

## Original Research

## Physical inactivity among adolescents in Managua, Nicaragua: A cross-sectional study and legal analysis

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### Abstract

Obesity-related non-communicable diseases (NCDs) are a primary health concern in Managua, Nicaragua, in particular among women, and research has evidenced a recent trend in increasing obesity among Nicaraguan girls. A wealth of research has established the link between physical inactivity, obesity and NCDs. The United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) obligates signatories to provide women equal rights in the realm of sports and physical activity. This study examined whether (i) there exists an association between sex and physical inactivity among Nicaraguan adolescents and (ii) Nicaragua is in compliance with its CEDAW obligations to ensure gender equality in sports and physical activity.

Structured interviews were conducted with 100 adolescents (13-17 years) in public high schools in Managua. In addition, Nicaragua's legal framework was reviewed, with reference to physical activity. Secondary statistics related to participation in national sports and recreation programs were gathered, and informal interviews were conducted with individuals at relevant government entities.

Physical inactivity in the last month was more common among girls (78.8%) than boys (31.2%) (RR=2.52, 95% CI=1.62–3.93). More girls (90.2%) than boys (58.3%) reported facing barriers to physical activity than the boys (RR=1.55, 95% CI=1.20 – 2.00). The most common barriers to physical activity reported by girls were lack of access to fields and spaces, lack of appropriate equipment, and lack of parental permission. Girls reported preferring participating in physical activity in secure places like schools or gyms, while boys reported preferring informal,

public spaces.

Inequities in participation and barriers to physical activity may place Nicaraguan girls at increased risk of NCDs. Nicaragua has yet to achieve full compliance with its obligations under CEDAW. Promoting gender-sensitive programs, policies, and legislation to increase girls' participation in physical activity in Nicaragua will strengthen Nicaragua's compliance with CEDAW and help combat girls' risk of NCDs.

### Background

#### Physical Inactivity and NCDs among Women and Girls in Nicaragua

Research indicates that physical activity significantly reduces the risk of diabetes, and contributes to weight control, an increase in lean muscle, and the reduction of fat [1]. In addition, exercise cuts the risk of heart disease, and of dying from cardiovascular disease or stroke [1]. Physical activity has also been shown to reduce the risk of breast cancer, colon cancer, and osteoporosis [1]. On the other hand, physical inactivity is one of the primary risk factors for NCDs [2].

However, despite the multitude of benefits of physical activity, sedentary lifestyle is a growing problem worldwide, and in particular, among women. According to several studies, women are typically less physically active than men, an observation often linked to social factors [3-4]. Latin American women specifically tend to have lower levels of participation in physical activity than their male counterparts [5-6].

Their levels of participation are influenced by cultural factors – specifically, a cultural understanding that sports and physical activity are “male activities” – which tend to be more influential in the early stages of the adoption of physical activity [5-6].

The issue of physical activity is particularly relevant for Nicaragua’s capital city of Managua. According to the Central American Diabetes Initiative (CAMDI), a cross-sectional study carried out by the Pan-American Health Organization in 2003 in Managua, NCDs have increased among adults in Managua by 15% from 1997 to 2002 [7]. The CAMDI study also revealed that NCDs caused 45% of deaths and 67% of disabilities in 2003, and that 20% of respondents had high cholesterol and 9.1% had diabetes mellitus [7]. In addition, the study showed that 65% of the respondents were overweight (BMI > 25), with 28% of those individuals also suffering from obesity [7].

Notably, a higher percentage of female respondents were overweight than male respondents (71% and 59% respectively) [7]. Female respondents were also more likely to suffer from hypertension than male respondents (28.8% and 21.2% respectively) [7]. Similarly, other research suggests a trend in increasing obesity not just among adult women, as demonstrated by the CAMDI study, but also among adolescent girls in Managua [8].

### **Legal Requirement of Gender Equality in Physical Activity**

Not only is participation in physical activity necessary for both sexes to combat NCDs, it is a human right guaranteed in international human rights law. Through international human rights treaties, governments agree to ensure their citizens certain rights and living conditions, and can be held to these obligations by other international actors. As such, when conditions in a country are substandard, international human rights law serves as an important tool to advocate for government action to improve such conditions [9].

