

Original Research

The Impact Of COVID-19 On Physical Activity Behavior And Well-Being Of Children In Riyadh Saudi Arabia

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Abstract

Objective: The primary goal of this research was to examine the impact of COVID-19 on children's physical activity levels during the COVID-19 period and to examine the factors that influenced the change in children's physical activity level during the Covid-19 pandemic. **Methods:** We used one tools from one search: (The current analysis from the children and youth movement and play behaviors during COVID-19 virus outbreak survey).. Survey content respondents provided demographic information about their parents and children, as well as assessments of their children's movement behaviors in the previous week. Following that, they were asked to compare their child's behavior before and during the COVID-19. **Results:** The results show most part was healthy in terms of psychological, behavioral, and physical health, and the physical activities of children were not permanent but were practiced in varying forms. The clubs and gardens in which the children may be able to practice activities were insufficient, as half of the sample did not have any clubs or gardens to practice sports, and this may affect physical activity. All activities that depend on physical movement were few and at low levels and almost unchanged during the Corona pandemic (Covid-19), which formed stagnation or inactivity in bringing about change. On the other hand, the activities that did not depend on the movement had a higher percentage, whether they were done continuously or at different times. **Conclusion:** Where the study showed that physical activity among children in Riyadh is little and has not changed much during the Corona pandemic, and due to inactive lifestyle, the prevalence of chronic diseases associated with obesity may be high. **Recommendations:** The importance of physical activity for children and the impact of the COVID-19 pandemic on it, it is strongly recommending the importance of home programs to disrupt the physical inactivity of children and help them overcome this pandemic with minimal damage.

Keywords: COVID-19, children's physical activity, physical health, Corona pandemic, obesity

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Introduction

Health is defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”, and not absence the of disease or infirmity), that what the research talks about it, so when we are measuring the effect of Covid-19 on the behavior of physical activity and the well-being of children [11]. By measure several aspects by which health is indirectly affected, because regular physical activity in children, very important topic and had a lot of benefits, which whereby achieved overall well-being [12].

Physical activity is the movement of the body by producing energy through the skeletal muscles, physical activity is intended even by exerting energy during work and while on the move, even in leisure time, and in general, strong, and moderate movement benefits health [12]. helps to control their weight, reduce depression and nervousness, build bones and muscles, and strengthen cardiorespiratory. Also, a movement disorder in children causes serious consequences, such as low bone density, increased risk factors for cardiovascular disease such as high cholesterol and triglycerides, high blood pressure, and insulin and glucose resistance, which leads to an increased risk of developing type 2 diabetes [8].

A global pandemic caused by the novel coronavirus (COVID-19) resulted in restrictions to daily living in all over world, including social distancing and closure of city and provincial recreation facilities, national parks and playgrounds. The objective of this study was to assess how these preemptive measures impacted physical activity behavior and well-being [5]. Lack of physical activity is one of the reasons for the spread of civilization diseases among children, such as diabetes, heart disease, high blood pressure, and obesity. Physical activity is one of the elements that enhance a child's health and development in childhood, and movement activities provide a valuable opportunity for the child to express himself, explore his capabilities, and sometimes even challenge them. Also, it should be 60 minutes of moderate to vigorous physical activity daily [4]. Even so, globally less than a quarter of children

engage in 60 minutes of physical activity every day. The importance of physical activity lies in that it helps to strengthen the heart and skeleton, improves mood, reduces stress and tension, controls weight, and most importantly, in this period, it strengthens memory and focus [1]. The percentage of children from 0 to 14 years old, represents 1.96 billion (25.65%) inhabitants of the world, and they represent 8.521.21 million (25%) residents of Saudi Arabia [10].

Movement behaviours have been further impacted by the recent and ongoing coronavirus disease (COVID-19) crisis. On March 11, 2020, the World Health Organization (WHO) announced a global COVID-19 pandemic, due to the risks of acute respiratory disease posed by this novel virus [12-13]. Given that the COVID-19 virus spreads primarily through respiratory droplets and contact routes, the outbreak led to policies and guidelines to implement physical distancing, which have significantly affected children and youth movement [12].

