**Thesis Protocol**

**Effects of Visual Gaming and Motives on Depressive Symptoms, Musculoskeletal Symptoms and Psychosomatic Symptoms and Social Relationships among Adolescents of Bangladesh**

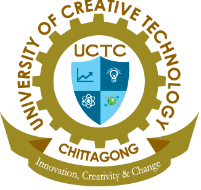
**Submitted By:** Shakila Arabi-230712022

**Subject:** Master of Public Health

**Batch:** 9th

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**Attention:**Md. Zahid Hossain Sharif, PhD

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Dear Sir,

I hope this letter finds you in good health and high spirits. I am writing to request formal approval for my thesis proposal titled “**Effects of Visual Gaming and Motives on Depressive Symptoms, Musculoskeletal Symptoms and Psychosomatic Symptoms and Social Relationships among Adolescents of Bangladesh”.**

As a dedicated MPH student at UCTC, I have undertaken an extensive review of the existing literature and conducted preliminary research to prepare this proposal. My study aims to contribute to the understanding of the effects of online gaming on the well-being of adolescents in urban areas of Chittagong, Bangladesh, which is an increasingly relevant and important topic.  
The research will be conducted following all ethical guidelines and with the utmost care to ensure the well-being and confidentiality of the participants. I will also seek all necessary approvals and permissions required for conducting this study.

I kindly request your approval for this research proposal to proceed with my thesis work. Your support and guidance are highly valuable to me, and I am committed to conducting this study with diligence and integrity.  
If you require any additional information or have specific guidelines for the thesis approval process, please do not hesitate to inform me. I am eager to comply with all requirements and make any adjustments as needed.

Thank you for considering my request. I look forward to your response and the opportunity to contribute to the body of knowledge in this field.

Sincerely,  
Shakila Arabi  
ID- 230712022  
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**1. Introduction**

**1.1 Background**

Online gaming has become an increasingly popular form of entertainment among adolescents in recent years. As the use of online gaming platforms has grown, so has the concern regarding its potential effects on the mental and physical health of adolescents (1). It is possible that online gaming provides an escape from these issues and a way to cope with emotional distress (2). Additionally, the widespread availability of smartphones and affordable internet access may have contributed to the increase in online gaming in urban areas of Bangladesh (2). While some studies have examined the relationship between online gaming and various health outcomes, there is still a need for research that delves deeper into the role of online gaming time and motives in influencing depressive, musculoskeletal, and psychosomatic symptoms and social behavior in adolescents of Chittagong Secondary and Higher Secondary Medium at Bangladesh Urban Areas as a developing Country (3).

**1.2 Research Problem**

This research aims to address the following research problem:

**Investigating the multifaceted consequences: Depressive Symptoms, Musculoskeletal Symptoms and Psychosomatic Symptoms of excessive engagement with virtual gaming and social relationships in Secondary and Higher Secondary Medium Adolescents of Bangladesh: Chittagong Urban Areas**

**1.3 Purpose of the Study**

The purpose of this study is to investigate the relationship between online gaming time, motives, and the prevalence of depressive, musculoskeletal, and psychosomatic symptoms in adolescents. An article in Tech Observer Magazine reported that online game addiction is soaring in Bangladesh, and addicted children forget to eat, drink, and study, leading to negative consequences (4).

The reasons for the increase in online gaming among Bangladeshi Adolescents are not entirely clear. However, some possible reasons include:

* **Free content:** According to a case study from gamers' perspectives, Bangladeshi students are happy with the free content they get from games and do not want to spend money buying paid content.
* **Escapism:** Online gaming may provide an escape from issues such as depression, malnutrition, illness, and domestic violence, which are prevalent among children, particularly in rural areas of Bangladesh.
* **Availability of smartphones and affordable internet access:** The widespread availability of smartphones and affordable internet access may have contributed to the increase in online gaming in urban areas of Bangladesh.
* **Entertainment:** According to a study on mobile game addiction among university students in Bangladesh, 65.2% of university students play mobile games as their main source of entertainment (5).
* **Influence of friends and YouTube gamers:** The same study found that more than half of the respondents (54.3%) are severely addicted to mobile games and were influenced by friends and YouTube gamers to play (5).