The United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) – to which Nicaragua is a party – provides that States Parties must ensure gender equality in sports and recreational activities [10]. CEDAW specifically obligates signatories to: (i) achieve formal equality, or “equality on paper”, by eliminating discrimination in laws and policies relevant to physical activity; and (ii) achieve substantive equality, also known as “equality in reality” or “equality of results”, in

the realm of physical activity [10-11]. The CEDAW Committee, the body charged with monitoring CEDAW compliance, has repeatedly stressed that the true indicators whether a country has achieved gender equality lie not in the measures a country has taken, but in those measures a country has achieved [12]. Substantive equality is deemed to have been achieved when, in their day-to-day lives, women have the same access as men to the rights guaranteed to them on paper and are “enjoying their rights in various fields in fairly equal numbers with men” [13].

A critical element of the concept of substantive equality is that it may sometimes call for measures that treat women different from men if such treatment is necessary to achieve the result of men and women enjoying their human rights on an equal basis [11]. CEDAW even lays out the specific measures States Parties should take in achieving substantive equality, such as: proactive measures to ensure the development and advancement of women [10]; temporary special measures to accelerate de facto equality between men and women (e.g. participation quotas, financial stimulus, etc.) [10, 13]; and measures to modify social and cultural habits with a view towards eliminating gender stereotypes [10].

A review of Nicaragua’s domestic laws and regulations reveals that, on the whole, Nicaragua has achieved the first requirement of CEDAW – formal equality, or “equality on paper” – in the realm of physical activity. None of the relevant laws or regulations – which include the Nicaraguan Constitution [14], the Law of Equality of Rights and Opportunities [15], the Law of Promotion of the Integral Development of Youth [16], the General Law of Sport, Recreation and Physical Education (the “Sports Law”) [17], the General Law of Education [18], the General Law of Health [19], and their related regulations – contains any language that is discriminatory towards women. In fact, some of these laws even contain language that proactively promotes gender equality. For example, the Equality Law states that government entities should take measures to “guarantee equality of opportunities in activities corresponding to the sports and cultural disciplines, directed at contributing to a healthy physical development... and entertainment of women and men...” and eliminate gender stereotypes [15].

However, whether Nicaragua’s above-mentioned legal and regulatory measures have been sufficient to achieve substantive equality, as ultimately required by CEDAW, cannot be determined by reviewing Nicaragua’s legal framework.

Rather, this can only be determined by examining whether women actually experience equality in the realm of physical activity in reality – i.e. whether there is close to equal participation in physical activity among males and females, and whether there are any barriers to access to physical activity which more heavily affect women than men (including gender stereotypes) [11-13]. If women's conditions are not equal to men's, Nicaragua has not achieved full compliance with CEDAW, and must take further measures to ensure gender equality in this sphere.

### Objectives of the Study

As discussed above, physical activity is critical in combating NCDs and is also a human right guaranteed to both sexes. Research shows that women are often less likely to participate in physical activity and that women in Managua are more affected by obesity and some NCDs than men [7]. However, little research has explored the role of gender in the practice of physical activity in Nicaragua. While the Nicaraguan government has many entities relevant to the practice of physical activity – each of which has a fairly robust infrastructure to carry out programs – to date, it has not designed any studies, programs, or initiatives specifically aimed at promoting physical activity among women and/or girls [personal communications].

This study examined whether there is gender equality in Nicaragua in the realm of physical activity, and if not, why not (i.e. what barriers exist to equality). In doing so, this study sheds light on: (i) whether girls or boys are more at risk of NCDs; and (ii) whether Nicaragua is in compliance with its CEDAW obligations, or whether it must take additional measures to meet such obligations. Understanding gender's role in the practice of physical activity will foster the design of gender-sensitive policies related to physical activity, thereby combating obesity-related NCDs in both sexes, and strengthening compliance with international law.

### Methods

Three primary methods were used in this study. First, to examine the legal obligations applicable to Nicaragua in the realm of sports and physical activity, as well as de facto participation levels in sport in Nicaragua, researchers conducted legal and statistical research. This research included a review of international legal instruments applicable to Nicaragua related to the rights to sport and recreation, gender equality, health, and education. In this review, researchers focused primarily on CEDAW, the

General Recommendations of the CEDAW Committee, the CEDAW Country Reports submitted by Nicaragua, and articles and compliance monitoring tools related to CEDAW. The legal research also included a review of Nicaragua's domestic laws, regulations, policies, and other documentation related to the rights to sport and recreation, gender equality, health, and education. Additionally, researchers reviewed plans, budgets, and participation statistics related to various national sports programs, leagues, facilities, and events.