In the last period, that is, during the Corona pandemic, many things have changed in Saudi Arabia that affected the lifestyle of children. One of the precautionary measures, such as closing schools, particularly affected children, can no longer access school physical activities such as physical education, rest, and walking to/from school. The collective sporting championships for youth have canceled all practices and games as well. Although these social distancing measures have been essential to slow the spread of COVID-19, they may be limited in children's ability to engage inadequate levels of physical activity to maintain health and prevent disease [13]. Some children may play physical active at home. However, there may be huge disparities in accessing these opportunities based on household financial considerations, access to digital technology, home and yard size, neighborhood safety, and traffic volume. School closures for COVID-19 are expected to increase childhood obesity rates in part because schools provide opportunities and facilities for physical activity through physical education and vacation [2].

Here comes the role of parents in helping their children to overcome this crisis with the least negative consequences. They must maintain a

steady, regular and healthy lifestyle, allocate time for various physical activities such as walking in the backyard, jumping rope, swimming if there is a swimming pool at home, and many other activities [6]. Stay away from electronic devices as much as possible after completing school lessons, and provide a special place for children's games [1].

Methods

Research Design

This study employed a cross-sectional design to investigate the impact of the COVID-19 pandemic on children's physical activity levels in Riyadh, Saudi Arabia. Data were collected using the *Maru/Matchbox Questionnaire*, a validated instrument developed by the Canadian non-profit organization ParticipACTION under the project *Impact of the 2020 COVID-19 Outbreak*. The survey aimed to capture parental perceptions of their children's movement and play behaviors both before and during the pandemic, thereby providing a comparative understanding of behavioral shifts associated with lockdown measures.

Study Population and Sampling

The target population consisted of children aged 4 to 18 years residing in Riyadh, irrespective of nationality. Because children could not be approached directly, their parents were invited to participate in the survey and provide proxy responses regarding their children's behaviors. A random distribution strategy was used to reach parents across the city. The data collection period extended from February 24, 2021, to March 22, 2021, during which a total of 278 complete responses were obtained.

Study Instrument

The Maru/Matchbox questionnaire comprised 48 items distributed across five domains relevant to children's movement behaviors. The **physical domain** included items on general health status, sedentary behavior, and levels of physical activity before and during the pandemic. The **social domain** addressed interpersonal relationships, while the **cognitive domain** explored parental

knowledge regarding children's movement behaviors. The **affective domain** assessed parental attitudes, and the **environmental domain** evaluated the influence of home and neighborhood settings. Parents were asked to recall and compare their child's behaviors prior to COVID-19 restrictions with those exhibited during the outbreak. Additionally, questions explored parental support for children's activity before and during the pandemic.

Validity and Reliability of the Instrument

The Maru/Matchbox questionnaire has been widely recognized as a reliable and valid tool for measuring the impact of COVID-19 on children's physical activity. Its adoption in this study ensured methodological rigor and comparability with prior international research. The content validity of the survey is strengthened by its development through expert consultation and its prior use in large-scale population studies of children and youth movement behaviors during the pandemic.

Data Collection Procedures

The survey was distributed electronically through online platforms accessible to Riyadh residents. Parents who consented to participate were directed to the survey link and were instructed to complete the questionnaire based on their observations of their children's activities and their own parental practices. Participation was voluntary, and anonymity was assured to reduce reporting bias.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 21. Descriptive statistics were generated to summarize demographic characteristics and distribution of responses across domains. Comparative analyses were then performed to examine differences in reported physical activity, sedentary behavior, and parental support before and during the COVID-19 pandemic. The analysis was designed to identify the key factors associated with changes in children's physical activity levels during the outbreak period.

Methodological Strengths and Limitations

The study benefited from the use of a standardized and validated instrument, which allowed for systematic assessment of children's behaviors in multiple domains. The online distribution method facilitated timely data collection during a period when in-person contact was limited. Nevertheless, several limitations must be acknowledged. First, as children could not be directly surveyed, reliance on parental recall introduced the possibility of recall bias, particularly in comparing pre-pandemic behaviors. Second, the relatively short data collection window limited the sample size, which may affect generalizability. Finally, the scarcity of prior research on children's physical activity in Saudi Arabia during the COVID-19 pandemic restricted the contextualization of findings within the local literature.

Results

A total of 278 parents of children aged 4 to 18 years participated in the study. Among the children, 142 (51.1%) were female and 136 (48.9%) were male. The majority of the children (39.9%, $n = 111$) were between 8 and 12 years of age, followed by 21.9% ($n = 61$) aged 6 to 8 years, 19.8% ($n = 55$) aged 12 years and above, and 18.3% ($n = 51$) aged 4 to 6 years.

