Family promotion of children’s healthy lifestyles during the COVID-19 pandemic in light of Saudi Vision 2030

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Abstract

Objective: This study aims to determine the role of the family in promoting an active and healthy lifestyle for children aged 3–12 years during the COVID-19 pandemic in the Qassim region in light of Saudi Arabia’s Vision 2030 program.

Background: This study is important in defining the role of the family in promoting an active lifestyle for children during the COVID-19 pandemic because the family is primarily responsible for promoting a healthy lifestyle for children.

Method: We evaluated responses of 320 parents completing an online survey about their children’s physical health during the pandemic.

Results: The results showed a low level of children’s physical activity and excessive use of electronic devices. Late bedtimes were evident and defined as midnight or later. As well, however, families knew the necessary information about COVID-19 and maintained the children’s preventive measures. The families were aware of the child’s consumption of a healthy diet. They helped the child complete studies through distance education. The families supported the child’s psychological well-being and helped them develop some entertainment plans.

Conclusions: Although the family plays an important role in promoting the active and healthy lifestyle of the child, there is still a need for more awareness regarding the child’s practice of physical activity, healthy sleep habits, and correct use of electronic devices.

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Implications: Programs should be established to increase family awareness of the guidelines of the World Health Organization and the Saudi Ministry of Health regarding the child’s physical activity, sleep habits, and the use of electronic devices.

KEYWORDS
- coronavirus
- diet
- physical activity
- psychological
- sleep quality

INTRODUCTION

The COVID-19 pandemic led to taking preventive health measures worldwide such as isolation, quarantine, and social separation. The Saudi government has promoted these preventive measures to reduce the spread of the virus. The most important measures are the suspension of studies in schools and universities, partial and/or complete curfews, suspension of sporting activity, and the closure of government and private sports centers and parks. These measures have all significantly changed the usual daily lifestyle.

The family is the building block of society, the primary provider of their needs, and the protective shield for society to confront various challenges. The most important role is maintaining an active and healthy lifestyle as a mechanism to overcome the stress of daily life resulting from a lack of movement due to quarantine and social separation and the accompanying adverse health effects and psychological damage. Maintaining correct sleeping habits, the proper use of electronic devices, and continued teaching and learning through official and unofficial channels is important.

Children’s healthy development keeps the community healthy and prosperous. Unhealthy lifestyles contribute to children’s increased risk of chronic diseases, low educational attainment, unemployment, and reduced income level. These impacts directly and indirectly affect health and well-being. Therefore, it is critical to develop public health and social challenges that improve the lives of children, families, and societies (Merrick et al., 2019; Schreier et al., 2019).

Prior work by Stuntz and Weiss (2010) and Howie et al. (2020) emphasized the need for the family to provide positive social support that improves the motivation of children and young people to maintain physical activity; thus, the physical, social, and psychological health benefits are granted by this participation. This support is not limited to simply providing children with information about the benefits, frequency, and duration of physical activity, but rather working to make changes in the family’s lifestyle to support the motives of physical activity and their positive behavior.

The Iberoamerican Nutrition Foundation (FINUT) has designed a 3D pyramid as a new strategy to sustain and promote a healthy, active lifestyle. The three faces include (1) food-based guidelines and healthy eating habits that are environmentally sustainable; (2) recommendations for physical activity (PA), rest, education, and social and cultural issues; and (3) guidelines for education and hygiene chosen, which are intended for the general population of all ages and which serve as a guide for living an active, healthy lifestyle (Gil et al., 2014).

The World Health Organization (WHO) reports that early childhood is a period of rapid physical and cognitive development. Moreover, this time is when the child’s habits are shaped and adapted to the family lifestyle in which he or she lives. Accordingly, the WHO has developed guidelines on PA, sedentary behavior, and sleep for children under 5 years of age (WHO, 2019). The vibrant society axis of the Saudi Vision 2030 aims to build a productive and robust community. Hence, the Ministries of Health and Education launched the initiative “Agility,” which aims to raise awareness of active lifestyles while also creating a database to provide a supportive environment, and activate laws and regulations related to a healthy diet,
PA, and combating obesity. This initiative targeted male and female students at all school levels (primary, intermediate, secondary) and was designed in accordance with the standards of the WHO (Saudi Vision 2030, n.d.).

Researchers extracted the essential criteria of an active lifestyle for children to achieve the study goals. A 1-year-old should practice a variety of PA activities at least 30 minutes per day. Children 1 to 2 years should practice a minimum of 180 minutes throughout the day. Children 3 to 12 years should have a minimum of 180 minutes during the day or 60 minutes of PA at moderate to vigorous levels. Children should allocate the most significant portion of daily PA to aerobic physical activities and practice high PA levels at least three times at least every week. They should reduce the hours spent watching TV, electronic games, and using the internet for entertainment to less than 2 hours per day. Children younger than 1 year should not watch TV or smartphones. Children 2 to 4 years should not have more than 60 minutes per day. Children 0 to 3 months should sleep 14–17 hours per day. Those 4 to 11 months should sleep 12–16 hours. Those 1 to 2 years should sleep 11–14 hours per day, and those 3 to 4 years should sleep 10–13 hours a day including a nap. Children with special needs should follow under the supervision of a specialist according to the child’s situation. The guidelines also clarified a healthy diet that aims to raise awareness for maintaining the ideal weight for height, the causes of obesity, its health problems, how to obtain energy in our lives, and how to spend it.

Goodway and Smith (2005) emphasized that PA is the essence of an active lifestyle and one of the most critical factors in disease prevention. Laddu et al. (2021) reported that PA is an essential component in healthy medicine and significantly reduces the risk of developing systemic inflammation, excess body mass, and noncommunicable diseases. Physical activity dramatically reduces the infectious disease risk from bacterial and viral infections. Simpson et al. (2020) noted that it is a strong catalyst for immune functions, especially in the face of the new COVID-19. Their study emphasized the enhancement of immune function and reduced risk, duration, or severity of viral infections.

Therefore, PA is one of the most important advantages a family brings to its children primarily from childhood through adulthood. It is the primary component that ensures the child’s immune system’s enhancement to overcome infectious viral diseases including COVID-19. Hurley et al. (2018) confirmed that obesity in children raises concerns about negative physical, psychological, and social consequences of childhood, including an increased risk of disease and later death. Obesity is one of the most important environmental factors influencing parenting habits and feeding practices within the family system. It controls the general health of the child and significantly affects the body mass index from childhood to adolescence.