Second, to better understand contextual issues related to the practice of sport and physical activity in Nicaragua, researchers conducted informal, semi-structured interviews with individuals at various Nicaraguan government ministries including the: Institute of Sports, Institute of Women, Ministry of Health, Ministry of Education, Institute of Youth, Municipality of Managua, and National Athletic Federations. Researchers also conducted similar interviews with individuals at local and international non-governmental organizations in Nicaragua focusing on sports, gender, health, education, and youth issues. These interviews addressed a wide range of issues related to the practice of sport and physical activity in Nicaragua, including: government structure and funding; most prevalent sports and activities; participation levels; availability and conditions of facilities; gender and cultural issues; and barriers to access for both young males and females.

Finally, to further examine the role gender plays in the practice of physical activity among Nicaraguan adolescents in reality, researchers conducted structured interviews with 100 boys and girls (age 13-17 years) in public high schools within the municipality of Managua. This age group was selected because it is imperative to develop healthy habits related to physical activity early in life in order to sustain them into adulthood. Managua was selected because its population, and in particular the female population, had already been identified as being at risk for being overweight and for NCDs [7-8].

Interviews consisted primarily of close-ended questions, as well as a small number of open-ended questions to elicit more details about each individual's experience. The questionnaires were prepared, taking into account the multi-level determinants of health model proposed by Dahlgren and Whitehead [20], the psychosocial determinants of health put forth by Norman and Sallis [21], and environmental factors considered in the Amherst Health and Activity Study [22].

The primary components of the questionnaire included: self-reported type and frequency of physical activity in the last month; personal beliefs, knowledge, and attitudes related to physical activity; support or resistance from family related to physical activity; environmental factors affecting physical activity; availability of resources related to physical activity; and cultural factors and stereotypes affecting physical activity.

Seven high schools, one in each of the seven districts of Managua, were selected using stratified sampling. Individuals were randomly selected from class registers, with a balance across each of the five grades. Subjects were ages 13-17, with a mean age of 15.1 years among girls and 14.8 years among boys.

In order to arrange and carry out the interviews, researchers worked in conjunction with the Departmental Delegation of Managua of the Ministry of Education of Nicaragua. The interviews were conducted one-on-one in empty classrooms or libraries within the high schools and transcribed by the interviewers. Ethical approval for the study was granted by the Pan-American Health Organization, and consent was obtained from each participating high school and participant. Data analysis was carried out with EpiInfo and ANALYSIS programs

[23].

## Results

### Levels of Physical Activity

During preliminary research, the following five different means of participating in physical activity in Nicaragua were identified: 1) informal physical activity (e.g. walking, running, or playing sports with friends, usually in the street or public neighborhood spaces); 2) organized neighborhood activities (e.g. a neighborhood sports team or recreational group); 3) organized school activities (e.g. sports team or dancing group); 4) gyms; and 5) physical education classes. Overall, 41 of the 52 girls interviewed (78.8%) reported not having participated in physical activity in the last month, while 11 of the 52 girls (21.2%) reported having done so. Fifteen of the 48 boys interviewed (31.2%) reported not having participated in physical activity in the last month, while 33 of the 48 (68.8%) reported having done so. More boys than girls reported participating in each type of activity (except for physical education classes), with the largest differences occurring in informal physical activity and organized neighborhood activities. Levels were similar in physical education classes, which are mandatory, and generally take place one to two times per week for one hour.

**Table 1. Self-reported participation in different means of physical activity**

Type of Activity	All N=100		Girls N=52		Boys N=48		RR	95% CI	p value*
	N	%	N	%	N	%			
<b>Participants</b>	100	100	52	100	48	100			
<b>Interested in Physical Activity</b>	83	83	46	88.5	47	97.9	0.90	0.81-1.00	N/A
<b>Physical Activity in Last Month**</b>									
Any	44	44	11	21.2	33	68.8			
None	56	56	41	78.8	15	31.2	2.52	1.62-3.93	<0.001
<b>Type of reported physical activity**</b>									
Informal	30	30	7	13.5	23	48.0	0.28	0.13-0.59	<0.001
Official Neighborhood Activity	9	9	2	3.8	7	14.6	0.26	0.06-1.21	N/A
Official School Activity	5	5	2	3.8	3	6.2	0.62	0.11-3.53	N/A
Physical Education Classes	98	98	51	98.1	47	97.9	1.00	0.95-1.06	N/A

\* Based on Pearson's chi square \*\*Self-reported participation in the last month

### Interests Related to Physical Activity

Forty-six of the 52 girls (88.5%) and 47 of the 48 boys (98%) reported being interested in physical activity. The most popular activities among boys were soccer and weight-lifting, and among girls were volleyball, soccer, aerobics, and dancing. Interviewees were asked about which means of participating in extracurricular physical

activity appeals to them most. Boys preferred organized neighborhood activities, followed by informal activities and the gym (in equal amounts), with organized school activities as their last preference. Girls preferred organized school activities, followed by the gym and organized neighborhood activities. No girls preferred participating in informal activities.

