### 4.1.3 Participants’ Demographics Data

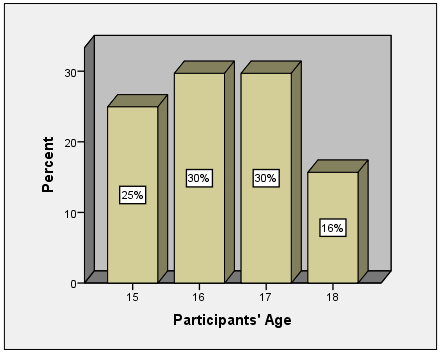
The study was conducted on Omani Female Adolescents aged from 15 to 18 years of age (*M* = 16.4 years old, *SD* = 1.0). A range of 4 years (15–18 years old) was targeted in the study and it is clearly noted that 60% of the participants belong to the 16 and 17year old age group. The lowest percentage of participants is in the 18-year-old age group (16%) (Figure 4.1).

Figure (4.1) Proportions (%) of Age/ Year of Omani Adolescent Girls

### 4.1.4 Anthropometric Measurement of Omani Adolescent Girls

The purpose of this study was to assess the BMI categories among Omani adolescent girls. Weight and height were measured, and BMI was calculated and plotted in the WHO z-score chart for girls aged from 5–19 years of age for a total of 421 participants from the two schools. According to the BMI chart, the adolescent BMI cut-offs are: normal weight is <1SD, over weight is >1SD, obese is >2SD, and underweight is < 2SD (WHO 2014b). The study participants aged from15 to 18 years, and their average BMI values are (*M* = 23.4 kg/m2, *SD* = 6.3), age is (*M* = 16.4 years, *SD* = 1.0), weight is (*M* = 57.8 Kg, *SD* = 16.0), and height is (*M* = 160 cm, *SD* = 0.50), the results were illustrated in table (4.3).

Table (4.3) Participants’ Characteristics

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Number | Mean | SD |
| BMI (kg/m2) | 421 | 23.4 | 6.3 |
| Age/ year | 421 | 16.4 | 1.0 |
| Weight/ Kg | 421 | 57.8 | 16.0 |
| Height/ cm | 421 | 160 | 50 |

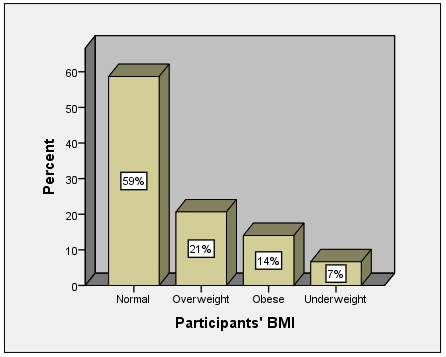
The participants were categorized by BMI into four groups: normal weight, obese, overweight, and underweight. The BMI of the Omani adolescent girls who completed the online ATLS questionnaire ranged from 14 kg/m2 to 48 kg/m2 (*M* = 23.4 kg/m2, *SD* = 6.3), which revealed that there were participants who were underweight, of normal weight, overweight, and participants who were obese. The WHO z-score chart was used to classify the BMI of each participant in the current study. Among the participants who completed the online ATLS questionnaire, the majority were of normal weight (n = 247, 59%), only (n = 28, 7%) were underweight and the others were either overweight (n = 87, 21%) or obese (n = 59, 14%), in terms of BMI (Figure 4.2).

Figure (4.2): Proportions (%) of BMI of Omani Adolescent Girls

The aim of this study was, to examine the association between normal weight, obese and overweight adolescents and, physical activities, sedentary behaviours and dietary habits, and to identify the differences or similarities between these adolescents. Therefore, participants with underweight (n = 28, 7%) were excluded from the following analysis. Additionally, the participants were divided into two groups (normal weight and overweight/ obese).

As shown in the table below (4.4) most of the overweight/ obese (33%) participants are in the 17-year-old group, and the least number of normal weight (17%) and overweight/ obese (12%) participants are in the 18-year-old age group.

Table (4.4) Proportions (%) of BMI in the Studied Age Groups

|  |  |  |  |
| --- | --- | --- | --- |
|  | \*BMI | |  |
| Age | Normal | Overweight/ Obese | Total |
| 15 years | 61(25%) | 38 (26%) | 99 (25%) |
| 16 years | 73 (30%) | 42 (29%) | 115 (29%) |
| 17 years | 72 (29%) | 48 (33%) | 120 (31%) |
| 18 years | 41 (17%) | 18 (12%) | 59 (15%) |
| Total | 247 (100%) | 146 (100%) | 393 (100%) |

\*BMI= Body Mass Index

### 4.1.5 Online ATLS Questionnaire Analysis

The purpose of the current study was to assess the lifestyle characteristics (physical activity level, sedentary behaviours, and eating habits) of female Omani adolescents by using an online ATLS questionnaire. It aimed to record different types of physical activities and the frequency of practicing such activities, to record the time spent on sitting or sleeping and screen time, to record the type of food eaten, how often it was consumed, and to identify and determine the differences or similarities between the various lifestyles amongst obese or overweight adolescents, as well as normal weight adolescents. To achieve these aims, a total of 393 participants (95% response) aged from 15 to 18 years of age completed the online ATLS questionnaire.

The online ATLS questionnaire includes a variety of questions including Likert scale responses and general open-ended questions. The overall ATLS questionnaire is divided into 3 parts. The analysis was also developed that way and was focused on assessing the variety of lifestyles associated with BMI of the Omani adolescent girls.

### 4.1.6 Descriptive analysis – Physical Activity/Inactivity

The purpose of this study is to identify the activities or habits that contribute to the weight increase of Omani adolescent girls. The data regarding physical activities was given a special importance while collecting the responses. The collected data included several questions that reflect the physical activity behaviour of the Omani adolescent girls. Although the internal consistency has already been tested, descriptive statistical analysis of the data provides a better view of the data. Moreover, the measurement of Kurtosis and Skewness shows whether the data was normally distributed or not. Normally distributed data has a ‘bell shaped curve’ and provides better results of different statistical analyses (Huck 2008).

The analysis includes the calculation of the mean, standard deviation, skewness and kurtosis of physical activity or inactivity variables. Analysis of the time spent on these physical activities was also carried out. Some of the studied data variables were positively skewed, such as swimming, cycling, self-defence sports, and body building exercise. This means that, the difference between the skewness value and standard error was >1.96, and the data were right-tailed (Heavey 2015). Therefore, the prevalence of physical activities among participants was described as percentage and medians (IQR) to better measure the data and these findings are displayed in the following tables. Table (4.5) shows the highest prevalence of moderate intensity physical activity practiced five times or more a week among Omani adolescent girls was household work (68%). The second highest activity was playing volleyball, table tennis, bowling (50%) tasks, and the least frequent activity was swimming (13%).

