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## Original Research

# Prevalence of physical activity and sedentary-related behaviors among adolescents: data from the Qatar National School Survey

M. Al-Thani <sup>a</sup>, A. Al-Thani <sup>a</sup>, S. Alyafei <sup>a</sup>, M.G. Al-Kuwari <sup>b</sup>,  
W. Al-Chetachi <sup>a</sup>, S.E. Khalifa <sup>a</sup>, I. Ibrahim <sup>b</sup>, S. Sayegh <sup>b</sup>, B. Vinodson <sup>a</sup>,  
H. Akram <sup>a,\*</sup>

<sup>a</sup> Public Health Department, Ministry of Public Health, Doha, Qatar

<sup>b</sup> Aspetar Orthopaedic and Sports Medicine Hospital, Doha, Qatar

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## ABSTRACT

**Objectives:** To investigate the prevalence of physical activity (PA) and sedentary behaviors among adolescents in Qatar by selected demographic characteristics.

**Study design:** Cross-sectional study.

**Methods:** A total of 5862 students (2938 boys and 2924 girls) in the age group 12–17 years were included in the analyses. PA and sedentary-related measures were obtained from the self-reported survey questions.

**Results:** Only 35.4% of students were performing 60 min of PA  $\geq 3$  days/week. The proportion of students with  $>2$  hr screentime ranged from 43% to 57% (weekdays) and 50% to 62.5% (weekends). Girls had less odds of being physically active than the boys (odds ratio [OR] = 0.61,  $P < 0.001$ ). Qatari students were less likely to be physically active than non-Qataris (OR = 0.79,  $P < 0.001$ ). Age was inversely correlated with PA ( $[r = -0.113, P < 0.001$  for participation with sports team] and  $[r = -0.139, P < 0.001$  for school physical education classes]). Participation in sports teams positively correlated with 60 min of PA number of days in a week ( $r = 0.317, P < 0.001$ ).

**Conclusions:** The study describes insufficient PA among youth as a public health issue of concern in the State of Qatar that requires multipronged health promotion initiatives.

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## Introduction

The increasing prevalence of physical inactivity in adolescents is a critical public health problem worldwide because of its negative effects on health, well-being, and growth. More than 1.9 million global deaths per year could be prevented

with sufficient levels of physical activity (PA).<sup>1</sup> It has been established that the younger generation in developed countries, specifically adolescents, lead sedentary lifestyles marked with reduced PAs.<sup>2</sup> The PA level tends to decrease in the adolescence period and continues through adulthood.<sup>3,4</sup> It has been established that increasing PA during adolescence reduces the risk of adulthood obesity.<sup>5,6</sup> Current evidence

\* Corresponding author. PO Box 42, Rumailah West, Ministry of Public Health, Doha, Qatar. Tel.: +974 44070912.

E-mail address: [hakram@moph.gov.qa](mailto:hakram@moph.gov.qa) (H. Akram).

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shows that there is a greater reliance on sedentary activities, mainly on electronic devices, that was found to be associated with the increased risk of obesity.<sup>7</sup>

PA among Arab adolescents has greatly declined in recent decades.<sup>8</sup> The Eastern Mediterranean Region (EMR) has witnessed urbanization and major lifestyle transformations which highly contributed to the reduction in PA levels and increase of sedentary behavior.<sup>9</sup> Evidence shows that regular PA has a protective effect on the risk of non-communicable diseases (NCDs) among adolescents, such as coronary heart disease, stroke, and type 2 diabetes.<sup>10,11</sup> NCDs were found to be the major cause of morbidity and mortality in most countries of the EMR, accounting for more than 60% of total deaths yearly.<sup>10,12</sup> The majority of adolescents in the Arab world do not meet the recommended daily PA guidelines of at least 60 min of PA per day. More than 85% of girls and 75% of boys aged 13–15 years in some Arab countries do not engage in a sufficient amount of daily PA.<sup>1</sup> The State of Qatar has one of the highest obesity prevalence rates in the Arabian Gulf area. Statistics show that around 32% of male children and adolescents in Qatar are overweight or obese compared with 34% females.<sup>13</sup>