Overall, the reasons for the increase in online gaming among Bangladeshi adolescents are likely multifaceted and complex. Further research is needed to fully understand the factors contributing to this trend. However, some of the studies suggest that family factors, including parent-child relationships, parental influence on gaming, and parenting practices, may play a role in adolescent problematic internet gaming (6)(7)(8). For example, excessive gaming may displace opportunities for family interaction, or poor family relationships may lead an adolescent to seek out social engagement in gaming (7).

By understanding this relationship, we can provide insights for parents, educators, and policymakers to develop strategies that promote healthier gaming habits and better mental and physical health outcomes and social relationships among adolescents. Overall, the thesis proposal is a valuable contribution to the field of adolescent health and gaming research.

**1.4 Research Questions**

To achieve the purpose of this study, the following research questions will be explored:

* How does the amount of time spend on online gaming impact depressive symptoms in adolescents?
* What is the relationship between gaming motives and the presence of musculoskeletal symptoms in adolescents who engage in online gaming?
* Do psychosomatic symptoms differ among adolescents based on their gaming motives?
* How are social relationships influenced by online gaming activities?

**1.5 Significance of the Study**

This study is significant as it addresses an emerging public health concern. Adolescents spend a substantial amount of their time engaged in online gaming, and understanding its effects on mental and physical health is crucial. The findings of this study will contribute to the existing literature on online gaming and its impact on adolescents' well-being including their social life, providing valuable insights for parents, educators, healthcare professionals, and policymakers.

**2. Literature Review**

Several studies have investigated the relationship between online gaming time and motives and negative health outcomes in adolescents. A study by Hellström et al. found that increased online gaming time during weekdays increased the probability of having depressive, musculoskeletal, and psychosomatic symptoms (8). However, these relations with time spent gaming were further explained by online gaming motives. Weekday online gaming for more than five hours a day, in combination with escape motives, was associated with an increased probability of depressive symptoms, musculoskeletal symptoms, and psychosomatic symptoms. The probability of ill health decreased when gaming was for fun or had social motives. Another study by Ballabio found that regardless of the time spent in front of screens, higher levels of game addiction were associated with higher levels of internalizing symptoms in children and adolescents (9).

Furthermore, a systematic review by Kim found that excessive video game playtimes (> 3 h/day) seemed to be a predictor for the appearance of musculoskeletal disorders (10). Prolonged sitting with poor posture and fine motor strain associated with digital gaming makes musculoskeletal symptoms one of the most common physical health hazards (11). In addition, gaming motives are associated with gaming disorders. A meta-analysis by King showed statistically significant associations between gaming disorder symptoms and 23 out of 26 motivational factors, with the majority of the pooled mean effect sizes ranging from small to moderate. Moreover, large heterogeneity was observed, and the calculated prediction intervals indicated substantial variation in effects across populations and settings (8). Motivations related to emotional escape were robustly associated with gaming disorder symptoms. Gaming Disorder is a common unidentified disease around our world.

**3. General and Specific Objectives**

**General Objectives:**

To investigate the relationship between online gaming time, motives for gaming, and the prevalence of depressive, musculoskeletal, and psychosomatic symptoms and the social attitude among adolescents in Bangladesh urban areas of Chittagong Secondary and Higher Secondary Medium.

**Specific Objectives:**

- Using playtime indicators to study the effects of online gaming on adolescent health.

- Identifying potential consequences of excessive virtual gaming.

- Investigating the impact on the psychological functioning of adolescents.

These specific objectives are aimed at understanding the relationship between online gaming time and motives and the symptoms of depression, musculoskeletal, and psychosomatic symptoms in adolescents. The objectives also aim to identify the predictors of these symptoms and provide recommendations for interventions to reduce the negative effects of online gaming on adolescent health. The studies provide valuable insights into the effects of online gaming on adolescent health and highlight the need for interventions to promote healthy online gaming habits.