With regard to educational level, most children were enrolled in elementary school (66.2%, $n = 184$), while smaller proportions were in middle school (15.8%, $n = 44$), kindergarten (10.1%, $n = 28$), or high school (2.2%, $n = 6$). A minority of children (5.8%, $n = 16$) had no formal education.

Health-related characteristics showed that only 15 children (5.4%) had a chronic disease, and 8 (2.9%) had a disability, while the majority reported no such conditions.

Parents were predominantly Saudi nationals (99.6%, $n = 277$), with just one participant (0.4%) reporting non-Saudi ethnicity. In terms of age distribution, 42.1% ($n = 117$) were between 30 and 40 years old, 36.0% ($n = 100$) were between 40 and 50 years, 12.2% ($n = 34$) were younger than 30 years, and 9.7% ($n = 27$) were between 50 and 60 years.

Table1: Demographic characteristics of study sample (n= 278)

	Frequency	Percent
Child sex:		
Female	142	51.1
Male	136	48.9
Total	278	100.0
Child age:		
4 = 6 years	51	18.3
6-8 years	61	21.9
8-12 years	111	39.9
12 years and up	55	19.8
Total	278	100.0
Child Education		
Elementary	184	66.2
High school	6	2.2
Kindergarten	28	10.1
Middle school	44	15.8
No Education	16	5.8
Total	278	100.0
Child has chronic Disease:		
Yes	15	5.4
No	263	94.6
Total	278	100.0
Child has Disability:		
Yes	8	2.9
No	270	97.1
Total	278	100.0
Parent Ethnicity:		
Saudi	277	99.6
Non-Saudi	1	.4
Total	278	100.0
Parent Age:		
Under 30	34	12.2
30-40	117	42.1
40-50	100	36.0
50-60	27	9.7
Total	278	100.0
Parent Education:		
Bachelor degree	173	62.2
General Education	53	19.1
No Education	7	2.5
PHD	45	16.2
Total	278	100.0
Parent Job:		
Government Job	116	41.7
Non	90	32.4
Private Sector	14	5.0
Retired	28	10.1
Self-employment	30	10.8
Total	278	100.0

Regarding educational attainment, most parents held a bachelor's degree (62.2%, $n = 173$), while 19.1% ($n = 53$) had general education, 16.2% ($n =$

45) had completed a doctoral degree, and a small number reported no education (2.5%, $n = 7$).

Table 2: Activities characteristic of sample

	A lot less	A little less	Same	A little more	A lot more
Outdoor play	5%	22.3%	36%	26.6%	10.1%
Indoor play	4.7%	24.8%	27.7%	31.7%	11.2%
Outdoor PA\Sort	7.6%	22.3%	37.4%	23.7%	9%
Indoor PA\Sort	6.5%	27.7%	32.4%	26.6%	6.8%
Walking	5.4%	20.9%	34.5%	27.3%	11.9%
Screen time	4.3%	20.5%	16.5%	34.5%	24.1%
Sleep time	4.7%	15.8%	38.8%	27%	13.7%
Healthy movement behaviors	2.2%	18.3%	40.6%	29.5%	9.4%
Time spends outdoors	6.8 %	22.3 %	32.7	27 %	11.2 %
Family time in physical activity	4.3%	28.4%	38.1	23%	6.1 %
Family time in sedentary behaviors	3.2%	25.2 %	37.8	23.7 %	10.1 %

Behavioural outcome table 2 presents the parents reported noticeable changes in their children's behaviors during the COVID-19 pandemic compared with the pre-pandemic period. Outdoor play decreased for many children, with 5.0% reporting "a lot less" and 22.3% reporting "a little less," while 26.6% indicated "a little more" and 10.1% "a lot more"; 36.0% reported no change. Indoor play showed a similar trend, with 29.5% indicating increased engagement ("a little more" or "a lot more") compared with 29.5% reporting reduced play.

Outdoor physical activity or sport showed mixed results: 29.9% reported less participation, 32.7% reported more, and 37.4% indicated no change. Indoor physical activity or sport also fluctuated, with 34.2% reporting less, 33.4% more, and 32.4% unchanged. Walking behaviors increased for many children, as 39.2% of parents reported more walking compared to 26.3% who reported a decline.