Before the COVID-19 pandemic, there have been many studies dealing with active and healthy lifestyles in children including Calmeiro and Pereira (2019), who studied the nature of the relationship between an active and a healthy lifestyle and body mass for children. The results indicated that most children are not accurate in estimating their body size to generate motivation for practicing an active and healthy lifestyle. This requires the highest follow-up of the parents and the school to provide a supportive environment for the children leading to an active and healthy lifestyle. Moreover, Alonso-Stuyck (2019) presented a model that improves the emotional aspect of the close relationship between parents and children. In addition, support for the family in its educational mission can help guide healthy lifestyles. Families are important to have in this crucial task. Trigueros (2019) found that physical education classes can enhance adherence to healthy lifestyle habits during childhood and adolescence.

In the Kingdom of Saudi Arabia, many studies have indicated an increasingly high rate of obesity among children and young people (Al-Hussaini et al., 2019; Aliss et al., 2020; Alwin Robert et al., 2017; El Mouzan et al., 2010; Hammad & Berry, 2017). One trend was toward largely sedentary activities and a lack of a healthy diet. This led to the spread of diabetes and a subsequent increase in health care spending. One other study, Al Dhaifallah et al. (2015), indicated the need to develop a comprehensive approach that addresses the determinants of obesity.
such as education, social and religious beliefs, and cultural issues provided that it includes a multilevel strategy that starts from the home. Parents are concerned with obesity issues, and children and families are encouraged to follow healthy eating patterns and exercise physical activity. Schools, policy makers, and health and social service providers can develop policies and services that attract people to undertake health promotion activities including physical activity and nutrition programs.

In light of the COVID-19 pandemic, many studies have reported harmful effects on human health because of preventive measures and home isolation. Chopra et al. (2020) showed a slight change in eating behavior as well as weight gain with significantly reduced physical activity coupled with increased screen and sitting time. Mental health was also negatively affected (Lange & Nakamura, 2020) and added to the increased consumption of alcohol and tobacco and increased screen time, which causes poor sleep. These behaviors are associated with non-communicable diseases and can interfere with immunity. Park et al. (2021) confirmed a decrease in the rates of recreational, social, and educational activities. Furthermore, Tavakol et al. (2021) indicated that increased physical activity levels might partially reduce the severity of COVID-19 disease. In addition, some dietary patterns, such as increased consumption of fruits and poultry and drinking less tea, were significantly associated with reduced disease severity.

It is clear that previous studies emphasized the harmful effects of the COVID-19 pandemic: The most important is limited active lifestyles and increased rates of sedentary activities. Obesity was already high in children and youth in Saudi society before the COVID-19 pandemic; there are certainly now even greater harmful impacts on society if the necessary actions are not taken to enhance the active lifestyle of the family. As it is, a community entity is mainly responsible for this in light of the COVID-19 pandemic.

Hence this study is important in defining a framework for the essential components of an active lifestyle and determining the role of the family in promoting the active lifestyle of children. The COVID-19 pandemic made the family primarily responsible for promoting an active and healthy lifestyle for children. This study aimed to determine the role of the family in promoting an active and healthy lifestyle for children aged 3–12 years during the COVID-19 pandemic in the Qassim region in light of Saudi Arabia’s Vision 2030 program. The following research questions can facilitate the achievement of this aim:

1. What is the degree of family’s knowledge and awareness about the COVID-19 virus and preventive measures?
2. What is the degree to which the family promotes their child’s active and healthy lifestyles?

The following sub-questions were used to answer this question:

a. Is there a relationship between the child’s development stages and the child’s degree of PA during the quarantine period? What type of relationship? What role does the family play in promoting the child’s PA?
b. Is there a relationship between the child’s development stages and the child’s healthy diet degree during the quarantine period? What type of relationship? What role does the family have in encouraging a child to follow a healthy diet?
c. Is there a relationship between the child’s development stages and the child’s distance learning degree during the quarantine period? What type of relationship? What role does the family play in promoting a child’s distance education?
d. Is there a relationship between the child’s development stages and the child’s use of electronic devices during the quarantine period? What type of relationship? What role does the family have in monitoring a child’s use of electronic devices?
e. Is there a relationship between the child’s development stages and the child’s sleep quality during the quarantine period? What type of relationship? What role does the family play in encouraging a child’s healthy sleeping habits?
f. Is there a relationship between the child’s development stages and child tension and fear degree during the quarantine period? What type of relationship? What role does the family have in promoting a child’s positive psychological condition?

MATERIALS AND METHODS

The study used a descriptive method via an online survey because it suited preventive measures of the COVID-19 virus and achieved the study’s objective.

Population

The study population represents the families residing in the Qassim region who have children from 3 to 12 years and who are physically healthy and not infected with the COVID-19 virus. Statistics were from the Qassim Education Department and included the number of children enrolled in educational system (Noor) databases at the kindergarten and primary school ($N = 158,019$) for the academic year 2019–2020 (Ministry of Education, 2021). The required sample size is 383 children based on the Thompson (2012, p. 56) equation, where $Z$: confidence level at 95% = 1.96; $d$: error proportion = .05; $p$: probability = .50.

Sample

The sample included 320 physically healthy children in the Qassim region reported by parents to be negative for COVID-19. The parents selected one child as a representative sample of an active and healthy lifestyle in the family. If there was another child distinguished by a different lifestyle, then the parent could use the online survey a second time to report on that child; we measured the average number of children in the same family aged 3 to 12 years ($M = 1.99$, $SD = 0.90$). As a result, based on Thompson’s equation, the children’s lifestyle models collected by the parents’ responses are greater than the required sample size 383.

The questionnaire link was published from May 10 to May 23, 2020, through social media (Facebook, Snapchat, Instagram, Twitter, and WhatsApp). All participants voluntarily participated in the study. Ethical approval for this study was obtained from Regional Research Ethics Committee at Ministry of Health—Qassim Province that is registered at the National Committee of Bioethics (NCBE) at King Abdulaziz City for Science and Technology, KSA (APPROVAL NUMBER/ 4854–5-1443). Table S1 in supplemental materials shows a description of the study sample.

Designing the questionnaire’s axes and their items

The axes and their items are defined as follows: demographic information, the family’s knowledge and awareness degree about the COVID-19 virus and preventive measures (four items), and the child’s active, healthy lifestyle (35 items).

1. The first axis: Demographic information:

   • Essential information about the child (five statements).
   • Essential information about the family (nine statements).
2. The second axis: The family’s knowledge and awareness degree about the COVID-19 virus and preventive measures (four statements).