Table (4.5) Proportion (%) Moderate Intensive Physical Activity

|  |  |  |
| --- | --- | --- |
|  | ≥ 5 times/ week | % |
| 4. Walk? | 88 | 22 |
| 12. Swim? | 51 | 13 |
| 14. Moderate intensity sports (Volleyball, table tennis, bowling)? | 198 | 50 |
| 22. House hold work? | 267 | 68 |

N=393

The proportion of vigorous intensive physical activities practiced five times or more a week. The most practised activity was running (13%) and the least was cycling (0.5%), the results shown in table (4.6).

Table (4.6) Proportion (%) Vigorous Intensive Physical Activity per week (N=393)

|  |  |  |
| --- | --- | --- |
|  | ≥ 5 times/ week | % |
| 8. Jog or run? | 51 | 13 |
| 10. Cycle? | 2 | 0.5 |
| 16.High intensity sports (basketball, handball, netball) | 11 | 3 |
| 18. Self-defence sports? | 13 | 3 |
| 20. Strength training? | 8 | 2 |

The most frequently observed category of the participants’ walking pace was moderate (n = 73, 83%) (Table 4.7).

Table (4.7) Proportions (%) of Walking Pace

|  |  |  |
| --- | --- | --- |
| Variable | N | % |
| Fast | 9 | 10 |
| Moderate | 73 | 83 |
| Slow | 6 | 7 |
| Total | 88 | 100 |

### 

Table (4.8) revels the results of Independent Sample Test were not significant, (*p* = 0.25), indicating the differences in moderate intensity sports among the levels of BMI were all similar. The main effect, BMI, was not significant at the 95% confidence level, showing there were no significant differences of moderate intensity sports among BMI groups.

### 4.1.7 Differences in Physical Activities between Adolescent Girls in Different BMI Groups

Table (4.8) Moderate Intensity Sports: Comparison between BMI Groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | N | Mean (Minutes/day) | SD | P. Value |
| Normal | 244 | 26.4 | 27 | 0.25 |
| Overweight/ Obese | 144 | 28.3 | 24.5 |

\*SD= Standard Deviation

The crosstab analysis table (4.9) illustrates that the Pearson Chi-Square of the significance value was *p* = 0.75, which was greater than 0.05. Thus, there was no statistically significant difference between the proportions of participants in different BMI groups, and the recommended time spent on practicing daily moderate intensity sports. Table (4.10) shows that most of (90%) female overweight/ obese spent less than the recommended time (one hour/ day) playing moderate intensity sports on a daily basis.

Table (4.9) Reported Daily Moderate Intensity Sports Compared with Recommended 60 Minutes by NICE (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Moderate Intensive Sport** | | **Total** | **Chi-square** |
| **<60 Min/ day** | **>=60 Min/day** |
| **Normal** | 216 (88%) | 26 (12%) | 244 (100%) | .75 |
| **Overweight/ Obese** | 129 (90%) | 15 (10%) | 144 (100%) |
| **Total** | 343 (88%) | 45 (12%) | 388 (100%) |

Table (4.10) shows the result of the sample t-test that came up significant, (p=< 0.001) suggesting that moderate-vigorous intensity sport is unlikely to have been produced by a distribution with a mean of 60 minutes per day. The true mean (*M* = 27 minutes/day, *SD* = 26) of the distribution of moderate intensity sports is most likely lower than 60 minutes per day.

Table (4.10) One Sample t-Test for Moderately Intensive Sports

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | M  (Mins)/Day | SD | Recommended minutes/ day (NICE 2015) | *t* | P |
| Moderate Intensity Sports | 27 | 26 | 60 | –24.8 | < 0.001 |

M=Mean, SD= Standard Deviation

Table (4.11) shows that the results of the Independent Sample Test were not significant, (*p* = 0.37), indicating that the differences in vigorous intensity sports among the levels of BMI were all similar. The main effect, BMI was not significant at the 95% confidence level, showing there were no significant differences in vigorous intensity sports by BMI groups.

Table (4.11) Vigorous Intensity Sports: Comparison between BMI Groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | N | Mean  (Minutes/day) | SD | p Value |
| Normal | 240 | 11.6 | 16.0 | 0.37 |
| Overweight/ Obese | 140 | 11.8 | 14.5 |

M=Mean, SD= Standard Deviation

The crosstab analysis table (4.9) illustrates that the Pearson Chi-Square of the significance value was *p* = 0.88, which was greater than 0.05. Thus, there was no statistically significant difference between the proportions of participants in different BMI groups, and the recommended time spent on practicing daily vigorous intensity sports. Table (4.10) shows that most of (90%) female overweight/ obese spent less than the recommended time (one hour/ day) playing vigorous intensity sports on a daily basis.

Table (4.12) Reported Daily Vigorous Intensity Sports Compared with Recommended 60 Minutes by NICE (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Vigorous Intensive Sport** | | **Total** | **Chi-square** |
| **<60 Min/ day** | **>=60 Min/day** |
| **Normal** | 237 (99%) | 3 (1%) | 240 (100%) | .88 |
| **Overweight/ Obese** | 138 (1%) | 2 (1%) | 140 (100%) |
| **Total** | 343 (99%) | 5 (1%) | 380 (100%) |

Table (4.13) shows that the result of the one sample t-test was significant, (p=< 0.001) suggesting that vigorous intensity physical activity is unlikely to have been produced by a distribution with a mean of 60 minutes per day. The true mean (*M* = 11.3 minutes/day, *SD* = 15.6) of the distribution of vigorous intensity sports is most likely lower than 60 minutes per day.

Table (4.13) One Sample *t*-Test for Vigorous Intensity Sports

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | M  (Mins)/Day | SD | Recommended minutes/ day (NICE 2015) | *t* | *p* |
| Vigorous Intensity Sports | 11.3 | 15.6 | 60 | –60.9 | < 0.001 |

Figure (4.3) shows that the majority of participants like to take part in physical activity whether at home or at school, which was 58% and 34%, respectively. Parks, recreation centre and public areas were not popular among the Omani adolescent girls for participating in physical activities.

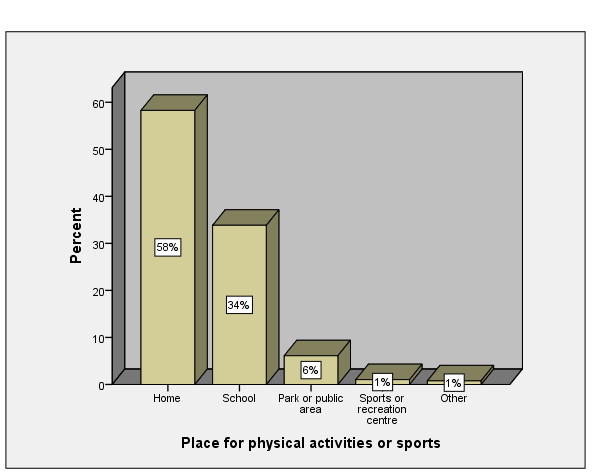


Figure (4.3) Place for Physical Activity or Sports

At the time of taking part in any kind of physical activity, participants indicted that the company was also very important. As Figure (4.4) suggests, the most popular option (33%) was to exercise alone. The next in preference was with relatives (25%), while 23% girls preferred to exercise with their friends. Parents were the least preferred company (5%) while being physically active.