**Table 2. Preferred means of participating in physical activity by sex**

Type of Activity	Girls Preference N=52		Boys Preference N=48	
	N	%	N	%
Informal	0	0	12	25.0
Official Neighborhood Activity	8	15.4	15	31.3
Official School Activity	28	53.8	9	18.8
Gym	16	30.8	12	25.0

### Barriers to Physical Activity

Twenty-eight boys (58.3%) and 47 girls (90.4%) reported facing barriers to access to physical activity. Twenty-two girls (42.3%) reported as a principal barrier the lack of access to fields and spaces for physical activity, while seventeen girls (32.7%) reported the lack of appropriate equipment or materials. Fourteen girls (26.9%) reported the lack of parental permission, eleven girls (21.2%)

reported safety concerns, ten girls (19.2%) reported lack of athletic clothing, eight girls (15.4%) reported financial issues, and seven girls (13.5%) reported insufficient promotion of opportunities available. When it came to barriers faced by the boys, fourteen boys (29.2%) reported the lack of time as a barrier (primarily due to work outside the home), five boys (10.4%) reported financial issues, five boys (10.4%) reported lack of athletic clothing, and three boys (6.2%) reported the lack of fields and spaces.

**Table 3. Reported barriers to physical activity**

Type of Activity	Girls N=52		Boys N=48		RR	95% CI	p value*
	N	%	N	%			
<b>Barriers Reported</b>	47	90.4	28	58.3	1.55	1.20-2.00	<0.001
<b>Specific Barriers</b>							
Lack of access to fields and spaces	22	42.3	3	6.2	6.77	2.16-21.2	<0.001
Lack of appropriate equipment/materials	17	32.7	2	4.2	7.85	1.91-32.2	<0.001
Lack of parental permission	14	26.9	2	4.2	6.46	1.55-27.0	0.002
Safety concerns	11	21.2	2	4.2	5.08	1.19-21.7	0.012
Lack of athletic clothing	10	19.2	5	10.4	1.85	0.68-5.01	0.22
Financial issues	8	15.4	5	10.4	1.48	0.52-4.20	0.46
Insufficient promotion of opportunities	7	13.5	0	0	N/A	N/A	N/A
Lack of time	9	17.3	14	29.2	0.59	0.28-1.24	0.16

\* Based on Pearson's chi square

*Environmental Issues*

Twenty-two girls interviewed (42.3%) reported a lack of spaces to participate in physical activity as a barrier, while three of the boys did (6.2%). Similarly, eleven of the girls (21.2%) reported safety concerns as a barrier to participating in physical activity, while two of the boys (4.2%) did. Twenty-one girls (40.4%) and fourteen boys (29.2%) reported believing that girls who play sports or engage in physical activity outside the home have a higher risk of assault. Twenty-five of the girls (48.1%) and thirty-six of the boys (75%) reported thinking that their neighborhoods are completely safe, and thirty-two of the girls (61.5%) and thirty-six of the boys (75%) reported thinking that sports facilities are completely safe.

*Lack of Family Support*

Fourteen of the female interviewees (26.9%) reported lack of parental permission as a barrier to participating in physical activity, while two of the male interviewees (4.2%) did. Eight girls (15.4%) reported that their parents think they could get into trouble if they engage in physical activity, while two of the boys reported this (4.2%). Thirteen girls (25%) reported that their parents worry about their safety and four boys did (8.3%). Eleven girls (21.2%) and twenty-two boys (45.8%) reported that their families facilitate transportation to opportunities for physical activity. Seven girls (13.5%) and twelve boys (25%) stated that their family members accompany them to sports activities. Seventeen girls (32.7%) and forty-two boys (87.5%) stated that their families understand the importance of their participation in physical activity.