3. The third axis: The child’s active, healthy lifestyle degree (35 statements) distributed as follows:
   4. The child’s PA degree during the quarantine period (10 statements).
   5. The child’s healthy diet degree during the quarantine period (10 statements).
   6. The child’s distance learning degree during the quarantine period (3 statements).
   7. The child’s using electronic devices degree during the quarantine period (three statements).
   8. The child’s sleep quality degree during the quarantine period (four statements)
   9. The child’s tension and fear degree during the quarantine period (five statements).

   Every item was formulated as multiple-choice according to its goal. These were arranged from highest to lowest according to the best practice in an active, healthy lifestyle for children. Therefore, the first selection is the best, and it is the highest coding in the SPSS 25. As an example, a 3-point Likert scale was used to answer Question 7 of Table 1 (“Did the child continue to exercise during the holy month of Ramadan?”): (3) yes, regularly, (2) yes, intermittently, and (1) do not exercise. Additionally, for Item 3 in Table 1 (“How many times does the family and child exercise a week?”), four responses were designed according to a 4-point Likert scale: (4) more than three times, (3) 2–3 times a week, (2) once a week, and (1) do not exercise. Further, Question 2 in Table 4 asks, “How much time does your child spend on their phone daily?” Five responses were designed using a 5-point Likert scale as follows: (5) up to 1 hour, (4) from 1 to 2 hours, (3) from 2 to 3 hours, (2) she/he is free to use it all the time, and (1) she/he has not a mobile phone. In Table S2 in supplemental materials, the parents’ response was interpreted in terms of its weighted mean based on its Likert scale (Pimentel, 2010).

**Validity and reliability of the questionnaire**

**Content validity**

Five experts holding PhDs in their field of specialization reviewed the questionnaire: three specializing in sports science and physical activity, one in psychology, and another in sociology. After receiving the questionnaire in its initial form, most of the experts suggested removing six items that dealt with the child’s lifestyle prior to the COVID-19 pandemic to take into account the study time frame; in addition, they suggested modifying several items. The final questionnaire became 50 items (Hays & Revicki, 2005).

**Internal consistency validity**

Google Forms was used to design the online questionnaire. It was applied to a pilot sample \(n = 30\) from the Qassim region via the responses of parents from May 1–7, 2020. Table S3 in the supplemental materials shows the correlation \(R\) and significance level \(p\) between every item and its axis.

Given that the items are not scaled the same within each axis, the raw scores were converted into standardized \(z\) scores (Clark-Carter, 2005). The Pearson correlation coefficient was calculated between each item and its axis. Table S3 in the supplemental materials ensures the consistency validity of the item with its axis where \(r(28) = 0.60:0.68, p < .01\) for Items 17, 18, 19, 22, 31, 35, 36, and 37; these are a positive moderate correlation. The remaining items were \(r(28) = 0.69:0.89, p < .01\), which is a strong positive correlation (Schober et al., 2018).
| Statement                                                                 | Response          | Early childhood | Middle childhood | Late childhood | $df$ | $\chi^2$ | $p$  | $n$  | $SD$ | $M$  | %   | Result                  |
|--------------------------------------------------------------------------|-------------------|-----------------|------------------|---------------|------|---------|------|------|------|------|-----|-------------------------|
| Is there a suitable place in the home to exercise during the quarantine period? |
| Yes                                                                      | 65               | 79              | 117              | 2             | 2.13 | .05    | 0.32 | 81.56 | 261   | 1.82 | Yes                     |
| No                                                                       | 20               | 17              | 22               | .35           | 59   | .18    | 0.39 | 18.44 | Yes               |
| Do you encourage the child to exercise at home during the quarantine period? |
| Yes                                                                      | 73               | 89              | 120              | 2             | 2.76 | .13    | 0.32 | 88.75 | Yes               |
| No                                                                       | 12               | 7               | 19               | .25           | 36   | .11    | 0.32 | 11.25 | Yes               |
| How many times does the family and child exercise a week?                 |
| More than three times                                                    | 29               | 32              | 42               | 6             | 8.66 | .19    | 0.32 | 34.40 | Yes               |
| 2–3 times a week                                                         | 35               | 37              | 57               | 19            |      |        |      | 40.30 | Yes               |
| Once a week                                                              | 6                | 19              | 22               | 41            |      |        |      | 12.80 | Yes               |
| Do not exercise                                                          | 15               | 8               | 18               | 40            |      |        |      | 12.50 | Yes               |
| How long does the child take to do exercises in one training session?    |
| 45 minutes or more                                                        | 8                | 12              | 18               | 6             | 7.65 | .13    | 0.32 | 13.40 | Yes               |
| About 30 minutes                                                         | 34               | 34              | 61               | 26            | 132  | .99    | 0.32 | 41.30 | Yes               |
| Less than 30 minutes                                                     | 30               | 43              | 42               | 108           |      |        |      | 33.80 | Yes               |
| Do not exercise                                                          | 13               | 7               | 18               | 37            |      |        |      | 11.60 | Yes               |
| Who is presenting the training session?                                  |
| Use a sports app or follow a sports TV program                           | 33               | 35              | 43               | 6             | 114  | .34    | 0.76 | 35.60 | Yes               |
| A family member                                                          | 43               | 54              | 80               | 177           |      |        |      | 55.30 | Yes               |
| Varied, irregular PA                                                     | 2                | 3               | 10               | 13            |      |        |      | 4.10  | Yes               |
| Do not exercise                                                          | 7                | 4               | 6                | 16            |      |        |      | 5.00  | Yes               |
| Does the family have sports equipment and devices (treadmill, stationary bike, dumbbells, etc.)? |
| Yes                                                                      | 36               | 51              | 74               | 4             | 162  | .22    | 0.74 | 2.34  | Yes               |
| No                                                                       | 36               | 26              | 45               | 104           |      |        |      | 32.50 | Yes               |
| Create sports tools from home                                            | 13               | 19              | 20               | 54            |      |        |      | 16.90 | Yes               |
| Did the child continue to exercise during the holy month of Ramadan?      |
| Yes, regularly                                                           | 21               | 22              | 30               | 4             | 80   | .31    | 0.63 | 25.00 | Yes, intermittently |
| Yes, intermittently                                                      | 50               | 58              | 86               | 189           |      |        |      | 59.10 | Yes, intermittently |

(Continues)
Reliability

Cronbach’s alpha is based on standardized items and is used because the questionnaire items are not scaled similarly (Gliem & Gliem, 2003). Table S4 in the supplemental materials shows that the values of Cronbach’s alpha based on standardized items ranged between .84 and .94, which are greater than .7 and indicate good reliability (Taber, 2018).

