open-air spaces located near the children's homes were the recreational spaces most used to do physical activity. It is important

to point out that these places, identified as the nearest and most used, are mainly public spaces with free access, and no socioeconomic inequality was observed as regards their use. Our results coincide with a similar study carried out in the United States, where children's parents regarded squares or small parks and public playing spaces as the most frequently used.⁽¹⁷⁾

In contrast, *gymnasiums and closed sports facilities* are of limited access and are unequally used in accordance with gender and mother's educational level. Since these spaces require the payment of a monthly fee to be used and assuming that mothers with low educational level probably have a lower socioeconomic level, this

result shows a socioeconomic inequality related to a lower opportunity for access to a place to do physical activity.

In this sense, it is important to make it clear that most public spaces are located near children's homes and they are frequently used to do physical activity. This study did not attempt to explore the conditions of such public spaces, their availability or use compared to other zones in the city. Nevertheless, it would be greatly relevant to document it, as this would confirm the unequal distribution of green spaces in different city regions, which correlate with socioeconomic indicators. For example, the heart of the city has 9.38 m² of green space per inhabitant, whereas the southwest only has 2.75m².⁽¹⁸⁾

One of the main findings of this study is the fact that proximity to recreational spaces is associated with a greater use of such spaces to do physical activity. This coincides with the findings of other studies.^(17,19,20) It is also known that a child's decision to stay at home or go out to play depends, partly, on the availability of recreational alternatives in the neighborhood, and that, besides, greater proximity increases a child's level of physical activity.⁽²¹⁾ Anyway, we must keep in mind the design of these elements since, in general, urban planning policies tend to homogenize different collective realities with similar proposals and, therefore, stigmatize them with elements of lower quality in relation to more integrated social sectors, thus affecting their identity and possibility of social integration.⁽²²⁾

The authorities responsible for the design and restructuring of neighborhoods should consider this information, as these spaces constitute an important opportunity resource either for the practice of physical activity, or for social integration and collective action. This would foster supportive environments for health where people could lead a physically active life, acquire autonomy, identity and opportunities for empowerment.

In our country there are initiatives based on this approach that are aimed at promoting *healthy cities*. In the city of La Plata there are offers of recreational and sports activities of open and free access in different parks of the city, all of them under the supervision of Physical Education teachers.⁽²³⁾ In the city of Mar del Plata there is a project aimed at creating *meeting centers* as

a figure of integration and inclusion in the most deprived neighborhoods, with sports, cultural and educational activities, among others, as well as it is aimed at building bike lanes and running paths across the entire city.⁽²⁴⁾

An innovative initiative that is being developed in the city of Córdoba, since the end of 2014, is the building of five Cultural Educational Parks in zones of greater social vulnerability. The project was based on the "Parques Educativos" built in the city of Medellín, Colombia.⁽²⁵⁾ The implementation of this initiative aims at fostering citizen encounters, educational, cultural, sports and recreational activities, and the building of a collective identity.⁽²⁶⁾

Another interesting result has to do with gender differences observed in the frequency of use of the different spaces to do physical activity. It shows that girls are using less these spaces to do physical activity, especially those of public access, although they more frequently attend *gymnasiums and closed sports facilities*. This pattern has been confirmed in several studies in which, for example, there is an observable greater presence of boys in relation to girls in parks or squares. The reason for this could be the fact that many of these public spaces are designed and structured for sports activities such as football or basketball, sports preferred by boys, and there is a lesser proportion of areas to walk, run or cycle, activities mostly preferred by girls,⁽¹⁹⁾ although this statement also carries a gender bias. It would be worth finding out how much the particular characteristics of these places, such as their state of maintenance and the resources available there, or people's perception of, for example, security, or the beliefs inserted in the society about gender issues related to the use of these spaces, can represent a hindrance to girls when they want to use the common recreational spaces. These aspects have not been analyzed here but should be considered when designing recreational and physical activity spaces in the neighborhoods.

We can point out some limitations to the study. Firstly, its cross-sectional design, which does not allow making causal assumptions among the variables studied. Additional studies are necessary to dive deeply into these results, especially longitudinal studies to reinforce the associations found in this first approach, and to be able to explore the effect of neighborhood

environment over people's life cycle. Secondly, the use of self-administered questionnaires to collect data may lead to misreports and produce biases that question the validity of the information provided here,⁽²⁷⁾ even though both the adaptation and comprehension of the questionnaires were previously proved.

Besides, the interviewed people were contacted through schools, so the schoolchildren were responsible for the delivery of the questionnaires to their parents and the return of such questionnaires to their teachers. This "indirect" contact with the interviewed people resulted in a great percentage of questionnaires that were not answered. Another limitation to the study is the lack of representativity of the sampling of all the school population in the city of Córdoba, as the study was carried out only in local public schools, while provincial public or private schools were not included. For this reason, the geographic and socioeconomic characteristics of the sampling do not show great variability, which hinders the possibility of a deeper analysis in relation to social inequalities as regards access to recreational and physical activity spaces.

CONCLUSION

It is important to point out that the places located at a shorter distance from children's homes were also the most frequently used to do physical activity. These spaces, identified as the nearest and

the most used, are mainly public and have free accessibility. Differences in the use of such spaces in accordance with sex were also observed. Such differences generate a social inequality in relation to the possibility of doing any physical activity in the public spaces available in the neighborhoods where, in this case, girls live in. It is important to point out the need to consider a gender-based approach in the social construction of health issues or problems, in decision-making process and in the formulation and evaluation of the policies implemented.

As public spaces turn out to be more frequently used by this population, the usefulness of some spaces already existing in the neighborhood but not accessible to the community could be taken into consideration; such as public school facilities outside of school hours.

These results provide data to encourage public health and urban design initiatives that may improve the quality of public spaces, facilitate access to such spaces so they can be used for several activities, as they are key scenarios both for health promotion and social integration among the inhabitants in the city neighborhoods.

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