Sedentary behavior is a set of activities that require minimal energy expenditure including prolonged sitting at work or school, watching TV, and using a computer or playing video games.<sup>14</sup> Time spent on sedentary activities is actually defined as the number of hours per week spent during leisure time on screens, such as computers, video games, television, and tablets.<sup>15</sup> Evidence shows that daily TV watching of 2 h or more is associated with reduced physical and psychosocial well-being. The World Health Organization (WHO) recommends youth aged between 5 and 17 years to engage in at least 60 min of PA of moderate-to-vigorous intensity daily to improve or sustain cardiorespiratory health, metabolic biomarkers, and muscular fitness.<sup>16</sup> In addition, it is recommended that adolescents spend not more than 2 h per day on screen-based sedentary activities, such as TV watching.<sup>17</sup>

Adolescence is considered an ideal stage for acquiring lifelong PA behaviors;<sup>18</sup> therefore, it is important to focus on the younger generation. Currently, there are limited studies on PA patterns and sedentary-related behaviors among Qatari adolescents. Results from the Qatar Active Healthy Kids Report Card, 2016, identified some weaknesses and gaps in the evidence on PA and health in children and youth in Qatar.<sup>19</sup> A country-level surveillance and investigation is required to provide additional in-depth resources that would support future PA promotion strategies. The aim of this study is to investigate the prevalence of PA and sedentary-related behaviors among adolescents in Qatar.

## Methods

### Study design and population

This study is part of a school-based survey, the ‘Qatar National School Survey’ (QNSS). It is derived from the Global School Health Survey (GSHS) that was initially developed by the WHO and Centers for Disease Control and Prevention in collaboration with the United Nations Children's Fund, United Nations Educational, Scientific and Cultural Organization, and United

Nations Joint Programme on HIV/AIDS.<sup>20,21</sup> The GSHS aimed to measure and assess behavioral risk factors and protective factors among students aged 13–17 years; however, educational levels were used in the QNSS for the sample selection process (i.e. primary, preparatory, and secondary classes). The overall aim of the QNSS was to obtain information pertaining to health behaviors among children and adolescents, including diet, PA, injuries, oral health, tobacco use, and mental health. The survey was also supplemented with questions from the Arab Teens Lifestyle Study (ATLS), a school-based cross-sectional multicenter collaborative study.<sup>22</sup> The ATLS project aimed to explore lifestyle habits of Arab adolescents. Demographic factors related to PA and sedentary behavior were particularly used from the survey in the analyses.

A total of 7545 students (children and adolescents) were surveyed. For the present article, a total of 5862 students (2938 boys and 2924 girls) were included for further analysis to capture adolescents (age group 12–17 years) only. A standardized sample selection process is applied with a two-staged cluster sampling design to recruit a representative country sample. The first stage is the selection of independent schools of Qatar. The second stage was a random selection of classes within schools, which included primary (classes 5 and 6), preparatory (classes 7, 8, and 9), and secondary (classes 10, 11, and 12) of each participating school. All students in the selected classes who were in attendance at the time of survey were eligible to participate in the study.

The study was approved by the Ministry of Public Health (MOPH) and Ministry of Education and Higher Education (MEHE), Qatar. A notification was released by the MEHE to the schools regarding this study. Verbal consent was attained from children's parents and school principals before data collection. Children were assured that their participation was voluntary and informed about their identification confidentiality. The study was carried out as per compliance with MOPH (governmental) policies and regulations.

### PA and sedentary behavior measures

Data collection took place during May 2016, by trained health educators. The questionnaire was self-filled by students, under the supervision of teachers and health educators. Information on the children's ages, gender, and nationality and the level of education was obtained from the survey. PA and sedentary-related measures were obtained from the self-reported seven core survey questions to assess the level of PA and sedentary behavior among the studied population. The questions were ‘During the past 7 days, on how many days were you physically active for a total of at least 60 min per day?’; ‘During the past 12 months, how many sport teams you participated with regularly (such as basketball, handball, football, or swimming)?’; ‘During the past 7 days, on how many days were you involved in strength training exercises (such as push-up, sit-up, or weight lifting)?’; ‘Throughout the academic year, how many days per week you participated in the physical education sessions?’; ‘How many physical education sessions does your school offer per week?’; ‘How much time do you spend during a typical weekday sitting and watching television, or playing computer games?’; ‘How much time do you spend during a typical weekend sitting and

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