Statistical analysis

IBM SPSS Statistics for Windows (Version 25) was used for the following statistical analysis: frequencies, percentage (%), mean (M), standard deviation (SD), chi-square test of independence ($\chi^2$), Cronbach’s alpha (α), skewness coefficient, and Shapiro–Wilk test. The Shapiro–Wilk test showed that the p value ($p = .00$) is smaller than .05, which indicates that the data are not in a normal distribution. Hence, nonparametric statistics were used (Shapiro & Wilk, 1965).

RESULTS

Research question 1. What is the degree of family’s knowledge and awareness about the COVID-19 virus and preventive measures?

Table S5 in the supplemental materials indicates the family’s diligence in familiarizing themselves with information related to the COVID-19 virus and preventive measures necessary to reduce children’s risk. With the checkboxes question, which also included an open answer option in the second axis, the results of Table S6 in the supplemental materials clarified that 68.1% of the respondents depended on the Saudi Ministry of Health or the WHO websites to obtain the necessary information about COVID-19 and preventive measures.
These organizations represented the primary and most accurate source of information available to families. In addition, 19.4% depended on TV channels and official daily newspapers, which have high credibility sources; 12.5% relied on sources that may be inaccurate such as social media, relatives, and friends. Consequently, 87.5% of the respondents depended on official and highly reliable sources to obtain information about COVID-19, confirming the results of Table S5.

**Research question 2. What is the degree to which the family promotes their child’s active and healthy lifestyles?**

T. Armstrong (2019) suggested that childhood is divided into three stages: early childhood (ages 3–5), middle childhood (ages 6–8 years), and late childhood (ages 9–11 years). Each stage has cognitive, physical, psychological, and social characteristics that represent the child’s growth and development. Next, we show results on the family’s role in supporting a child’s active healthy lifestyle according to the characteristics of the child’s development stages by answering the following sub-questions:

a. Is there a relationship between the child’s development stages and the child’s degree of PA during the quarantine period? What type of relationship? What role does the family play in promoting the child’s PA? A chi-square test of independence was performed to examine the following hypothesis: The child’s development stages and the child’s PA degree during the quarantine period are dependent.

A chi-square test of independence was performed to examine the association between the child’s development stages and the child’s PA degree during the quarantine period. The $\chi^2$ value ranged between (4, $n = 320) = 0.31, p = .99$, and (6, $n = 320) = 8.66, p = .19$. Thus, we cannot reject the null hypothesis; there was no statistically significant association between the child’s development stages and the child’s PA degree during the quarantine period.

Table 1 shows that 81.56% of the families have a suitable place in the house for practicing physical exercises, and that 88.75% of the families encourage the child to practice physical exercises. Further, 40.30% of the children practice physical exercises two to three times a week, 34.40% practice more than three times a week, 12.8% practice only once a week, and 12.50% do not practice any physical exercises. We found that 41.3% of the children practice physical exercises for 30 minutes in the training session, 33.80% practice less than 30 minutes in one training session, 13.40% practice 45 minutes or more, and 11.60% do not practice any physical exercises. In addition, 55.3% of the families depend on a family member to present the training session, and 35.60% use a sports application on a mobile phone or follow a TV sports program, and 4.10% practice varied and irregular PA; 5.00% of the children do not engage in any PA. The data show that 50.60% of the families have home sporting devices and tools, 32.50% do not have them, and 16.90% can devise alternative sporting tools from home.

The lifestyle differs in the Ramadan holy month in Muslim countries where Muslims fast from eating and drinking from dawn (Fajr’s prayer) until sunset (Maghreb’s prayer). In Ramadan, 59.10% of the children practiced PA intermittently: 25% practiced regularly, and 15.90% did not engage in any physical activities, which indicates an increase in the number of children not practicing PA. Moreover, 66.60% of children practiced physical exercise in the period between sunset (Iftar) and predawn (Suhoor) when the child was not fasting; 17.20% practiced physical exercises before sunset (Iftar) in the fasting period, and 16.30% of children did not practice any PA. Furthermore, 51.30% of the children were not affected by the quarantine period: 34.40% were positive, and 14.40% were negative.
a. Is there a relationship between the child’s development stages and the child’s healthy diet degree during the quarantine period? What type of relationship? What role does the family have in encouraging a child to follow a healthy diet? A chi-square test of independence was performed to examine the following hypothesis: The child’s development stages and the child’s healthy diet degree during the quarantine period are dependent.

A chi-square test of independence performed to examine the association between the child’s development stages and sufficient food, eating healthy food carefully, breakfast is an essential meal, eating vegetables per day, ingest natural fruits or juices per day, eating junk food, and becoming overweight or not during the quarantine period was not significant. Here, the $\chi^2$ value ranged between $(2, n = 320) = 2.70, p = .26, ns$, and $(6, n = 320) = 9.90, p = .13, ns$. Thus, we cannot reject the null hypothesis for these variables. There was no statistically significant association between the two variables.

The association between the child’s development stages and the number of meals a child consumes per day during the quarantine was significant: $\chi^2(6, n = 320) = 16.36, p = .01, \phi_{\text{Cramer}} = .16$. Figure 1 shows an inverse association between the child’s developmental stages and the family’s awareness of the child’s follow-up in terms of the number of meals a child consumes per day. According to the responses of parents, 48.5% ate meals at any time and in any quantity, and 59.1% ate two meals or less in late childhood, a percentage that exceeds the early and middle childhood stages. The association between the child’s development stages and the number of times a child drinks milk and eats dairy products per day during the quarantine was significant: $\chi^2(4, n = 320) = 15.85, p = .00, \phi_{\text{Cramer}} = .16$. Figure S1 shows that when the child reaches his or her late childhood stage, the rate of drinking milk and eating dairy products decreases. According to parents who have children in the late childhood stage, 52.9% of their children did not drink or eat dairy products, and 53.5% only drank or ate dairy products once a day. The association between the child’s development stages and the number of times a child consumes soft drinks per day during the quarantine was significant: $\chi^2(6, n = 320) = 16.41, p = .01, \phi_{\text{Cramer}} = .16$. Figure S2 shows that children in late childhood consumed soft drinks more frequently than children in early and middle childhood, with 53.6% of late childhood children drinking a soft drink three or more times per day, 53.8% twice daily, and 56% once daily.

The statistical analysis designed by Cramer and Nicewander (1979) showed Cramer’s values of $.10 > .30, .30 > .50,$ and $\leq .50$, which suggest weak, moderate, and strong associations, respectively (Cohen, 1988). These are weak associations.