**4. Methodology**

**4.1 Research Design**  
This is a cross-sectional study, which will highlight the correlation between mental health and screen timing of adolescents. This study will use an anonymous and voluntary questionnaire to be completed by Bangladeshi adolescents aged 13–18 years. The questionnaire will include demographic background, gaming habits, depressive, musculoskeletal, and psychosomatic symptoms, and social relationships. The questionnaire will also include the Motives for Online Gaming Questionnaire to assess gaming motives (11).  
The findings of this study will contribute to the understanding of the negative health outcomes associated with online gaming in adolescents and may inform the development of preventive strategies for these negative health outcomes.

* **Participants:** The study will involve adolescents of Chittagong Higher Secondary Medium in Bangladesh Urban Areas. All adults will be the excluded participants for this study. The participants are very specific in 1 point, covering both: the participant is going to Higher Secondary school (aged 13-18).
* **Variables:** The study will investigate the impact of online gaming time and motives on depressive, musculoskeletal, and psychosomatic symptoms and social relationships.
* **Operational Definition:** The specific depressive, musculoskeletal, and psychosomatic symptoms and social relationships measured in the studies include:
* **Depressive symptoms:** These symptoms include sadness, hopelessness, loss of interest, and other symptoms related to depression.
* **Musculoskeletal symptoms:** These symptoms include pain or discomfort in the muscles, bones, or joints, such as back pain, neck pain, or wrist pain.
* **Psychosomatic symptoms:** These symptoms include physical symptoms that are caused or exacerbated by psychological factors, such as headaches, stomachaches, and fatigue.

In the studies, these symptoms were measured using self-report measures, such as questionnaires. The results of the studies suggest that online gaming time and motives are associated with these symptoms in adolescents. The findings highlight the need for interventions to reduce the negative effects of online gaming on adolescent health.

**4.2 Study Period**The study period will be carried out from February 2024 to July 2024.

**4.3 Sample Size:**However, it is mentioned that the study will use an anonymous and voluntary questionnaire to be completed by Bangladeshi: Chittagonian Urban adolescents aged 13–18 years. The sample size will depend on the number of adolescents who choose to participate in the study. Sample size would be 364 and population, 95% confidence Level, 5% interval, total students of 2 colleges including Islamia College Chattagram- 1850 ppn, City College (Day and Evening)- 4800 ppn.

**4.4 Sampling Technique:**   
The sampling technique used in the study will be a convenience sampling technique, which is a non-probability sampling technique that involves selecting participants based on their availability and willingness to participate.

**4.5 Data Collection & Analysis:**   
The study involves the use of questionnaires to collect data on online gaming time, motives, and health outcomes. The study will likely use statistical analysis to examine the relationship between online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms and social relationships of adolescents’ individual lives. Data will be collected by a Semi-structured questionnaire through peer interviews.

I am considering using statistical and data analysis tools to process and interpret the data.

* **Excel:** While not as powerful as specialized statistical software, Microsoft Excel can be used for basic data analysis and visualization, making it accessible and user-friendly.
* **SPSS (Statistical Package for the Social Sciences):** SPSS is widely used in social science research and is known for its versatility in statistical analysis. It's suitable for analyzing the impact of various factors on my research variables.

The statistical methods used to analyze the data in the thesis proposal include:

* **Descriptive statistics:** frequencies and percentage will be calculated for all variables.
* **Inferential analysis:** Inferential statistical tests will be conducted to examine the study's hypotheses. These tests may include a crosstab with chi-square test to assess the association between online gaming time, motives, and depressive, musculoskeletal, and psychosomatic symptoms and social relations.

The statistical methods used in this thesis proposal are appropriate for the research question and the data collected. The use of descriptive statistics and inferential analysis to allow for a comprehensive understanding of the relationship between online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms and social relationships in adolescents. The results of these analyses can provide insights into the predictors of these symptoms and inform interventions to reduce the negative effects of online gaming on adolescent health.