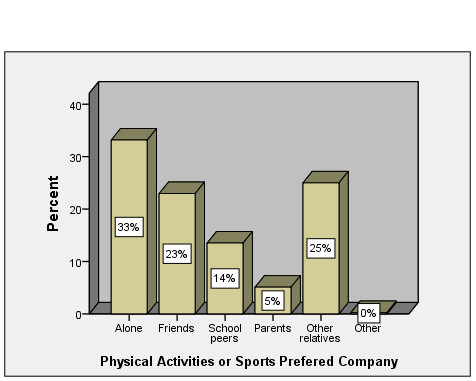


Figure (4.4) Physical Activities Preferred in Whose Company

Approximately 36% of the study participants reported that they did not have a timetable or preferred time in the day for physical activities (Figure 4.5). However, 25% girls indicated their preference for mornings, while 15% preferred afternoons. The least preferred was evenings, at 5%.

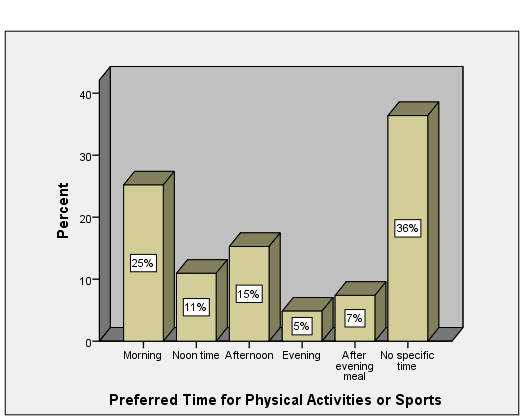


Figure (4.5) Preferred Time for Physical Activities

Adolescents undertake physical activities for different purposes, which in turn might have a significant impact on the overall effect of such activities. Around 49% of the Omani adolescent girls can be considered ‘health conscious’ as they revealed that they were engaging in physical activities only for the purpose of staying in good health (Figure 4.6). Another 36% wanted to lose weight. Social factors and sports competitions, at 2% each, were the least chosen purposes for engaging into physical activities.

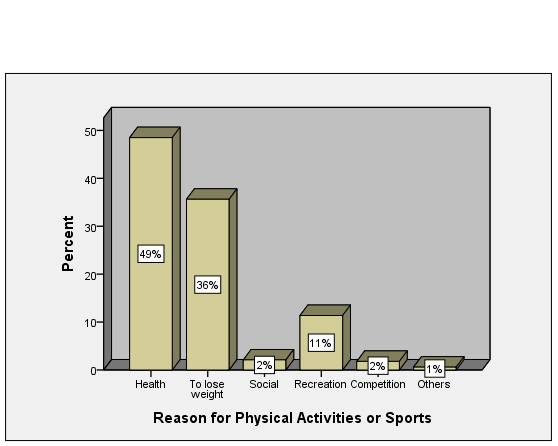


Figure (4.6) Reason for Participating in Physical Activities

The analysis regarding the reasons for not engaging in physical activities are presented in the following figure (4.7). Although the importance of engaging in physical activities was well-recognised, some of the study participants were not engaging in physical activities. When they were asked why, the majority (68%) responded that they did not have sufficient time (Figure 4.7). Another important reason advanced included inadequate facility, as well as a personal lack of interest. Only a few replied that physical activities were not important to them or cited health reasons for a lack of engagement, 6% and 4%, respectively.

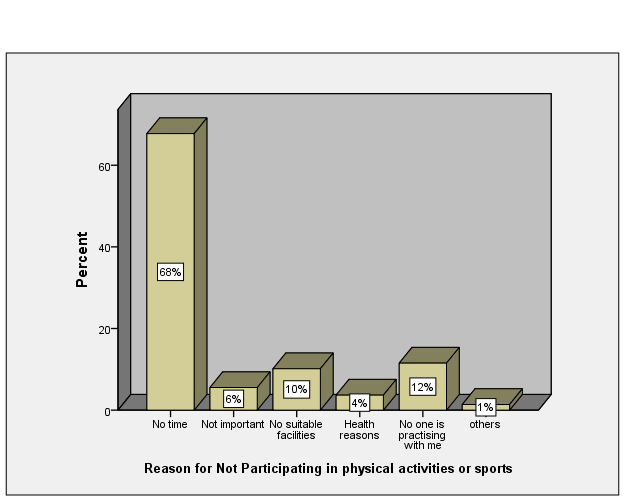


Figure (4.7) Reasons for Not Participating in Physical Activities

### 4.1.8 Descriptive analysis: Sedentary Behaviours

As the study was concerned with assessing the lifestyle of the Omani adolescent girls, it was important to identify and analyse their sedentary behaviours, that might contribute to increased body weight in Omani adolescent girls in addition to determining the differences or similarities between different sedentary behaviours among Omani adolescent girls in different BMI groups. The questionnaire includes different questions regarding the sedentary behaviours of the participants. To achieve such an objective, data was collected and analysed that regarded the time spent sitting in front of the TV, DVD, video, computer, Internet and the duration of sleep per day.

Table (4.15) Frequency of Sedentary Behaviour per Day

|  |  |  |  |
| --- | --- | --- | --- |
|  | N | Mean (Hour/day) | SD |
| 29) Watch TV, DVD/Video week days? | 363 | 2.2 | 1.7 |
| 30) Watch TV, DVD/Video weekends? | 371 | 2.0 | 1.8 |
| 31) Using computer, internet/ week days? | 396 | 3.0 | 1.9 |
| 32) Using computer, internet/  Weekends? | 377 | 2.6 | 1.8 |
| 33) Sleep/ week days?  15–17 years  18 years | 355  66 | 6.0  6.0 | 2  2 |
| 34) Sleep/ weekends?  15–17 years  18 years | 355  66 | 8.0  7.0 | 2  2 |

Table (4.15) shows the mean hours spent watching TV, DVD, video and using the computer during weekends and week days at about 2–3 hours per day. The girls slept about 6 hours during weekdays and 8 hours during weekends. The skewness and kurtosis were showing that most of the values were falling within one standard deviation of the mean, indicating the data as normally distributed (Heavey 2015).