*Lack of Resources*

Seventeen of the girls interviewed (32.7%) and two of the boys interviewed (4.2%) reported as a barrier difficulty securing athletic equipment necessary to participate in sports or physical activity. Ten of the girls (19.2%) and five of the boys (10.4%) reported as barriers the lack of appropriate clothing and shoes for physical activity. Eight of the girls (15.4%) and five of the boys (10.4%) stated as a barrier the lack financial resources necessary to engage in activities. Twenty-six of the girls (50%) and thirty-three of the boys (68.8%) reported that their parents purchase materials for them related to physical activity (e.g. shoes, clothes, sports equipment).

*Lack of Information*

Seven of the girls (13.5%) and none of the boys (0%) reported lack of promotion of activities as a barrier to participation in physical activity. Twenty-nine of the girls (55.8%) were aware of opportunities to engage in physical

activity if they wanted to, whereas thirty-four (70.8%) of the boys were. Fourteen of the girls (26.9%) reported being aware of facilities where they could engage in physical activity, while twenty-six of the boys (54.2%) were aware of such facilities.

*Personal Attitudes and Practices*

Both the boys and girls reported personal issues which affect their levels of participation in physical activity. Five girls (9.6%) and one boy (2.1%) reported discomfort with people seeing them engage in physical activity, while seventeen girls (32.7%) and eleven boys (22.9%) reported discomfort in extreme temperatures. Eleven girls (21.2%) and six boys (12.5%) reported fear of getting hurt. Fourteen boys (29.2%) and nine girls (17.3%) reported that they lack sufficient time to engage in physical activity.

*Gender Issues and Cultural Stereotypes*

Many interviewees, particularly the boys, reported holding beliefs that gender plays a role in whether one can or should engage in physical activity and sports. Five girls (9.6%) and sixteen boys (33.3%) reported believing that women do not play sports as well as men. Twenty-one girls (40.4%) and twenty-five boys (52.1%) reported believing that it is more difficult for women to engage in physical activity than for men. Three girls (5.8%) and fourteen boys (29.3%) reported believing that women who engage in sports or physical activity tend to be more masculine or lesbians. One girl (1.9%) and eighteen boys (37.5%) reported believing that women need to be taking care of the home instead of engaging in physical activity or sports. Seventeen girls (32.7%) and twenty-four males (50%) reported believing it is better for women not to engage in physical activity or sports while menstruating. Two girls (3.8%) and seven boys (14.6%) reported believing that exercise clothing is not appropriate for women. In addition, fifty-two girls (100%) and forty-eight boys (100%) reported having a male role model related to sports or physical activity.

**Discussion****Interview Trends: Gender Roles and Safety as Recurring Themes**

Reported physical inactivity in the last month among girls was high (79%) and girls were roughly 2.5-times more likely than their male peers to report physical inactivity in the last month. Girls were roughly 1.5-times more likely than boys to report experiencing barriers to physical activity.

It does not seem that the difference in participation levels can be attributed to differing interest levels, as the vast majority (89%) of girls reported interest in physical activity. Rather, the interviewees' preferences regarding and perceived barriers to physical activity shed light on the differing participation levels.

To fully explore the issues raised in interviews, it is important to first note that, in Nicaraguan public and private life, "machismo" and the values, beliefs, and social customs that go with it, are prevalent. Females for the most part still are expected to be submissive, dependent, and somewhat fragile or vulnerable. Their domain is seen as the home, where they are expected to take care of household chores. Women often get pregnant very young (the majority in their teens), have many children, and shoulder most of the child-rearing responsibilities themselves [28].

Men's domain, on the other hand, is seen as outside of the home. They are expected to be independent, strong, and dominant. Nicaraguan men also feel it is part of "being male" to express their sexual prowess how they choose, including being aggressive with females verbally and physically [28]. It is extremely common for women to be harassed verbally or even physically in public spaces, while domestic violence is also prevalent [29, personal communications]. This male aggression in public spaces creates a sort of cycle: men act aggressively towards women in such spaces, so men (who may act this way themselves), as well as women, often discourage the females in their lives from going out in certain places. This protectionism further relegates women and girls to the home [personal communications]. While the barriers to physical activity have been addressed individually in this study, each occurs within the context of the culture of machismo and its accompanying gender roles, expectations, and perceptions.

For example, it is noteworthy that twenty-two out of fifty-two of girls reported that the lack of access to fields and spaces are a barrier to physical activity, while only three out of the forty-eight of the boys reported that issue as a barrier. On further questioning, many girls revealed that it is not the lack of existence of spaces that is a barrier; rather, it is that those spaces are not available to them because they are "boys' places". A number of the girls reported that they would simply never try to use those places because they know the boys would not let them, or they would get made fun of and harassed. Indeed, a few stated that this had actually happened to them. This barrier seems to be very much borne by the cultural understanding that men are dominant, and that public spaces are for men

rather than women.