Table 2 also indicates that 98.13% of the families had sufficient food during the quarantine period: 50.31% of the families were keen on healthy diet continuously, 47.5% intermittently, and 2.19% were not willing to eat healthy diet. We found that 83.13% of children always consumed breakfast as an essential meal, 13.75% consumed it sometimes, and 3.13% did not consume it; 59.4% of children ate three meals a day, 16.60% ate four meals, 13.80% ate two or less, 10.31% ate at any time in any quantity, with no fixed number of meals per day. Finally, 49.69% of the children drank milk and consumed its derivatives two to three times daily, 45.0% consumed them once per day, and 5.3% had none. We found that 31.3% of children ate fresh vegetables two to three times a day and 59.7% ate them once a day, while 9.1% did not eat them. We also found that 39.06% of the children consumed fresh fruits and juices two to three times daily and 54.69% consumed them once per day, while 6.25% did not consume them. We found that 64% of children did not eat fast food, 29% ate it once a week, 4% ate it twice a week, and 3% ate it three times and more. About 60% of children did not drink soft drinks, 23.44% drank them once a week, 8.13% of children drank them twice a week, and 8.75% drank them three times and more. A total of 52% of the children maintained their same weight during the quarantine period, 45% had a slight increase in weight, and 3% had a significant increase in weight.
a. Is there a relationship between the child’s development stages and the child’s distance learning degree during the quarantine period? What type of relationship? What role does the family play in promoting a child’s distance education? A chi-square test of independence was performed to examine the following hypothesis: The child’s development stages and the child’s distance learning degree during the quarantine period are dependent.

A chi-square test of independence performed to examine the association between the child’s development stages and the availability of smart devices and computers to enable the child to participate in distance education during the quarantine period was significant: \( \chi^2(2, n = 320) = 19.22, p = .00, \phi_{\text{Cramer}} = .24 \). It is a moderate association. In Figure S3, 45.9% of children in late childhood had smart devices and computers to participate in distance education, which was a higher percentage than those in early and middle childhood.

The association between the child’s development stages and the availability of schedule time for the child to learn and complete his or her studies and assignments during the quarantine was significant: \( \chi^2(2, n = 320) = 39.30, p = .00, \phi_{\text{Cramer}} = .35 \). It is a moderate association. According to Figure S4, 52.6% of families were interested in setting a schedule time for the child to complete his or her studies and assignments in late childhood. The association between the child development stages and the time a child spends learning per day during the quarantine was significant: \( \chi^2(4, n = 320) = 133.63, p = .00, \phi_{\text{Cramer}} = .46 \). It is a moderate association. As children progress through childhood, the time they take to learn and complete their homework increases. According to Figure 2, there were 86.2% of children in the late childhood stage, who spent 2 to 3 hours per day. It is clear from Table 3 that 90.63% of the children had computers and smartphones that enabled them to participate in distance education: 60.00% of families set

![Figure 1](https://wileyonlinelibrary.com)
### Table 2: Chi-square test and descriptive statistics for the child’s healthy diet degree during the quarantine period

| Statement                                                                 | Response                                    | Early childhood | Middle childhood | Late childhood | df | n  | $\chi^2$ | $p$ | Total % | SD | Result          |
|--------------------------------------------------------------------------|---------------------------------------------|-----------------|------------------|---------------|----|----|---------|-----|---------|----|----------------|
| Does the family have sufficient food during the quarantine period?       | Yes                                         | 83              | 96               | 135           | 2  | 314 | 1.98    | .26 | 98.13   | .14 | Yes             |
|                                                                           | No                                          | 2               | 0                | 4             | 6  | 98  | 1.88    |     |          |    |                 |
| Is the family eating healthy food carefully?                              | Yes, regularly                              | 45              | 49               | 67            | 4  | 161 | 2.48    | .43 | 50.31   | .05 | Yes, regularly |
|                                                                           | Yes, intermittently                         | 38              | 47               | 67            | 4  | 152 | 47.5    | .26 |          |    |                 |
|                                                                           | No                                          | 2               | 0                | 5             | 7  | 98  | 2.19    |     |          |    |                 |
| Breakfast is one of the essential meals that a child eats daily.          | Always                                      | 75              | 74               | 117           | 4  | 266 | 2.80    | .77 | 83.13   | .47 | Always          |
|                                                                           | Sometimes                                   | 9               | 18               | 17            | 4  | 44  | 13.75   |     |          |    |                 |
|                                                                           | Never                                       | 1               | 4                | 5             | 10 | 33  | 3.13    |     |          |    |                 |
| How many meals does the child eat per day?                               | 3 meals                                     | 62              | 59               | 69            | 6  | 161 | 3.25    | .01 | 59.4    |    | 3 meals         |
|                                                                           | 4 meals                                     | 12              | 13               | 28            | 6  | 190 | 1.04    |     |          |    |                 |
|                                                                           | Twice or less                               | 3               | 15               | 26            | 4  | 53  | 16.60   |     |          |    |                 |
|                                                                           | Eating at any time any quantity, and qualitative | 8            | 9                | 16            | 4  | 33  | 10.31   |     |          |    |                 |
| How many times does a child ingest milk and dairy products per day?       | 2–3 times a day                             | 55              | 51               | 53            | 4  | 159 | 2.40    | .00 | 49.69   | .60 | 2–3 times a day |
|                                                                           | Once                                        | 26              | 41               | 77            | 4  | 144 | 0.60    |     |          |    |                 |
|                                                                           | She/he does not ingest                      | 4               | 4                | 9             | 17 | 17  | 5.31    |     |          |    |                 |
| How many times does a child eat vegetables per day?                      | 2–3 times a day                             | 20              | 36               | 44            | 4  | 100 | 2.22    | .32 | 31.3    | .60 | Once           |
|                                                                           | Once                                        | 58              | 52               | 81            | 4  | 191 | 0.40    |     |          |    |                 |
|                                                                           | She/he does not eat                         | 7               | 8                | 14            | 4  | 29  | 9.10    |     |          |    |                 |
| How many times a week does a child ingest natural fruits or juices per day? | 2–3 times a day                             | 32              | 42               | 51            | 4  | 125 | 2.33    | .23 | 39.06   | .59 | Once           |
|                                                                           | Once                                        | 48              | 52               | 75            | 4  | 175 | 0.59    |     |          |    |                 |
|                                                                           | She/he does not ingest                      | 5               | 2                | 13            | 2  | 20  | 5.25    |     |          |    |                 |
| How many times a week does a child eat junk food (McDonald’s,             | She/he does not eat                         | 63              | 63               | 78            | 6  | 204 | 3.53    | .13 | 64.00   | .73 | She/he does not eat |
|                                                                           | Once                                        | 17              | 24               | 51            | 6  | 92  | 92.00   |     |          |    |                 |

(Continues)
a schedule for children to complete their education and homework, 52.50% of children spent 1–2 hours per day in education and completing homework, 27.20% spent 2–3 hours, and 20.30% did not study.

a. Is there a relationship between the child’s development stages and the child’s use of electronic devices during the quarantine period? What type of relationship? What role does the family have in monitoring a child’s use of electronic devices? A chi-square test of independence was performed to examine the following hypothesis: The child’s development stages and the child’s use of electronic devices during the quarantine period are dependent.