### 4.1.9 Differences in Lifestyle (sedentary behaviour) between Omani Adolescent Girls in Different BMI Groups

Table (4.16) Watching TV during Week Days: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean (Hour/Day) | SD | Post-hoc | P. Value |
| Normal | 247 | 2.0 | 1.5 | Normal< Underweight | 0.012 |
| Overweight | 87 | 2.4 | 2.0 |  |
| Obese | 59 | 2.2 | 2.0 |  |
| Underweight | 28 | 3.0 | 2.1 | Underweight>Normal |

The results of the one-way ANOVA (Table 4.16) were significant, (p = 0.012), indicating there were significant differences in the time spent watching TV and videos during week days among the levels of BMI. The eta squared was 0.03, indicating that there was a small difference between the BMI groups in time spent watching TV, DVD, and video during week days. However, there were no significant differences in time spent watching TV, DVD, and video during weekends among the participants in different of BMI groups, with *p*=>0.5.

To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted to determine all significant effects. For the main effect of BMI, the mean amount of time spent watching TV, DVD, and video during week days for the normal weight participants (M = 2 hour/day, SD = 1.5) was significantly lower than for underweight (M = 3 hour/day, SD = 2.1).

Table (4.17) Using Computer and Internet during week days: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Hour/Day) | SD | Post-hoc | P. Value |
| Normal | 247 | 2.7 | 1.9 | Normal<Overweight | 0.002 |
| Overweight | 87 | 3.5 | 2.0 | Overweight>Normal |
| Obese | 59 | 3.5 | 1.8 | Obese>Normal |
| Underweight | 28 | 3.1 | 1.9 |  |

The findings of the one-way ANOVA were significant, (p = 0.002), indicating there were considerable differences in the time daily spent on the computer and internet during weekdays, among the levels of BMI (Table 4.17). The eta squared was 0.03, indicating a small difference between the BMI groups in the time spent on the computer and internet during weekdays. The homogeneity of the variance assumption requires that the variance of the dependent variable is approximately equal in each group.

To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of daily uses of the computer during week days for the normal weight participants (M = 2.7 hour/ day, SD = 1.9) was significantly lower than for those who were obese (M = 3.5 hour/ day, SD = 1.8) and significantly lower than for those who were overweight (M = 3.5 hour/ day, SD = 2).

However, the significance of the one-way ANOVA indicates that there were no considerable differences in daily uses of the computer and internet during weekends among the participants in different BMI groups.

Table (4.18) Screen Time during Weekdays: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Hour/ Day) | SD | Post-hoc | *P*. Value |
| Normal | 247 | 4.7 | 3.0 | Normal<Overweight | 0.002 |
| Overweight | 87 | 6.0 | 3.0 | Overweight>  Normal |
| Obese | 59 | 5.8 | 3.3 |  |
| Underweight | 28 | 6.1 | 3.2 |  |

The results of the ANOVA (Table 4.18) were significant, (p = 0.002), indicating there were considerable differences in screen time (watching TV, DVD, video, and computer) during weekdays among the levels of BMI. The eta squared was 0.04, indicating that there was a small difference between the BMI groups in screen time during weekdays. To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of screen time during weekdays for Normal (M = 4.7 hour/day, SD = 3) was significantly lower than for Overweight (M = 6 hour/day, SD = 3).

Additionally, 97% of the girls spent more than two hours sitting in front of digital screens (TV, DVD, video, and computer) during the weekdays.

Table (4.19) Screen Time during Weekends: Comparison between BMI Groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | N | Mean  (Hour/ Day) | SD | P. Value |
| Normal | 245 | 4.6 | 3.2 | 0.550 |
| Overweight | 87 | 5.0 | 3.2 |
| Obese | 59 | 4.3 | 3.0 |
| Underweight | 28 | 4.9 | 3.6 |

Table (4.19) reveals the results of the ANOVA were not significant, (p = 0.550), indicating the differences in screen time (watching TV, DVD, video, and computer) during weekends among the levels of BMI were all similar (Table 4.20). The main effect, BMI, was not significant at the 95% confidence level, p = 0.550, indicating there were no significant differences of screen time during weekends, among the BMI levels. As a result, post-hoc comparisons were not conducted.

Table (4.20) Reported Screen Time during Weekdays Compared with Recommended 2 Hours by NICE (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Screen Time (Weekdays) | |  | Chi-square |
| BMI | ≤2 (Hour/ Day) | >2 (Hour/ Day) | Total |
| Normal | 8 (3%) | 239 (97%) | 247(100%) | 0.041 |
| Overweight | 0 (0%) | 87 (100%) | 87 (100%) |
| Obese | 2 (3%) | 57 (97%) | 59 (100%) |
| Underweight | 3 (11%) | 25 (89%) | 28 (100%) |
| Total | 13 (3%) | 408 (97%) | 421 (100%) |

Table (4.20) reveals that the vast majority (97%) of the total sample of the female Omani adolescent in all BMI groups had more than the recommended daily two hours of screen time during weekdays. All overweight participants had more than 2 hours screen time during the weekdays. The Pearson Chi-Square calculated value was 8.252 (*p* = 0.041), which indicates statistically significant difference between the percentages of participants in different BMI groups and their time spent watching screens during the weekdays.

Table (4.21) Reported Screen Time during Weekends Compared with   
Recommended Two Hours by NICE (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Screen Time Weekends | |  | Chi-square |
| BMI | ≤ 2 (Hour/Day) | >2 (Hour/Day) | Total |
| Normal | 139 (56%) | 108 (44%) | 247(100%) | >0.5 |
| Overweight | 36 (41%) | 51 (59%) | 87 (100%) |
| Obese | 32 (54%) | 27 (46%) | 59 (100%) |
| Underweight | 13 (46%) | 15 (54%) | 28 (100%) |
| Total | 220 (52%) | 201 (48%) | 421 (100%) |

The crosstab analysis table (4.21) illustrates the Pearson Chi-Square value was 6.199 and the significance value was *p* = 0.102, higher than 0.05. This indicates that there was no statistical significant difference between the percentages of participants in different BMI groups, and time they spent in front of screens during weekends.

Table (4.22) One Sample t-Test for Screen Time

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Mean  (Hour/Day) | SD | Recommended Hours/ day (NICE 2015) | *t* | *p* |
| Screen Time (Weekdays) | 5.2 | 3.1 | 2 | 21.6 | <0.001 |
| Screen Time (Weekends) | 4.6 | 3.2 | 2 | 16.8 | < 0.001 |

Table (4.22) indicates the result of the one sample t-test was significant, (p < 0.001) in respect of the screen time (watching TV, DVD, video and computer) during weekdays and weekends. The true means of the distributions of daily screen time during weekdays (*M* = 5.2 hour/ day, *SD* = 3.1) and weekends (*M* = 4.6 hour/ day, *SD* = 3.2) are likely to be more than 2 hours per day.