Related to this and also of note is the fact that girls and boys had nearly opposite responses about the means through which they prefer to participate in physical activity. Girls reported strongly preferring to participate through an organized school activity, followed by the gym or an official neighborhood activity. No female interviewees reported preferring to participate in informal activities (which are usually in the street or public neighborhood spaces), whereas boys reported preferring organized neighborhood activities, followed by informal activities and the gym, with organized school activities being their last preference.

These different preferences can be explained by the particularities of opportunities for physical activity in Nicaragua. Schools and gyms in Nicaragua typically have more private and secure settings – most schools in Nicaragua are walled-in familiar settings to students, and gyms are indoors. On the contrary, organized neighborhood activities and informal activities tend to be in public settings (like streets and public fields). These spaces are often dominated by males and perceived as more appropriate for males, whereas women might encounter harassment or aggression by males in these spaces. Perhaps this explains why girls – who are accustomed to machismo behaviour and who reported safety concerns and greater perceived risk of assault associated with physical activity in public spaces – reported preferring more secure settings for physical activity. Boys, with fewer concerns related to safety and higher comfort levels in public spaces, prefer participating in their neighborhoods.

Our personal communications with officials and various stakeholders suggest that organized school activities are extremely scarce in Nicaragua, due to limited funding within the Ministry of Education for such activities. Similarly, private gyms are scarce due to limited resources to create the gyms, and limited resources of individuals to pay monthly fees. On the other hand, organized neighborhood activities are less scarce, often being funded by municipalities or the Institute of Sport. Informal activities – mainly "street sports", which require minimal resources – are extremely common and a large part of national culture. These issues reflect inconsistencies with supply and demand of spaces for physical activity that may partly explain lower levels of reported physical activity among girls.

Even if issues related to spaces were resolved, other barriers to girls' participation in physical activity would need to be addressed for girls to have more access thereto – most notably, lack of parental support and lack of equipment. More than one in four girls reported lack of parental permission as a barrier to participating in physical activity, compared to only two of the forty-eight boys. This difference again likely relates to the aforementioned gender role stereotyping and protectionism. More girls reported that their parents worry about their safety when they engage in physical activity and that their parents believe they might get into trouble while doing so. When more detailed responses were elicited, a number of girls stated that their parents preferred them to stay at home due to household chores and their concerns about gangs, sexual harassment, sexual assault, or the possibility that they would skip the activity and instead get into trouble or end up pregnant. A larger number of girls also reported a lack of materials and equipment as a barrier. More detailed responses revealed that getting athletic materials or clothing from parents is not out of the ordinary for males, but is rare for females.

Perhaps the most revealing responses were those related to beliefs about gender as it relates to physical activity. These responses evidenced that many participants, especially males, believed that women who engage in physical activity are less skilled than men, more likely to get injured, more likely to be masculine or lesbians, or are acting inappropriately in some way (e.g. because they should be taking care of the house, because menstruation prevents it, or because athletic clothing is inappropriate for women). Machismo-based beliefs about gender roles were evident in these responses. Awareness of these beliefs provides additional insight about the other issues reported by the girls, such as why they prefer private settings, why their parents give less support, why they experience difficulty in securing resources, why there may be a lack of promotion of female activities, and why they have their own personal reservations about participating in activities.

### **Applicability of Lessons Learned to Nicaragua**

This study was only conducted among public high school students in the municipality of Managua, and cannot be generalized to all adolescents in Nicaragua. However, the issue of lower physical activity levels among Nicaraguan adolescent females as compared to adolescent males may be a national phenomenon. Statistics provided by the Nicaraguan Institute of Sports revealed male-dominant participation in 2010 state-sponsored programs. In major municipalities, 75% of students participating in athletics

were male; in rural community leagues, 90% were male; in neighborhood leagues, 75% were male; in student games, 64% were; and in the Nicaraguan contingent of the Central American and Caribbean Games, 69% are male [32]. Government officials within entities relevant to sports and physical activity also reported, in personal communications, that sports and physical activity are still very much male-dominated spheres nationwide.