Overall, the study design of the thesis proposal will likely involve a quantitative research approach to investigate the relationship between online gaming time and motives and health outcomes in adolescents.

**5. Ethical Considerations:**

Ethical considerations for the thesis proposal include:

* **Informed consent:** Participants will be informed about the purpose of the study, the procedures involved, and their rights as participants. They should provide informed consent before participating in the study.
* **Confidentiality:** Participants' personal information will be kept confidential and only used for research purposes.
* **Voluntary participation:** Participation in the study will be voluntary, and participants will be allowed to withdraw from the study at any time without penalty.
* **Minimization of harm:** Measures will be taken to minimize any potential harm to participants, such as providing resources for mental health support if needed.
* **Debriefing:** Participants will be debriefed after the study and provided with information about the results of the study.

The study will be conducted after getting approval from the ethics committee of the University of Creative Technology Chittagong. By following these ethical guidelines, the study can provide valuable insights into the relationship between online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms and social relationships of adolescents while protecting the rights and well-being of the participants.

**Results**

Table 1: Association between respondents' grade and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 1.694  P = 0.193 |
| XI | 25 (80.6) | 303 (88.6) | 328 (87.9) |
| XII | 6 (19.4) | 39 (11.4) | 45 (12.1) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 1 examines the relationship between respondents' grade level and the presence of symptoms of depression. The chi-square test results (X² = 1.694, P = 0.193) suggest that there is no significant association between the grade level and the symptoms of depression (P > 0.05). The distribution of depression symptoms across grades XI and XII shows that a higher percentage of respondents in grade XI (80.6%) report no symptoms of depression compared to those in grade XII (88.6%). Despite this, the statistical test indicates that these differences are not statistically significant.

Table 2: Association between respondents' age and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 8.553  P = 0.073 |
| 16 years | 3 (9.7) | 37 (10.8) | 40 (10.7) |
| 17 years | 19 (61.3) | 186 (54.4) | 205 (55.0) |
| 18 years | 2 (6.5) | 83 (24.3) | 85 (22.8) |
| 19 years | 7 (22.6) | 34 (9.9) | 41 (11.0) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 2 investigates whether age is associated with the presence of depression symptoms. The chi-square test (X² = 8.553, P = 0.073) indicates a borderline non-significant association (P > 0.05) between age and depression symptoms. While respondents aged 17 years exhibit the highest proportion of depression symptoms (61.3%), this association is not strong enough to be statistically significant at the conventional level. Age appears to have some impact, but the relationship is not conclusive based on the statistical analysis.

Table 3: Association between respondents' gender and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 22.316  P <0.001 |
| Female | 6 (19.4) | 212 (62.0) | 218 (58.4) |
| Male | 25 (80.6) | 127 (37.1) | 152 (40.8) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 3 explores the relationship between gender and depression symptoms. The chi-square test results (X² = 22.316, P < 0.001) show a statistically significant association between gender and depression symptoms (P < 0.05). A significant difference is observed with a higher proportion of males (80.6%) reporting depression symptoms compared to females (19.4%). This suggests that males are more likely to experience depression symptoms in this sample.

Table 4: Association between respondents' institution and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 4.193  P =0.041 |
| Govt. City College | 21 (67.7) | 166 (48.5) | 187 (50.1) |
| Islamia College | 10 (32.3) | 176 (51.5) | 186 (49.9) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 4 analyzes the association between the institution (government college or Islamia College) and depression symptoms. The chi-square test results (X² = 4.193, P = 0.041) indicate a statistically significant association (P < 0.05). A larger proportion of respondents from Government City College (67.7%) report symptoms of depression compared to those from Islamia College (32.3%). This suggests that institutional factors might have an influence on the prevalence of depression symptoms.