Table (4.23) Paired Samples T-Test for Screen Time

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Weekdays Screen Time  (Hour/ day) | | Weekends Screen Time  (Hour/ day) | |  |  |
| M | SD | M | SD | t | *p* |
| 4.81 | 1.61 | 2.31 | 1.60 | 25.95 | < 0.001 |

The result of the paired sample t-test (Table 4.23) was significant, p=<0.001, suggesting that the true difference in the means of screen time during the weekdays and weekends was significantly different from zero. The mean of screen time during the weekdays (M = 4.81 hour/ day, *SD* = 1.61) was significantly higher than the mean screen time during the weekends (M = 2.1 hour/ day, *SD* = 1.60).

### 4.1.10 Differences in Sleeping Duration between 18-year-old Omani Adolescent Girls in Different BMI Groups

The National Sleep Foundation (NSF) for the adolescent aged 18-25 years old, has recommended an average of eight hours a day of sleep and nine hours for 14-17 years old (NSF 2015a).

Table (4.24) One Sample t-Test for Sleeping Hours for 18-Year-Olds

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Mean  (Hour/Day) | SD | Recommended Hour/ day (NSF 2015a) | *t* | *p* |
| Sleeping Hours  (Weekdays) | 6 | 2 | 8 | –9.75 | < 0.001 |
| Sleeping Hours  (Weekends) | 7 | 2 | 8 | –4.47 | < 0.001 |

Table (4.24) shows the result of the one sample t-test was significant, (p < 0.001) suggesting lower-than normal sleeping hours for 18 years old Omani girls during weekdays and weekends. The true mean of the distribution of sleeping hours during weekdays (*M* = 6 hour/ day, SD = 2) and weekends (*M* = 7 hour/ day, SD = 2) are most likely lower than 8 hours/ day.

Table (4.25) Reported Sleeping Duration during weekdays Compared with the Recommended Average of 8 hours by NSF (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | Sleeping Hours/ weekdays | | Total | Chi-square  *P* |
| <8  (Hour/Day) | ≥ 8 (Hour/Day) |
| Normal | 36 (88%) | 5 (12%) | 41 (100%) | *0*.010 |
| Overweight | 4 (40%) | 6 (60%) | 10 (100%) |
| Obese | 6 (75%) | 2 (25%) | 8 (100%) |
| Underweight | 6 (86%) | 1 (14%) | 7 (100%) |
| Total | 52 (79%) | 14 (21%) | 66 (100%) |

The table (4.25) reveals that, the majority of the 18-year-old, female Omani adolescents in different BMI groups (79%) slept less than the recommended 8 hours during the weekdays. The Pearson Chi-Square significance value was *p* = 0.010, suggesting a significant difference between the percentages of participants in different BMI groups and the recommended weekday-sleeping hours of 8.

Table (4.26) Reported Sleeping Duration during weekends Compared with Recommended Average of 8 hours by NSF (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | Sleeping Hours/ weekends | | Total | Chi-square  *P* |
| <8 (Hour/Day) | ≥ 8 (Hour/Day) |
| Normal | 23 (56%) | 18 (44%) | 41 (100%) | 0.012 |
| Overweight | 1 (10%) | 9 (90%) | 10 (100%) |
| Obese | 5 (62%) | 3 (37%) | 8 (100%) |
| Underweight | 6 (86%) | 1 (14%) | 7 (100%) |
| Total | 35 (53%) | 31(47%) | 66 (100%) |

Table (4.26) shows that, 53% of the18 year old subjects responded that they slept less than the recommended 8 hours during the weekends. In the detailed tabular analysis, it was noted that, of the total sample size, most of the underweight adolescent (86%) had less sleeping hours than other adolescents in other BMI groups (Table 4.26). Additionally, the Pearson Chi-Square significance value was *P* = 0.012. This indicates that there was a statistical significant difference between the percentages of participants in different BMI groups and the recommended time spent on sleeping during weekends.

Table (4.27) Sleeping Hours during week days, 18 years Old: Comparison between BMI Groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | N | Mean  (Hour/Day) | SD | P. Value |
| Normal | 41 | 6.0 | 1.6 | >.05 |
| Overweight | 10 | 7.0 | 2.1 |
| Obese | 8 | 6.0 | 1.4 |
| Underweight | 7 | 5.0 | 2.0 |

The results of the one-way ANOVA were not significant, (p = 0.323), indicating the differences in sleeping hours for the 18-year-old Omani girls during weekdays among the levels of BMI were similar (Table 4.27). The main effect, BMI, was not significant at the 95% confidence level, (p = .323), indicating there were no significant differences of sleeping hours during weekdays by BMI levels.

Table (4.28) Sleeping Hours during weekends, 18-year-olds: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Hour/Day) | SD | Post-hoc | P. Value |
| Normal | 41 | 7 | 2 | Normal<Overweight | 0.006 |
| Overweight | 10 | 9 | 1 | Overweight>Underweight |
| Obese | 8 | 7 | 2 |  |
| Underweight | 7 | 6 | 2 |  |

The results of the one-way ANOVA (Table 4.29) were significant, (p = 0.006), indicating significant differences in weekend sleeping hours among our 18-year-old participants, depending on their BMI. The eta squared was 0.18, indicating BMI explains approximately 18% of the variance in sleeping hours during weekends.

Tukey pairwise comparisons were conducted for all significant effects. For the main effect of BMI, the mean of sleeping hours during weekends for normal participants (M = 7 hour/day, SD = 2) was significantly smaller than for overweight participants (M = 9 hour/day, SD = 1). For the main effect of BMI, the mean of sleeping hours during weekends for overweight (M = 9 hour/day, SD = 1) was significantly larger than for underweight (M = 6 hour/day, SD = 2).

Table (4.29) Paired Samples *t*-Test for the Difference between Sleeping Hours during Weekdays and Weekends

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Weekdays Sleep  (Hour/ day) | | Weekends Sleep  (Hour/ day) | |  |  |
| M | SD | M | SD | *t* | *p* |
| 6 | 2 | 7 | 2 | –4.92 | < 0.001 |

The results of the paired samples t-test (Table 4.29) was significant, p=< 0.001, suggesting that the true difference in the means of sleep during weekdays of participants aged 18 years and sleep during weekends was significantly different from zero. The mean of sleep during weekdays (M = 6 hour/day, *SD* = 2) was significantly lower than the mean of sleep during weekends (M = 7 hour/day, *SD* = 2).