While this cross-sectional study was not designed to be nationally representative, there are important similarities between this study's participants in Managua public high schools and many adolescents nationwide. Roughly 60% of high school students in Nicaragua attend public high schools; 30% of Nicaragua's population lives in Managua, and roughly 60% of Nicaragua's population lives in urban settings [24]. Moreover, many of the cultural issues examined here related to gender roles have been evidenced to exist country wide [25]. As such, valuable lessons can be gleaned from this study to gain a better understanding of issues causing adolescent Nicaraguan females to participate less in physical activity than their male counterparts nationwide.

### **Legal Issues**

While Nicaragua has achieved "equality on paper" in the realm of physical activity through non-discriminatory laws and regulations, the critical issue in assessing CEDAW compliance is whether a country has achieved substantive equality or equality in reality. One of the most straightforward ways to gauge whether substantive gender equality exists is to look at participation statistics of males and females [13]. As explained above, fewer girls than boys in this study reported participating in physical activity than boys, and there are fewer adolescent females than males in state-sponsored sports and recreational activities nationwide. In assessing whether substantive equality exists, attention must also be paid to whether there is gender disparity at the point of access [11, 13]. Again, more girls interviewed than boys reported facing barriers to their access to physical activity. CEDAW also specifically calls for an elimination of gender stereotypes that may affect women's access to their rights [10]. Here too, the interviews highlighted numerous practices and beliefs based on gender stereotypes – namely that physical activity is unsafe or in some way inappropriate for women – which hinder girls' access to sports and physical activity. These issues reveal that Nicaragua's legal framework has not succeeded in bringing about substantive equality in Managua public high schools or in programs nationwide.



As such, Nicaragua must take additional steps to eliminate the specific barriers to girls' access to physical activity and to promote equal participation, including: proactive measures to ensure the advancement of women; temporary special measures to accelerate the de facto equality of women; and measures to eliminate gender stereotypes [10]. Through such measures, great progress can be made towards ensuring that girls can exercise their rights to physical activity on an equal basis with boys, thereby strengthening CEDAW compliance and promoting healthy habits at an early age for all Nicaraguans.

### Recommendations to Achieve Substantive Equality in Physical Activity

In designing measures to achieve substantive equality, the CEDAW Committee has stressed that "one-size-fits-all" approaches are ineffective. Rather, to succeed in achieving gender equality, measures must be tailored to address the context and unique barriers to equality specific to an individual country [13].

In Nicaragua, measures to promote girls' participation in physical activity must not just reflect the elimination of specific barriers thereto, but must also take into account the gender stereotyping underlying much of the inequity in access and participation. Changing beliefs about gender roles is an extremely complex process, as understanding of gender roles begins in early childhood and is built upon and reinforced at every subsequent life stage. For real progress, there must be consistent attention placed on gender role reframing in all age groups and sectors of Nicaraguan society. The government must set the tone through laws, policies, and plans that promote gender equality in all areas. Moreover, a multitude of other relevant actors – private and public schools, companies, non-governmental organizations, religious and cultural groups – must create educational programs, awareness campaigns, and other initiatives promoting gender equality. These institutions must also "walk the walk", adopting equitable policies themselves and implementing consequences for the violation of these policies [31]. While this process is complex and ongoing, below are recommendations that, if adopted, would be strong steps towards promoting gender equality in sport and eliminating the obstacles thereto.

To address the environmental issues that act as barriers to girls' access to physical activity in Nicaragua – i.e., lack of spaces and safety concerns – it is critical that the relevant government actors (e.g., the Ministry of Education, Institute of Sports, and municipal governments) focus on identifying and fostering spaces where girls feel safe and

comfortable participating in physical activity. This can be done by:

- Educating against and consequences for the verbal and physical harassment of females in public spaces;
- Dedicating funding to create and maintain activities for girls at schools, where they prefer to participate;
- Ensuring girls are given access to existing facilities and spaces, through reserved times for females and/or the presence of security guards or local authorities to prevent exclusion based on gender;
- Ensuring activities include security measures, such as the engagement of parents, a security guard, or local authorities to ensure the girls are safe, comfortable, and free from verbal and physical harassment;
- Ensuring that coaches are aware of and trained on safety issues;
- Scheduling activities during the day time; and
- Ensuring a safe means of transportation is coordinated for all participants [27, 28, personal communications].