Table 5: Association between respondents' online gaming hours and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 19.853  P < 0.001 |
| <=4 hours | 4 (12.9) | 187 (54.7) | 191 (51.2) |
| >4 hours | 27 (87.1) | 155 (45.3) | 182 (48.8) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 5 examines the relationship between the number of hours spent on online gaming and the presence of depression symptoms. The chi-square test (X² = 19.853, P < 0.001) shows a statistically significant association (P < 0.05). A large majority of respondents who play online games for more than 4 hours (87.1%) report symptoms of depression. In contrast, only 12.9% of respondents who play for 4 or fewer hours show depression symptoms. This suggests that higher gaming hours may be linked to increased depressive symptoms.

Table 6: Association between respondents' online gaming types and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 3.15  P = 0.369 |
| Action | 18 (58.1) | 146 (42.7) | 164 (44.0) |
| Racing | 10 (32.3) | 144 (42.1) | 154 (41.3) |
| Role Playing | 3 (9.7) | 44 (12.9) | 47 (12.6) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 6 investigates whether the type of online games played is associated with depression symptoms. The chi-square test results (X² = 3.15, P = 0.369) show no significant association (P > 0.05). Although the distribution of gaming types such as action, racing, and role-playing games differs across respondents with and without depression symptoms, the results suggest that the type of game played does not significantly influence the likelihood of experiencing depression symptoms.

Table 7: Association between respondents' online gaming duration and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 16.314  P < 0.001 |
| 1-2 years | 11 (35.5) | 123 (36.0) | 134 (35.9) |
| 6 months – 1 year | 0 (0.0) | 79 (23.1) | 79 (21.2) |
| Less than 6 months | 1 (3.2) | 34 (9.9) | 35 (9.4) |
| More than 2 years | 19 (61.3) | 106 (31.0) | 125 (33.5) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 7 looks at the relationship between the duration of online gaming (in years) and symptoms of depression. The chi-square test (X² = 16.314, P < 0.001) reveals a statistically significant association (P < 0.05). Respondents who have been gaming for more than 2 years (61.3%) are more likely to report symptoms of depression, while those who have been gaming for less than 6 months (3.2%) show fewer depression symptoms. This suggests that longer gaming durations may be linked to increased depression symptoms.

Table 8: Association between respondents' online gaming days in week and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 9.761  P < 0.001 |
| 1-4 days | 2 (6.5) | 112 (32.7) | 114 (30.6) |
| 5-7 days | 29 (93.5) | 227 (66.4) | 256 (68.6) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 8 examines the number of days per week spent gaming and the presence of depression symptoms. The chi-square test (X² = 9.761, P < 0.001) indicates a statistically significant association (P < 0.05). Respondents who play online games for 5-7 days a week (93.5%) are more likely to report symptoms of depression compared to those who game only 1-4 days a week (6.5%). This suggests that frequent gaming may be associated with an increased likelihood of experiencing depression symptoms.

Table 9: Association between respondents' online gaming motivation and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 19.579  P < 0.001 |
| Achievement | 1 (3.2) | 17 (5.0) | 18 (4.8) |
| Entertainment | 22 (71.0) | 307 (89.8) | 329 (88.2) |
| Escapism | 1 (3.2) | 1 (0.3) | 2 (0.5) |
| Social interaction | 7 (22.6) | 17 (5.0) | 24 (6.4) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 9 explores whether the motivation behind online gaming is related to depression symptoms. The chi-square test results (X² = 19.579, P < 0.001) show a statistically significant association (P < 0.05). A majority of respondents who game for entertainment purposes (71.0%) report no symptoms of depression, while those who game for achievement, escapism, or social interaction have a higher likelihood of reporting depression symptoms. This suggests that different motivations for gaming may have varying impacts on depression, with certain motivations being more linked to depressive symptoms.

Table 10: Association between respondents' online gaming academic performance affected and symptoms of depression (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Depression | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 13.319  P < 0.001 |
| No | 6 (19.4) | 179 (52.3) | 185 (49.6) |
| Yes | 25 (80.6) | 159 (46.5) | 184 (49.3) |
| Total | 31 (8.3) | 342 (91.7) | 373 (100.0) |

Table 10 examines the relationship between the impact of online gaming on academic performance and the presence of depression symptoms. The chi-square test (X² = 13.319, P < 0.001) reveals a statistically significant association (P < 0.05). Respondents who report that their academic performance is affected by gaming (80.6%) are more likely to experience depression symptoms compared to those who do not report any academic impact (19.4%). This suggests that the negative academic consequences of gaming might be associated with a higher likelihood of depression symptoms.