A chi-square test of independence was performed to examine the association between the child’s development stages and the time spent on their phone daily during the quarantine was not significant: $\chi^2(6, n = 320) = 10.90, p = .09, \text{ns.}$ The association between the child’s development stages and the time using their PlayStation or computer games daily during the quarantine was significant: $\chi^2(6, n = 320) = 13.64, p = .03, \phi_{\text{Cramer}} = .18.$ It is a weak association. Figure 3 shows that 64.5% of children in late childhood spent 1 to 2 hours playing electronic games, and 50% of those children were free to play it all the time. These results indicate overuse, compared with their peers in early and middle childhood.

It is clear from Table 4 that 61.9% of the parents monitored the content that their child watches on TV and the smartphone to verify suitability for their age, 33.8% monitored their children sometimes, and 4.4% never monitored their children. In addition, 32.20% of the

| Statement | Response | Early childhood | Middle childhood | Late childhood | $df$ | Total % | $M$ | $SD$ |
|-----------|----------|----------------|-----------------|---------------|------|---------|-----|------|
| Kudu, Herfy, and others)? | Twice | 3 | 6 | 5 | 29.00 | | |
| | 3 times or more | 2 | 3 | 5 | 14.00 | 14 | 3.00 |
| How many times a week does a child consume soft drinks (Pepsi, Cola, etc.)? | She/he does not drink | 64 | 59 | 68 | 6 | 191 | 3.34 | .01 |
| | Once | 12 | 21 | 42 | 75 | 99 | 23.44 |
| | Twice | 3 | 9 | 14 | 26 | 165 | 2.48 | .01 |
| | 3 times or more | 6 | 7 | 15 | 28 | 52.00 | 8.13 |
| Did the child become overweight during the quarantine period? | Same weight | 50 | 53 | 62 | 4 | 165 | 2.48 | .01 |
| | Small overweight gain | 35 | 41 | 69 | 145 | 52.00 | 2.48 | .01 |
| | Large overweight gain | 0 | 2 | 8 | 10 | 45.00 | 2.48 | .01 |

*p ≤ .05 is statistically significant. It indicates strong evidence against the null hypothesis.
FIGURE 2  The association between the child’s development stages and the time does a child spends learning per day during the quarantine period [Color figure can be viewed at wileyonlinelibrary.com]

TABLE 3 Chi-square test and descriptive statistics for the degree of the child’s distance learning degree during the quarantine period

| Statement                                                                 | Response   | Early child. | Middle child. | Late child. | df | $\chi^2$ | p   | Total | M   | SD  | Result                  |
|--------------------------------------------------------------------------|------------|--------------|---------------|-------------|----|---------|-----|-------|-----|-----|-------------------------|
| Does the child have a smartphone, computer, and the internet for distance learning? | Yes        | 67           | 90            | 133         | 2  | 19.22   | .00a| 290   | 1.91| 0.29| Yes                     |
|                                                                          | No         | 18           | 6             | 6           |    |         |     | 30    | 9.38|                 |
| Is there a schedule for the child to complete his or her studies and assignments? | Yes        | 27           | 64            | 101         | 2  | 39.30   | .00a| 192   | 1.6 | 0.49| Yes                     |
|                                                                          | No         | 58           | 32            | 38          |    |         |     | 128   | 4.00|                 |
| How much time does a child spend on their studies and assignments daily through distance learning? | From 2 to 3 hours | 0           | 12            | 75          | 4  | 133.63  | .00a| 87    | 2.07| 0.69| From 1 to 2 hours      |
|                                                                          | From 1 to 2 hours | 44          | 76            | 48          |    |         |     | 168   | 5.20|                 |
|                                                                          | Not taught | 41           | 8             | 16          |    |         |     | 65    | 20.30|                 |

*a p ≤ .05 is statistically significant. It indicates strong evidence against the null hypothesis.*
children used the smartphone 1–2 hours daily, 24.10% used it freely without being restricted by a specific time, 18.80% used it for up to 1 hour, 16.60% used it 2–3 hours daily, and 8.40% of the children did not have a smartphone. Furthermore, 35% of the children did not have PlayStation or computer games, 23.80% of the children played PlayStation or computer games 1–2 hours a day, 18.4% used it for up to 1 hour, 13.80% used it freely without restrictions, and 9.10% used it 2–3 hours a day.

a. Is there a relationship between the child’s development stages and the child’s sleep quality during the quarantine period? What type of relationship? What role does the family play in encouraging a child’s healthy sleeping habits? A chi-square test of independence was performed to examine the following hypothesis: The child’s development stages and the child sleep quality during the quarantine period are dependent.

A chi-square test of independence was performed to examine the association between the child’s development stages and the specific sleep times during the quarantine period (Table 5).

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**TABLE 4** Chi-square test and descriptive statistics for the degree of the child’s use of electronic devices during the quarantine period

| Statement                                    | Response                    | Early childhood | Middle childhood | Late childhood | df | Total n | M    | SD   | Result  |
|----------------------------------------------|-----------------------------|-----------------|------------------|----------------|----|---------|------|------|---------|
| Do you monitor the information that a child gets from (TV, mobile phone, social media …) to make sure of their suitability for her/him? | Always                      | 56              | 64               | 78             | 4  | 198     | 61.90| 0.58 | Always  |
|                                              | Sometimes                   | 27              | 31               | 50             | 4  | 108     | 33.80|      |         |
|                                              | Never                       | 2               | 1                | 11             | 4  | 14      | 4.40 |      |         |
| How much time does a child spend on their phone daily? | Up to 1 hour               | 21              | 22               | 17             | 6  | 60      | 18.8 |      | 2.50    |
|                                              | From 1 to 2 hours           | 23              | 27               | 53             | 6  | 103     | 32.20|      | 1.09    |
|                                              | From 2 to 3 hours           | 9               | 18               | 26             | 9  | 53      | 16.60|      |         |
|                                              | She/he is free to use it all the time | 17            | 23               | 37             | 103| 77      | 24.10|      |         |
|                                              | She/he has not a mobile phone|                |                  |                |    | 27      | 8.40 |      |         |
| How much time does a child spend on their PlayStation or computer games daily? | Up to 1 hour               | 16              | 21               | 22             | 6  | 59      | 18.40|      | 2.72    |
|                                              | From 1 to 2 hours           | 9               | 18               | 49             | 6  | 76      | 23.80|      | 1.09    |
|                                              | From 2 to 3 hours           | 4               | 13               | 12             | 49 | 29      | 9.10 |      |         |
|                                              | She/he is free to use it all the time | 9              | 13               | 22             | 49 | 44      | 13.80|      |         |
|                                              | She/he has not a PlayStation or computer games |                |                  |                |    | 112     | 35.00|      |         |