### 4.1.11 Differences in Sleeping Hours between Omani Adolescent Girls aged 15–17 years in Different BMI Groups

Table (4.30) Sleeping Duration (15–17 years) Compared with Recommended Average of 9 hours of sleep by NSF (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | Sleeping Hours/ weekends | | Total | Chi-square  *P* |
| <9 (Hour/Day) | ≥ 9 (Hour/Day) |
| Normal | 128 (62%) | 78 (38%) | 206 (100%) | 0.025 |
| Overweight | 39 (51%) | 38 (49%) | 77 (100%) |
| Obese | 33 (65%) | 18 (35%) | 51 (100%) |
| Underweight | 7 (33%) | 14 (67%) | 21 (100%) |
| Total | 207 (58%) | 148 (42%) | 355 (100%) |

Table (4.30) indicates that 58% of the 15–17-year-old subjects responded that they slept less than the recommended 9 hours during the weekends. Tabular analysis revealed that most obese 15–17-year-olds (65%) slept less than their counterparts in other BMI groups (Table 4.30). With the Pearson Chi-Square significance at *p* = 0.025, there was a statistically significant difference between the percentages of participants in different BMI groups in the 15–17 age group, between their actual hours of weekend sleep and the recommended hours.

Table (4.31) Sleeping Duration (15-17 years old) Compared with Recommended Average of 9 hours of sleep by NSF (2015)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | Sleeping Hours/ weekdays | | Total | Chi-square  *P* |
| <9 (Hour/Day) | ≥9 (Hour/Day) |
| Normal | 190 (92%) | 16 (8%) | 206 (100%) | >0.05 |
| Overweight | 75 (97%) | 2 (3%) | 77 (100%) |
| Obese | 46 (90%) | 5 (10%) | 51 (100%) |
| Underweight | 17 (81%) | 4 (19%) | 21 (100%) |
| Total | 328 (92%) | 27 (8%) | 355 (100%) |

Table (4.31) shows that 92% of the 15–17-year-old girls in different BMI groups slept less than the recommended 9 hours during the weekdays. In the detailed tabular analysis it was noted that nearly all (97%) overweight girls slept less than those in other BMI groups (Table 4.31). However, there was no statistically significant difference between the percentages of participants in different BMI groups and the recommended sleeping time during weekdays.

Table (4.32) One Sample t-Test for Sleeping Hours for 15–17-Year-Olds

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Mean  (Hour/Day) | SD | Recommended Hour/ day (NSF 2015a) | t | P. value |
| Sleeping Hours  (Weekdays) | 6 | 2 | 9 | –31.27 | < 0.001 |
| Sleeping Hours  (Weekends) | 8 | 2 | 9 | –13.27 | < 0.001 |

Note. Degrees of Freedom for the t-statistic = 354.

Table (4.32) illustrates the result of the one sample t-test, suggesting a significant, (p < 0.001) difference in the sleeping hours for the 15–17-year-old girls during weekdays and weekends. The true means of the distribution of sleeping hours during weekdays (*M* = 6 hours/ day, *SD* = 2) and weekends (*M* = 8 hours/ day, *SD* = 2) are most likely lower than 9 hours/ day.

Table (4.33) Sleeping Hours during week days, 15–17-year-olds: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Hour/Day) | SD | Post-hoc | P. Value |
| Normal | 206 | 6.3 | 2.0 | Normal>Overweight | 0.001 |
| Overweight | 77 | 5.7 | 1.0 | Overweight< Underweight |
| Obese | 51 | 6.1 | 2.0 | Obese< Underweight |
| Underweight | 21 | 7.3 | 2.0 |  |

The results of the ANOVA were significant, (p=< 0.001), indicating there were significant differences in sleeping hours for 15–17 years old Omani teenage girls during weekdays among the levels of BMI (Table 4.33). The eta squared was 0.05 indicating BMI explains approximately 5% of the variance in sleeping hours during weekdays.

To further examine the differences among the variables, t-tests were calculated between each pair of measurements. Tukey pairwise comparisons were conducted for all significant effects. For the main effect of BMI, the mean of sleeping hours during weekdays for normal weight girls (M = 6.3 hour/day, SD = 2) was significantly higher than for overweight girls (M = 5.7 hour/day, SD = 1). For the main effect of BMI, the mean of sleeping hours during weekdays for obese subjects (M = 6.1 hour/day, SD = 2) was significantly lower than for their underweight counterparts (M = 7.3 hour/day, SD = 2). For the main effect of BMI, the mean of sleeping hours during weekdays for overweight girls (M = 5.7 hour/day, SD = 1) was significantly lower than for those who were underweight (M = 7.3 hour/day, SD = 2) (Table 4.33).

Table (4.34) Sleeping Hours during weekends for 15–17-year-olds:  
 Comparison between BMI Groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BMI | N | Mean  (Hour/Day) | SD | P. Value |
| Normal | 206 | 8.0 | 2.0 | 0.034 |
| Overweight | 77 | 8.0 | 2.0 |
| Obese | 51 | 7.0 | 2.0 |
| Underweight | 21 | 8.0 | 1.0 |

The results of the ANOVA were significant, (p = 0.034), indicating there were significant differences in sleeping hours for 15–17-year-old Omani girls during weekends among the levels of BMI (Table 4.34). The eta squared was 0.02, indicating BMI explaining approximately 2% of the variance in sleeping hours during weekends.

Table (4.35) Paired Samples T-Test for the Difference between Sleeping Hours during Weekdays and Weekends

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Weekdays Sleep  (Hour/ day) | | Weekends Sleep  (Hour/ day) | |  |  |
| M | SD | M | SD | *t* | *p* |
| 6 | 2 | 8 | 2 | –14.62 | < 0.001 |

The results of the paired samples t-test (Table 4.35) was significant, p < 0.001, suggesting that the true difference in the means of sleep of the participants aged from 15–17 years of age during weekdays and during weekends was significantly different from zero. The mean of sleep during weekdays (M = 6 hour/day, *SD* = 2) was significantly lower than the mean of sleep during weekends (M = 8 hour/day, *SD* = 2).

Table (4.36) Association between BMI (kg/m2) and Sedentary Behaviours

|  |  |  |
| --- | --- | --- |
| Variables | N | BMI (kg/m2)  Pearson’s correlation coefficient |
| Daily Screen Time (weekdays) | 421 | *r* = 0.163, *p* = < 0.001 |
| Sleep Duration(weekdays) | 355 | r = –0.12, *p* = 0.02 |

There was a significant positive relationship between the participants’ BMIand daily screen time during weekdays at r = 0.163, *p*=< 0.001 which is illustrated in the table (4.36) above. This indicates that as the participants’ BMI increases, daily screen time tends to increase.

There was a significant negative relationship between the participants’ BMIand daily sleep durationfor 15–17-year-old Omani adolescent girls during weekdays at r = –0.12, *p* = 0.02 which is illustrated in the table (4.36) above. This indicates that as the participants’ BMI increases, sleep duration tends to decrease.