In order to address the lack of parental support for girls' participation, including lack of support in securing materials, relevant actors should focus on educating parents on matters relevant to their daughters' participation in physical activity. This can be done by:

- Educational campaigns for parents via schools regarding the health benefits of physical activity for girls and combating the gender stereotypes that can cause parents to be resistant thereto;
- Providing information about the importance of appropriate materials and equipment, and where they may find such materials at a low cost;
- Informing parents of safety precautions being taken; providing parents an opportunity to meet with organizers of activities;
- Eliciting parents' input regarding proposed activities and giving them a voice in designing it; and
- Obtaining official parental permission via consent forms [27, 28, personal communications].

To combat boys' and girls' beliefs about the role of gender in physical activity, the relevant actors – particularly the Ministry of Education – should focus on educational programs for boys and girls. Due to the prevalence and deeply-rooted nature of these gender stereotypes, this step is extremely challenging. Yet, it is critical as the beliefs formed in childhood will likely persist into adulthood and be passed on to the next generation. To have an impact, it is important that these educational programs (a) promote values of gender equality in all spheres, beginning when children are young, (b) are consistent and ongoing, and (c) are accompanied by daily practice and enforcement of the principles of gender equality [31]. These programs could include elements focusing on:

- Eliminating verbal and physical aggression towards females;
- Combating broadly-held beliefs that public spaces are for males and the home is for females; the benefits of physical activity for both sexes;
- The fact that physical activity is a right guaranteed to both sexes;
- Women's accomplishments in sports and other arenas;
- Female role models; and
- Concrete examples of ways to embrace gender equality in school and other spaces on a daily basis.

Consequences could also be implemented for students who do disrespect gender equality at school.

To further increase girls' levels of participation in physical activity, as well as lack of knowledge of opportunities and facilities available to them, the relevant government actors should take concrete measures to proactively promote girls' activities. These could include the following measures, many of which are endorsed by the CEDAW Committee as effective means of achieving substantive equality:

- Requiring statistics disaggregated by sex for government programs related to physical activity;
- Participation quotas in state-sponsored programs (e.g. required 50/50 participation in activities, or a designated percentage increase in female participation each year);
- Financial incentives and consequences for attainment or lack thereof of quotas; and

- Female-directed informational campaigns regarding available opportunities.

Similarly, to further address the issue of girls' lack of access to necessary resources (clothes, equipment, financial resources), relevant government actors should ensure that funding for girls' programs and materials is at least equal to that of boys [13].

In addition to these specific measures, in order to ensure that female participation in physical activity is prioritized by all relevant actors, the concept of substantive equality should be embodied in all relevant documents (laws, policies, training programs, and the like) and communicated to all relevant individuals. Specifically, the Sports Law (the most relevant document in terms of national programs and funding for physical activity), which currently does not contain any non-discrimination or gender equality provisions, should be amended to include such provisions, as well as any quotas and other measures adopted to promote female participation in physical activity.

Finally, given that the issue of physical activity for women involves many government actors – primarily the Ministry of Education and the Institute of Sports, but also the Ministry of Health, the Institute of Women, and others – there should be institutional strengthening to ensure this issue is taken on by all efficiently, effectively, and sustainably. The creation of a National Commission of Women and Sport, Recreation, and Physical Activity – currently being discussed in Nicaragua – would be a significant step towards increasing cooperation among government entities in this respect, and keeping this issue at the forefront of their operations.

## Conclusion

The interviews conducted in this study provided strong evidence that girls in the Managua public high schools are less physically active than boys. Similarly, statistics gathered revealed that girls participate in national programs related to sports and physical activity in fewer numbers than boys. The interviews helped shed light on the reasons behind girls' lower participation levels, revealing that girls in Managua public high schools face more barriers to physical activity than boys, namely: lack of access to fields and spaces, lack of appropriate equipment/materials, and lack of parental permission. These inequities suggest that Nicaragua has yet to achieve substantive gender equality in sports and physical activity, as required by CEDAW.

They also suggest that girls in Managua may be at greater risk of developing obesity-related NCDs than boys. The recommendations provided in study can be utilized to design gender-sensitive programs, policies, and legislation to increase girls' participation in physical activity in Nicaragua, including:

- Efforts to ensure safe and accessible spaces for girls to participate in physical activity;
- Efforts to garner parental support;
- Educational programs to combat gender stereotypes;
- Concrete measures (e.g., quotas) to increase and promote girls' participation;
- Documentation of the concept of substantive equality; and
- Institutional strengthening among relevant government actors.

Through such measures, Nicaragua will strengthen its compliance with its legal obligations under CEDAW and combat girls' risk of developing NCDs.

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