*p ≤ .05 is statistically significant. It indicates strong evidence against the null hypothesis.
The relationship was significant: \( \chi^2(2, n = 320) = 12.98, p = .00, \phi_{\text{Cramer}} = .20 \). It is a weak association. It is evident from Figure S5 that 55.6% of children in late childhood lacked specific sleeping hours during the quarantine period, in contrast to children in early and middle childhood. The association between the child’s development stages and the average hours of child sleep per day during the quarantine was not significant: \( \chi^2(6, n = 320) = 12.50, p = .05, ns \). The association between the child’s development stages and child sleep time during the quarantine was significant: \( \chi^2(6, n = 320) = 16.24, p = .01, \phi_{\text{Cramer}} = .16 \). It is a weak association. Based on Figure 4, it is clear that 58% of parents of children in late childhood did not care when they slept during quarantine, and allowed them to choose the time that suited them, compared to parents of kids in early and middle childhood. The association between the child’s development stages and the sleep disorders and nightmares during the quarantine was not significant: \( \chi^2(6, n = 320) = 9.69, p = .14, ns \).

It is clear from Table 5 that 63.44% of children adhere to specific sleep times. Furthermore, 71.25% of the children slept about 7 hours or more, 25% slept from 5–7 hours, 2.19% of the families did not pay attention to know how many hours their children slept, and 1.56% slept less than 5 hours daily. Regarding bedtimes, 47.81% of the children went to sleep after midnight, 21.25% went to sleep from 10:00 p.m. to 12:00 a.m., 15.63% the parents did not care about bedtime, and 15.31% went to sleep from 9:00 p.m. to 10:00 p.m. We found that 74.06% of the children did not suffer from sleep disturbances and nightmares, 20.00% sometimes suffer, 4.38% of the families did not care about the sleep condition of their children, and 1.56% suffer from sleep disturbances and nightmares.

a. Is there a relationship between the child’s development stages and child tension and fear degree during the quarantine period? What type of relationship? What role does the family
Table S7 in the supplemental materials shows that a chi-square test of independence was performed to examine the association between the child’s development stages and child tension and fear degree during the quarantine period; the relationship was not significant. The \( \chi^2 \) ranged between \( (2, n = 320) = 1.47, p = .83, ns \), and \( (6, n = 320) = 4.63, p = .10, ns \). Thus, we cannot reject the null hypothesis for these variables.

It is clear from Table S7 that 59.4% of the children were not affected by the quarantine in terms of their psychological state, 27.5% were affected positively, and 13.1% were negatively affected. We found that 70.9% of families helped their children to keep calm and make them more friendly and kind, 27.5% cared sometimes, and 1.6% of the families did not care. We found 60.3% of the families had a relaxation and entertainment plan, 30.6% plan sometimes, and 9.1% did not care. We found 89.69% of the families were not affected by the

### TABLE 5 Chi-square test and descriptive statistics for sleep quality of the child during the quarantine period

| Statement                                                                 | Response | Early childhood | Middle childhood | Late childhood | \( df^2 \) | \( n \) | \( \% \) | \( M \) |
|---------------------------------------------------------------------------|----------|----------------|------------------|---------------|-----------|-------|---------|--------|
| Is the child committed to sleeping at specific times during the quarantine period? | Yes      | 65             | 64               | 74            | 2         | 203   | 63.44   | 1.63   |
|                                                                           | No       | 20             | 32               | 65            | 12.89     | 117   | 36.56   | Yes    |
| What are the average hours the child sleeps per night during the quarantine period? | 7 hours or more | 68            | 73               | 87            | 6         | 228   | 71.25   | 3.65   |
|                                                                           | 5–7 hours | 13            | 20               | 47            | 12.5      | 80    | 25.00   |        |
|                                                                           | Less than 5 hours | 1             | 1                | 3             | .05       | 5     | 1.56    |        |
|                                                                           | I do not know | 3             | 2                | 2             |           | 7     | 2.19    |        |
| When does the child sleep during the quarantine period?                    | From 9:00 a.m. to 10:00 p.m. | 13            | 9                | 27            | 6         | 49    | 15.31   | 2.36   |
|                                                                           | From 10:00 p.m. to 12:00 a.m. | 17            | 30               | 21            | 16.24     | 68    | 21.25   | After midnight |
|                                                                           | After midnight | 46           | 45               | 62            | 21.25     | 153   | 47.81   |        |
|                                                                           | I don’t care, “The child sleeps when he or she wants” | 9            | 12               | 29            | 15.63     | 50    | 15.63   |        |
| Does the child suffer from sleep disorders or nightmares during the quarantine? | No       | 60            | 76               | 101           | 6         | 237   | 74.06   | 3.64   |
|                                                                           | Sometimes | 18            | 18               | 28            | 9.693     | 64    | 20.00   | No     |
|                                                                           | Yes       | 0             | 2                | 3             | .14       | 5     | 1.56    |        |
|                                                                           | I do not know | 7             | 0                | 7             |           | 14    | 4.38    |        |

\( ^* p \leq .05 \) is statistically significant. It indicates strong evidence against the null hypothesis.
quarantine in terms of family disputes, but 10.31% had family disputes from the quarantine. About 58% of the children were not afraid of being infected with the COVID-19 virus and 42.2% were afraid.

DISCUSSION

The results of the current study show that families in the Qassim region have knowledge and awareness of necessary information on the COVID-19 virus, which reflects the efforts of the Ministry of Health and the success of their awareness campaigns during quarantine periods. These results differ from the previous studies conducted on the spread of epidemics and diseases in Saudi Arabia, such as the study by Balkhy et al. (2010) on the swine flu pandemic, which showed a decrease in the level of knowledge about the disease and the preventive measures related to it. In contrast, the current study agreed with the Almofada et al. (2020) study, which was conducted during the COVID-19 pandemic on 6000 respondents in Saudi Arabia: 84.93% of the population were aware of the COVID-19 virus. This development in the results in the current study reflects the growth in the mechanisms used by the Saudi government in light of Saudi Vision 2030 to educate families and implement preventive measures decisively with the commitment of families to those measures out of awareness and care for their children.

