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Policy and Built Environment Changes in Bogotá and their Importance in Health Promotion

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Key Words

Built environment · Health promotion · Policy and physical activity

Abstract

There is an increasing interest in establishing the influence of urban environments on health. The importance of changes to environmental policy in order to promote physical activity has been emphasized during recent years. Bogotá, the capital of Columbia, is recognized as a Latin American leader in its creation of a more activity friendly environment. The city has undergone a number of urban and social changes which have resulted in a positive effect on the recovery of public spaces, access to recreational facilities, and promotion of non-motorized and public transportation options. These changes may have enhanced perceptions of quality of life and facilitated increased physical activity. The experience of Bogotá could be used as a potential example for leaders of other cities to encourage similar programs.

Background

Recognizing the influence of the urban environment on health has gained importance in the public health arena [1]. The appreciation of this has special relevance in mega-cities within developing countries that have undergone demographic and epidemiological transitions and also have a high prevalence of non-communicable diseases [2]. Rural-to-urban population shifts and the associated changes in lifestyle are especially relevant in Latin America, which is one of the most highly urbanized regions of the world. Some 76% of the population lives in urban areas [3].

Some studies [4,5] have emphasized the importance of creating changes at the environmental and policy levels to promote physical activity. The strategies they propose aim to influence the population at large rather than focusing efforts on changing the actions of individuals. There is some evidence that people who reside in neighborhoods with high mixed land use and high connectivity are more likely to choose alternative, non-motorized modes of transport, such as walking and bicycling [6,7]. In addition,

a social ecological perspective of health suggests that social environments that support and strengthen social networks could have a positive influence on physical activity levels [8,9].

Bogotá is a city of almost seven million inhabitants that has experienced many significant changes in its physical and social environments, gaining special recognition in the last decade as a leader in public transportation systems and in the promotion of physical activity [10]. These changes have included the creation and improvement of physical infrastructure and the implementation of educational strategies. A national nutrition survey in 2005 showed that 46% of Bogotá residents, ages 18–65 years were regularly active and 8.6% regularly engaged in physical activity during leisure time. This survey also found that the prevalence of walking for transportation as a regular pattern (≥ 30 min most days of the week) was 25.17% [11].

Policy and Environmental Changes and their Potential Impact on Physical Activity

To understand better the changes that have occurred in Bogotá, it is important to recognize the political atmosphere surrounding these changes and some of the main accomplishments by city administrations over the last decade [12]. First, the city began a decentralization process to achieve more autonomy in its political, financial, and administrative functions. Second, strategies and programs were implemented to focus on the betterment of social and urban environments.

The Program Ciclovía

Ciclovía is an initiative in which certain streets and main avenues of the city are closed to cars on Sundays and holidays, allowing recreational activities, such as walking and bicycling. On Ciclovía days, an average of 117 km of roadways is dedicated exclusively to these activities from 7:00 a.m. until 2:00 p.m. The first Ciclovía day was on December 15th, 1974, when more than 5000 cyclists protested the lack of recreational opportunities, as well as pollution and traffic congestion [13]. The program initially faced opposition from the transportation and business sectors and also lacked institutional commitment from the city for many years. By 1997, Ciclovía was the principal recreational activity for citizens, covering 70% of the city localities [14]. In 2005, an average of 400,000 residents aged 18–65 years (10% of the population) were participating every Sunday in the Ciclovía [15].

A cross-sectional study of women showed that after adjusting for potential confounders, women who frequently participated in Ciclovía were more likely to be regularly active otherwise during their leisure time [16]. This result suggests that women who participate in Ciclovía have an opportunity to engage in leisure time physical activity. This finding is important in a country where studies have shown women to be less likely than men to engage in physical activity [11].

The Cicloruta Transportation System

The Ciclorutas project is a network of 300 km of bicycle paths that was conceived by the government in 1998–2001. It was primarily created to reduce vehicular congestion; as well as to benefit the natural environment, increase the health of citizens, improve the city's aesthetics, and conserve both time and money [17]. The network provides access to occupational, educational, and recreational destinations in the city. In addition, paths connect the network with other public transportation systems, such as the TransMilenio (the rapid transport system of Bogotá), thus reducing dependence on private vehicles, while promoting alternative modes of transportation [18].

In 2003, a cross-sectional study in Bogotá (of adults aged 18–65 years), showed that 15.5% used bicycles as a means of transportation for ≥ 10 min during the previous week [11]. Unfortunately, reliable data on the prevalence of bicycle use prior to implementation of the Ciclorutas are not available. Another important barrier to overcome is the low usage of bicycles by women. This could be related to cultural factors, as well as differences in the perception of safety regarding bicycle paths. A key aspect to determine the significance of Ciclorutas on physical activity levels is the accessibility and proximity to bicycle paths. In 2004, Sarmiento et al. [19] reported that men who had Ciclorutas paths close to their neighborhoods were more likely to use bicycles as a means of transportation.

Transmilenio System

The Transmilenio system was started in December, 2000 to solve problems, such as traffic congestion, high pollution levels, and long duration of trips due to traffic jams. The system was based on the experience in Curitiba, Porto Alegre, and Goiania in Brazil and Quito in Ecuador [20]. Transmilenio was designed to give certain buses the exclusive right to operate in specially constructed lanes, allowing these buses freedom from traffic congestion [21].