Screen time increased substantially, with 34.5% indicating "a little more" and 24.1% "a lot more," while only 24.8% reported less screen time. Sleep duration patterns varied: 30.7% of children slept more, 20.5% slept less, and 38.8% showed no change.

Healthy movement behaviors (e.g., following recommended activity guidelines) were stable for 40.6% of children, with 38.9% reporting an increase and 20.5% a decrease. Time spent outdoors remained unchanged for 32.7% of children, increased for 38.2%, and decreased for 29.1%.

Family-related behaviors also shifted. While 29.1% of families reported less time in shared physical activity, 29.1% reported more, and 38.1% indicated no change. For sedentary family time, 28.4% reported less, 33.8% reported more, and 37.8% remained unchanged.

As it appeared in (Table 3, 4): in pair 1: P-value (Sig. value) = .023 < 0.05; It is concluded that there is a statistically significant difference between screen time before and during covid-19. This study is consistent with Voss et al., (2023) [14] findings which also suggested that students are spending more time working and socializing on their screens and phones. In in-pair 2: P-value (Sig. value) = .045 < 0.05; it is concluded that there is a statistically significant difference between indoor play before & during covid-19. All these factors influence either a positive or a negative effect on physical activity [9].

Table 3: Paired samples test Screen time before & during covid- 19

Screen time before Covid-19 Mean±SD# N=278	Screen time during Covid-19 Mean±SD# N=278	Paired t-Test	
		t	p
1.77±1.1	30.4±17.9	-26.472	<.001*

Std. Deviation ; *Statistically significant

Table 4: Paired samples test : Indoor play before & during covid- 19

Indoor play before Covid-19 Mean±SD# N=278	Indoor play during Covid-19 Mean±SD# N=278	Paired t-Test	
		t	p
1.2±1.2	31.1±16.4	-27.424	<.001*

Std. Deviation ; *Statistically significant

Discussion

Several studies have found a strong relationship between the impact of health through the effect of Covid-19 on the physical activity of children, Also, if a study finds that short-term changes in physical activity and sedentary behavior may become permanent long-term effects that affect the risk of obesity, diabetes, and heart disease [3]. A study found recommending the return of children to their normal lives and the resumption of sports activities due to the importance of their impact on health while taking precautionary measures and taking preventive measures [5]. A study was conducted in Canada on children and adolescents a sample was (1472). children (5-11 years) and youth (12-17 years) measuring the immediate changes in children's behavior based on physical activity and play affected by Covid- 19 and found that only 4.8% of children and 0,4% of young people are committed to movement behaviors During the Covid-19 restrictions. in general, they had low levels of physical activity and spending time outside, and high levels of sedentary behavior [7].

The results show the sample was approximately equal between the sexes, ages vary from 0 to 12, and the largest group was from 8 to 12 years old. And the most part was healthy in terms of psychological, behavioral, and physical health, and the physical activities of children were not permanent but were practiced in varying forms. The clubs and gardens in which the children may be able to practice activities were insufficient, as half of the sample did not have any clubs or gardens to practice sports, and this

may affect physical activity. All activities that depend on physical movement were few and at low levels and almost unchanged during the Corona pandemic (Covid-19), which formed stagnation or inactivity in bringing about change. On the other hand, the activities that did not depend on the movement had a higher percentage, whether they were done continuously or at different times.

Conclusion

Where the study showed that physical activity among children in Riyadh is little and has not changed much during the Corona pandemic, which may increase the risk of developing chronic diseases. One of the most important conclusions that must be worked on in the future is that the behavior and lifestyle of Saudis are almost inactive and need to change to prevent chronic diseases associated with obesity due to this inactive lifestyle.

Recommendations

Now that we are aware of the importance of physical activity for children and the impact of the COVID-19 pandemic on it, we strongly recommend the importance of home programs to disrupt the physical inactivity of children and help them overcome this pandemic with minimal damage. For future research, we recommend that you distribute the survey as much as possible and target larger facilities related to the topic to find out the extent of the damage. We also suggest that future studies compare physical activity before, during, and after the Corona pandemic.

Data Availability Statement

The datasets generated or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of Interest

The authors declare no conflicts of interest.

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