Among the most prominent results of this study are related to lower levels of children practicing physical activity in the home during the quarantine period: Only 34.40% of the respondent families were keen to practice physical exercises more than three times per week; for 13.40%, the average time of each training session was 45 minutes or more—this is recommended by the WHO (2021) for children from 5 to 17 years. Indeed, 60 minutes or more of moderate physical

FIGURE 4 The association between the child’s development stages and child sleep time during the quarantine period [Color figure can be viewed at wileyonlinelibrary.com]
activity should be carried out daily, including exercises to strengthen muscles and bones at least three times a week; this was confirmed by the Saudi Ministry of Health (n.d.).

Families depend on a family member to provide the exercise session, which confirms the role of the family in promoting children’s regular physical activity under their supervision. Parents should be aware of WHO guidelines for how children practice physical activity and guide them on how to present the training session. These results are consistent with the Korcz et al. (2020) study, which indicated the need for community-based PA programs designed for whole families to meet the recommended PA of children and also to develop an active lifestyle among families. Al-Hazzaa and AlMarzooqi (2018) indicated that there are many initiatives aimed at promoting PA in Saudi Arabia. However, the common feature of these is that they were fragmented, short-term attempts, and lacked a coordinating body and evaluation of their results.

Regarding the results about a healthy diet for children, we noted the availability of adequate food for the family in light of economic conditions and the low-income level of most families during the quarantine period. Moreover, the families tried to consume healthy food and avoid excessive fast-food intake and drinking sugary drinks. These results reflect the role of the “Agility” initiative that was implemented by Education and Health Ministries in the schools in light of Saudi Vision 2030, which concentrates on teaching children how to prepare a healthy food dish, calculating calories, and making competitions between children about the best healthy food dish. That is reflected positively in supporting the children’s and families’ awareness about the healthy diet (Al-Omari et al., 2020). In this context, the Saudi government obligated all restaurants to write the calorie intake of the meals so that the purchaser can determine the appropriate calories per day.

During the quarantine period, the family became an essential partner and played the role of the school at home, and became responsible for the success of the teaching and learning processes of the child and the achievement of learning outcomes through the Ministry of Education platforms. The current study indicated that 90.63% of children have computers, smartphones, and the internet that enables them to complete their learning. The child’s commitment to a learning timetable varied according to the childhood age stage. The results highlighted the responsibility of children in late childhood to schedule, and specified long hours for learning per day because of the advanced curriculum. This was related to the child obtaining the primary school certificate and moving to the intermediate stage of education.

The current study results indicate the family’s awareness of following up on the content that the child is watching through electronic devices to verify the suitability of this content for the child’s development stage. On the other side, the results reflect the children’s excessive use of electronic devices, especially if we add time to it allocated for use in distance education.

The WHO (2021) confirmed that a child aged 2 to 4 years has a screen time no more than 60 minutes during the day. Tremblay et al. (2011) indicated that children aged 5 to 11 years and young adults aged 12 to 17 years should reduce their time spent on sedentary activities. This can be achieved by determining the recreational screen time not to exceed 2 hours per day. Therefore, we should be raising awareness about the risks associated with spending excessive time on screen-based activities as a priority when developing intervention strategies that aim to adjust the time children spend in sedentary activities.

The results indicate that 71.25% of the children slept about 7 hours or more throughout a day. K. L. Armstrong et al. (1994) and Blair et al. (2012) indicated that the average number of hours of sleep per day for children 1 to 3 years is 12–14 hours, from 3 to 5 years is 11–13 hours, 5 to 10 years is 10–11 hours, and 10 to 17 years is 8–9 hours; this is consistent with the guidelines of the WHO (2021). Of course, these rates do not reflect a guideline for the ideal sleep pattern, but the sleeping habits of children in Saudi society need more study to be compatible with global standards.

One of the most noticeable results is that 47.81% of the children slept after midnight, and 21.25% slept from 10:00 p.m. to midnight, especially children in late childhood. Therefore,
parents should set a bedtime that enables the child to benefit from the most significant hours of sleep during the night and thus to wake up early with vigor and vitality. Adams et al. (2020) confirmed a link between early bedtime and total sleep for a longer time. The availability of a sleep time routine was associated with longer sleep at night.

The current study indicates that 86.90% of children did not have a harmful psychological condition according to the quarantine period. Families helped their children to keep calm and remain reassured and kind. Having a relaxation and entertainment plan was found in only 10.31% of the families. The quarantine period led to disputes among them. We found that 57.8% of the children are not afraid of becoming ill with COVID-19 but 42.2% feel worried, which reflects the family’s decisive role in providing appropriate psychological support to their children during the quarantine period.

CONCLUSIONS

This paper provides a brief overview of the family role in promoting an active healthy lifestyle for children aged 3–12 years during the COVID-19 epidemic period in the Qassim region in light of Saudi Arabia Vision 2030. The results showed the awareness and knowledge of the family with necessary information about the COVID-19 virus. The family has a role in promoting the active and healthy lifestyle of the child. The results showed a low level of child practice for PA inside the home during the quarantine period. The results indicated the availability of adequate food for the family during the quarantine. Families are aware that the child should consume a healthy, well-balanced diet. The study results also showed the family’s useful role as a partner with the school in helping the child to complete his or her studies through distance education platforms during the quarantine period, which is provided by the Ministry of Education.

The results also showed the excessive use of electronic devices by children—especially if we added to them the time allocated for their use in the purpose of distance education. Children’s sleep quality is impacted most by delaying bedtime to midnight or after. The results also showed the family’s awareness of providing a safe environment for the child and reducing the fear and tension in the environment. Entertainment plans that enhance the psychological environment of the child are useful. Thus, family awareness programs should be developed with the guidelines and standards of the World Health Organization and the Saudi Ministry of Health, especially concerning the child’s PA, sleep habits, and the use of electronic devices.

LIMITATIONS

The research aims and questions can consider several other aspects such as the association of the educational, economic level, the marital status of the parents; their effects on the child’s active and healthy lifestyle; and comparisons between boys and girls and attention to those issues after returning to the usual lifestyle. This study relied on an online survey according to the conditions of quarantine and social separation. Other tools can be used in the usual lifestyle such as interviews, observation, and anthropometric measurements for children to obtain more profound results. Moreover, the study sample can expand in Saudi society.

IMPLICATIONS

Programs should be established to increase family awareness of the guidelines of the World Health Organization and the Saudi Ministry of Health regarding the child’s physical activity, sleep habits, and the use of electronic devices.
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