The relationship between Transmilenio and physical activity levels is linked to utilitarian patterns. With the exception of this system, there are no clearly defined bus

stops in Bogotá and the regular public bus system spans nearly 100% of the city. Transmilenio stations are around 500 m apart causing users to walk more in order to access the system. This system may influence use of public transportation instead of private vehicles, while increasing awareness of other transportation alternatives, such as walking and bicycling.

City Parks

One of the greatest challenges that Bogotá is facing is the need to expand the number of square meters of green area per inhabitant in order to increase the quality of life. From 2001 to 2003, Bogotá increased the green area per inhabitant from 2.5 to 4.12 m²; with a proposed goal of having 8 m² per inhabitant by 2013 [22]. Presently, a network of 1000 parks covers the city [23].

The Sports and Recreation Institute (IDRD) which administers the parks has developed numerous activities to promote their use and maintenance. The *adopt a park* program allows private industries or community members to volunteer with maintenance and improvement of public parks. This strategy generates a culture of personal accountability for the parks [24]. Another strategy is the creation of a network of *volunteer park watchers*, formed mainly by adolescents who work to increase the safety of the parks.

Other Strategies

Over the past 10 years, the city administration has used a variety of methods to educate residents and alter social norms [25]. Three educational strategies may facilitate participation in physical activity:

- *Recovery of public space*

The city launched an effort to recover public spaces that pedestrians had lost to street vendors, cars parked on the sidewalks, and community fences that restricted access to public parks. One initiative was the placement of bollards to prevent cars from parking on sidewalks as well as relocating street vendors into special plazas. These strategies improved pedestrians' mobility and increased the perception of safety. According to a poll conducted in 1999, 64.6% of adults perceived improved use of public space [26].

- *Car-free Day*

In Bogotá, both public and private cars represent a high proportion of vehicle traffic, generating pollution, traffic jams, and increasing the duration of trips. On February 24th, 2000, the mayor's office held the first car-free day,

with the idea of promoting the use of alternative transportation modes other than private cars. This strategy was officially approved in a referendum on October 29th, 2000 and the municipal council issued an ordinance making the first Thursday of February a car-free day every year [27]. On car-free days, almost 1,000,000 private cars are not allowed to circulate for 13 h (from 6:30 a.m. to 7:30 p.m.), leaving residents the option of using alternative means of transportation, such as bicycles, public transportation, or walking.

- *Restriction of use of private and public vehicles (Pico y Placa)*

This strategy began in 1998 for private vehicles and in 2001 for public transportation. The strategy seeks to reduce vehicular congestion during rush hours by restricting vehicles from circulating on specific days of the week, depending on their license plate numbers. According to an official report, the average commute time has dropped by 21 min and air pollution due to carbon monoxide has been reduced significantly [28].

Conclusions and Future Directions

Urban transformation in Bogotá may have created a favorable environment for promoting an active lifestyle. Increasing evidence of the association between the environment and physical activity, coupled with a growing emphasis in the public health community on conceptual models (including policy and normative approaches), gives special relevance to these transformations. Most of the changes were started despite ongoing economic, social, and political crises in Bogotá. The political and social environments (including the rights claimed by the citizenry and the process of decentralization that the city has experienced) have collectively contributed to the conception and implementation of these changes.

Most of these changes may have had a substantial influence on physical activity levels, even though the changes originated from sectors outside public health (urban planning, transportation, and recreation) in order to address goals, such as reducing traffic congestion, improving aesthetics, reducing pollution, increasing productivity through more efficient mass transportation systems, and improving quality of life. Health benefits that could result from these changes would be an inadvertent benefit. Further positive health outcomes might be maximized if the public health sector can work with urban, transportation, and recreation planners to

develop and implement strategies and research hypotheses that would advance efforts to promote physical activity and quality of life.

This is a real-world illustration of how significant local government action can improve the community, affect positive changes, and how these changes can be used to secure, maintain, and build both public and political support [29]. The perceived success of these changes is causing them to be widely accepted and disseminated in other cities in Columbia and all across Latin America [30]. Almost all of the major cities in Columbia have begun to implement the Ciclovía program as well as cities in Mexico, Ecuador, Peru, and Brazil. Other countries in Latin America, such as Ecuador and Peru are implementing the strategy developed in Ciclorutas on the basis of the Bogotá experience [31].

Data on relationships between changes in physical environments, physical activity, and quality of life in Bogotá remain limited at this time. Although cross-sectional studies indicate that the use of Ciclovía, Ciclorutas, and parks are positively associated with patterns of utilitarian and leisure time physical activity, the data are not yet sufficient to clearly define this relationship. A group of national and international researchers are investigating the influence of the built environment on physical activity levels and quality of life of Bogotá adults and older residents [32,33]. The results from these studies will provide important insights to understand better the relationships between social and urban environments and physical activity in mega-cities in developing countries.

The need of a research agenda and evaluation that addresses the core changes and their possible influence on health should be a priority for the local government. Many of the strategies were implemented in the absence of previous research and without sound evaluation or assessment of community needs and potential benefits.

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Problems that need to be addressed are the high cost of investments in the construction of the Ciclorutas compared to their low use, the lack of connectivity between Transmilenio routes and the Ciclorutas, and finally the high levels of pollution in the city which may have negative effects on the respiratory health of people using Ciclovía and Ciclorutas. Finally, increasing awareness and use of environmental resources that are already available in the community may be a cost-effective strategy to increase physical activity and health of the population. These findings highlight the importance of integrating the experiences acquired from interventions in social environments, urban design, and public health.

Disclaimer

The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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