### 4.1.12 Descriptive Statistics: Dietary Habits

Dietary habits refer to the eating habits that are related to foods and beverages consumed on a regular basis. The dietary habits are one of the most important and influential factors that determine an individual’s BMI. The objective of this study was to assess eating habits that might contribute to an increase in Omani female adolescent body weight. An additional objective was to record the type of food eaten, such as fruits, vegetables, dairy products, cakes, fast food, soft and energy drinks, and how often these were consumed, as well as to identify and quantify the differences and similarities between the dietary habits of the obese, overweight, normal weight and underweight of Omani adolescent girls. To achieve these objectives, the participants were asked several questions regarding their food habits and the kinds of foods they prefer and usually consume, as well as the frequency of eating those foods. According to the normality test, all the data had positive skewness, and thus right tailed.

Table (4.37) Frequency of Consumption Different Food Intakes per Week

|  |  |  |  |
| --- | --- | --- | --- |
|  | N | Mean (Times/Week) | SD |
| 35) Breakfast consumption? | 421 | 4.0 | 3.0 |
| 36) Soft drinks)? | 421 | 3.4 | 2.4 |
| 37) Vegetable consumption? | 421 | 5.0 | 2.5 |
| 38) Fruit consumption? | 421 | 4.5 | 2.4 |
| 39) Dairy products & milk? | 421 | 4.0 | 2.4 |
| 40) Fast food? | 421 | 2.0 | 1.7 |
| 41) French fries /potato chips? | 421 | 4.1 | 2.0 |
| 42) Cakes & biscuits? | 421 | 4.0 | 1.9 |
| 43) Sweets and & chocolates? | 421 | 4.0 | 2.2 |
| 44) Energy drinks? | 421 | 0.42 | 1.1 |

Table (4.37) indicates descriptive analysis regarding the dietary food habits of Omani adolescent girls. The mean value of most of the dietary food intake was between 3–5 times per week. However, in case of fast food and energy drinks, the mean responses were 2 and 0.42 times per week, respectively.

### 4.1.13 Differences in Food Habits between Omani Adolescent Girls in Different BMI Groups

Table (4.38) Proportion (%) of Omani Adolescent Girls Exceeding the Cut-off Values for Food Intake

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables | Normal weight | Over weight | Obese | Underweight | *P.* Value |
| Daily Consumption of Breakfast | 97  (39%) | 13  (15%) | 9  (15%) | 8  (29%) | <0.001 |
| Daily Consumption of Vegetable | 110  (45%) | 39  (45%) | 26  (44%) | 11  (39%) | 0.96 |
| Daily Consumption of Fruits | 71  (29%) | 23  (26%) | 18  (31%) | 8  (29%) | 0.002 |
| Soft Drinks  >3 times/week | 116  (47%) | 30  (35%) | 23  (39%) | 15  (54%) | 0.12 |
| Dairy Products  >3 time/week | 130  (53%) | 47  (54%) | 26  (44%) | 16  (57%) | 0.57 |
| Fast Food  >3 time/week | 38  (15%) | 26  (30%) | 25  (42%) | 1  (4%) | <0.001 |
| French Fries & Crisps  >3 time/week | 118  (48%) | 71  (82%) | 43  (73%) | 17  (61%) | <0.001 |
| Sweets >3 times/week | 105  (43%) | 47  (54%) | 36  (61%) | 14  (50%) | 0.04 |
| Cake/ Doughnuts  >3 times/week | 103  (42%) | 64  (74%) | 42  (71%) | 12  (43%) | <0.001 |
| Energy Drinks  >3 times/week | 13  (5%) | 3  (3%) | 2  (3%) | 1  (4%) | 0.85 |

Note: *p* value tested by Chi-square test

Table (4.38) displays the proportion of Omani adolescent girls in different BMI groups who exceeded the normal cut-off values of the consumption of different foods. Daily breakfast consumption was higher among adolescents of normal BMI (at 39%) than adolescents in the other BMI groups, so it can be concluded that there is a statistical difference between the participants of *p* = <0.001.

Daily consumption of vegetables was almost equal among adolescents in the normal weight, overweight and obese groups, with the least consumed by the underweight adolescents. There was no statistically significant difference between the groups, *p* = 0.97.

Additionally, the proportion of milk and other dairy products consumed more than three times a week was high among the underweight adolescents (57%), while normal weight and overweight adolescents, consumed these less, at 44%, 53% and 54% respectively, *P* = 0.57.

Regarding daily consumption of fruit, obese female participants (31%) consumed more than their normal weight, overweight and underweight schoolmates did (the latter were 29%, 26% and 29% respectively), *p* = 0.002.

Obese participants were significantly more likely to consume fast foods (42%) and sweets (61%) more than thrice weekly than those in the other BMI groups, which were *p* = <.001 and *p* = .04 respectively.

Overweight participants had higher consumption of cakes (74%) and french-fries (82%) more than three times a week compared to those in the other BMI groups (*p* = < .001).

Table (4.39) Consuming Breakfast: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Times/Week) | SD | Post-hoc | P. Value |
| Normal | 247 | 4.2 | 2.7 | Normal> Overweight | < 0.001 |
| Overweight | 87 | 2.9 | 2.4 | Overweight<  Normal |
| Obese | 59 | 2.8 | 2.6 | Obese< Normal |
| Underweight | 28 | 3.3 | 2.8 |  |

The results of the one-way ANOVA (Table 4.39) were significant, p < 0.001, suggesting significant differences in breakfast consumption among the levels of BMI. The eta squared was 0.05, indicating a small difference between the BMI groups in weekly breakfast consumption. To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of weekly consumption of breakfast for normal weight participants (M = 4.2 times/ week, SD = 2.7) was significantly higher than for obese (M = 2.8 times/ week, SD = 2.6) and significantly higher than for overweight (M = 2.9 times/ week, SD = 2.4).

Table (4.40) Consuming Fast Food: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Times/Week) | SD | Post-hoc | P. Value |
| Normal | 247 | 1.9 | 1.5 | Normal<Obese  Normal<Overweight | < 0.001 |
| Overweight | 87 | 2.5 | 1.7 | Overweight>  Normal |
| Obese | 59 | 3.1 | 1.9 | Obese>Underweight |
| Underweight | 28 | 1.5 | 1.1 | Underweight <Overweight |

There were significant (p=< 0.001) differences in consumption of fast food between different levels of BMI, as shown by the one-way ANOVA (Table 4.40). The eta squared was 0.07, indicating medium difference between the BMI groups in the weekly consumption of fast food. To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of weekly consumption of fast food for the normal weight participants (M = 1.9 times/ week, SD = 1.5) was significantly lower than for obese (M = 3.1 times/ week, SD = 1.9) and significantly lower than for overweight (M = 2.5 times/ week, SD = 1.7). For the main effect of BMI, the mean of fast food consumption for obese (M = 3.1, SD = 1.9) was significantly higher than for underweight (M = 1.5 times/ week, SD = 1.1). For the main effect of BMI, the mean of fast food consumption for overweight (M = 2.5, SD = 1.7) was significantly higher than for underweight (M = 1.5 times/ week, SD = 1.1).

Table (4.41) Consumption of French Fries & Potato Chips: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Times/Week) | SD | Post-hoc | P. Value |
| Normal | 247 | 3.8 | 2.1 | Normal<Obese  Normal<Overweight | < 0.001 |
| Overweight | 87 | 4.6 | 1.4 | Overweight>  Normal |
| Obese | 59 | 4.7 | 1.6 | Obese> Normal |
| Underweight | 28 | 3.9 | 2.3 |  |

The results of the one-way ANOVA (Table 4.41) were significant, p < 0.001, evidencing that there were significant differences in consumption of French fries among the levels of BMI. The eta squared was 0.04, indicating a small difference between the BMI groups in weekly consumption of French fries. To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of weekly French fries consumption for the normal weight participants (M = 3.8 times/ week, SD = 2.1) was significantly lower than for obese (M = 4.7 times/ week, SD = 1.6) and significantly lower than for overweight (M = 4.6 times/ week, SD = 1.0).

Table (4.42) Consumption of Cakes, Biscuits and Donuts: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Times/Week) | SD | Post-hoc | P. Value |
| Normal | 247 | 3.4 | 2.0 | Normal<Obese  Normal<Overweight | < 0.001 |
| Overweight | 87 | 4.4 | 1.6 | Overweight>  Normal |
| Obese | 59 | 4.5 | 1.4 | Obese> Normal |
| Underweight | 28 | 3.7 | 2.2 |  |

The results of the one-way ANOVA (Table 4.42) showed significant differences (p < 0.001) in weekly consumption of cakes, biscuits, and donuts between girls in different BMI groups, while eta squared, at 0.07, suggested medium differences. To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of weekly consumption of cakes, biscuits, and donuts for the normal weight participants (M = 3.4 times/ week, SD = 2.0) was significantly lower than for obese (M = 4.5 times/ week, SD = 1.4) and was significantly lower than for overweight (M = 4.4 times/ week, SD = 1.6).

Table (4.43) Consumption of Fresh Fruits: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Times/Week) | SD | Post-hoc | P. Value |
| Normal | 247 | 4.8 | 2.4 | Normal>Overweight | < 0.001 |
| Overweight | 87 | 3.8 | 2.4 | Overweight<  Normal |
| Obese | 59 | 4.3 | 2.3 |  |
| Underweight | 28 | 3.4 | 2.6 | Underweight<Normal |

The results of the one-way ANOVA (Table 4.43) were significant, p=< 0.001, revealing there were significant differences in weekly consumption of fresh fruits between the levels of BMI. The eta squared was 0.04, indicating that there was a small difference between the BMI groups in consumption of fresh fruits.

To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of weekly consumption of fresh fruits for the normal weight participants (M = 4.8 times/ week, SD = 2.4) was significantly higher than for overweight (M = 3.8 times/ week, SD = 2.4) and higher than for underweight (M = 3.4 times/ week, SD = 2.6).

Table (4.44) Consumption of Sweets and Chocolate: Comparison between BMI Groups

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| BMI | N | Mean  (Times/Week) | SD | Post-hoc | P. Value |
| Normal | 247 | 3.5 | 2.2 | Normal<Obese | 0.043 |
| Overweight | 87 | 3.8 | 2.1 |  |
| Obese | 59 | 4.4 | 2.1 | Obese>Normal |
| Underweight | 28 | 4.1 | 2.4 |  |

The results of the one-way ANOVA (Table 4.44) were significant, p = 0.043, indicating there were significant differences in weekly consumption of sweets and chocolate between the levels of BMI. The eta squared was 0.02 indicating a small difference between the BMI groups.

To further examine the differences among the variables, post-hoc comparisons using Tukey pairwise were conducted for all significant effects. For the main effect of BMI, the mean of weekly consumption of sweets and chocolate for the normal weight participants (M = 3.5 times/ week, SD = 2.2) was significantly lower than for obese (M = 4.4 times/ week, SD = 2.1).

However, the one-way ANOVA revealed that there were no significant differences between the consumption of energy drinks, soft drinks, fresh vegetables and fresh dairy products among the participants in different BMI groups, with *p* = >0.5.

Table (4.45) Association between BMI (kg/m2) and Consumption of Different Foods

|  |  |
| --- | --- |
| Variables | BMI (kg/m2)  Pearson’s correlation coefficient |
| Breakfast | *r = –0*.186, *p* =≤ 0.001 |
| Fruits | *r = 0*.-169, *p* = 0.001 |
| Fast Food | r = 0.116, *p* = 0.017 |
| Cakes, Biscuits, Donuts | *r* = 0.180, *p* = < 0.001 |
| Sweets, Chocolates | *r* = 0.124, *p* = 0.011 |
| French Fries/ Potatoes | r = 0.132, *p* =0 .007 |

*Breakfast and BMI*. There was a significant relationship between the participants’ BMIand breakfast consumption at r = 0.-186, *p* = < 0.001 which is illustrated in the table (4.45) above. This indicates that as the participants’ BMI increases, consumption of breakfast tends to decrease.

*Fruit and BMI.* There was a significant relationship between the participants’ BMIand consumption of fruits at r = 0.-169, *p* = 0.001 which is illustrated in the table (4.45). This indicates that as the participants’ BMI increases, consumption of fruits tend to decrease.

*Fast foods*. There was a significant positive relationship between the participants’ BMIand consumption of fast food at r = 0.116, *p* = 0.017 which is illustrated in the table (4.45). This indicates that as the participants’ BMI increases, consumption of fast food tends to increase.

*Bakery snacks*. There was a significant relationship between the participants’ BMIand consumption of cakes, biscuits and donuts at r = 0.180, *p* = < 0.001 which is illustrated in the table (4.45). This indicates that as the participants’ BMI increases, consumption of cakes, biscuits, donuts tend to increase.

*Sweets and chocolates*. There was a significant relationship between the participants’ BMIand consumption of sweets/ chocolates at r = 0.124, *p* = 0.011 which is illustrated in the table (4.45). This indicates that as the participants’ BMI increases, consumption of sweets/ chocolates tends to increase.

*French fries and chips.* There was a significant relationship between the participants’ BMIand consumption of French fries/ potato chips at r = 0.132, *p* = 0.007 which is illustrated in the table (4.45). This indicates that as the participants’ BMI increase, consumption of French fries/ potatoes tends to increase.

Food items other than the above did not show significant relationship with participants’ BMI.