Table 11: Association between respondents' grade and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 3.135  P = 0.077 |
| XI | 263 (86.5) | 65 (94.2) | 328 (87.9) |
| XII | 41 (13.5) | 4 (5.8) | 45 (12.1) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 11 investigates the relationship between respondents' grade level and the presence of musculoskeletal symptoms. The chi-square test results (X² = 3.135, P = 0.077) indicate a marginally non-significant association (P > 0.05). A larger proportion of respondents in grade XI (86.5%) report no musculoskeletal symptoms compared to those in grade XII (94.2%). However, since the p-value is above 0.05, the association between grade level and musculoskeletal symptoms is not statistically significant.

Table 12: Association between respondents' age and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 11.573  P = 0.021 |
| 16 years | 27 (8.9) | 13 (18.8) | 40 (10.7) |
| 17 years | 174 (57.2) | 31 (44.9) | 205 (55.0) |
| 18 years | 65 (21.4) | 20 (29.0) | 85 (22.8) |
| 19 years | 37 (12.2) | 4 (5.8) | 41 (11.0) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 12 examines the association between respondents' age and the presence of musculoskeletal symptoms. The chi-square test results (X² = 11.573, P = 0.021) indicate a statistically significant association (P < 0.05). Respondents aged 17 years show the highest percentage of musculoskeletal symptoms (57.2%), while those aged 16 years show a lower prevalence (8.9%). This suggests that age plays a significant role in the occurrence of musculoskeletal symptoms, with younger respondents (16 years) being less affected.

Table 13: Association between respondents' gender and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 22.970  P <0.001 |
| Female | 160 (52.6) | 58 (84.1) | 218 (58.4) |
| Male | 141 (46.4) | 11 (15.9) | 152 (40.8) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 13 explores the relationship between gender and musculoskeletal symptoms. The chi-square test results (X² = 22.970, P < 0.001) show a statistically significant association (P < 0.05). A higher proportion of females (52.6%) report experiencing musculoskeletal symptoms compared to males (46.4%). This suggests that females are more likely to report musculoskeletal symptoms in this sample, indicating a potential gender-related difference in symptom prevalence.

Table 14: Association between respondents' institution and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 6.545  P =0.011 |
| Govt. City College | 162 (53.3) | 25 (36.2) | 187 (50.1) |
| Islamia College | 142 (46.7) | 142 (46.7) | 186 (49.9) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 14 looks at the relationship between the respondents' institution (Government City College or Islamia College) and musculoskeletal symptoms. The chi-square test results (X² = 6.545, P = 0.011) show a statistically significant association (P < 0.05). A higher proportion of respondents from Government City College (53.3%) report musculoskeletal symptoms compared to those from Islamia College (46.7%). This suggests that the type of institution might influence the occurrence of musculoskeletal symptoms.

Table 15: Association between respondents' online gaming hours and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 27.530  P < 0.001 |
| <=4 hours | 136 (44.7) | 55 (79.7) | 191 (51.2) |
| >4 hours | 168 (55.3) | 14 (20.3) | 182 (48.8) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 15 investigates the relationship between the number of hours spent on online gaming and the presence of musculoskeletal symptoms. The chi-square test results (X² = 27.530, P < 0.001) indicate a highly statistically significant association (P < 0.05). A larger proportion of respondents who game for more than 4 hours (55.3%) report musculoskeletal symptoms compared to those who game for 4 or fewer hours (44.7%). This suggests that longer gaming hours are strongly associated with the presence of musculoskeletal symptoms.

Table 16: Association between respondents' online gaming types and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 21.234  P < 0.001 |
| Action | 146 (48.0) | 18 (26.1) | 164 (44.0) |
| Racing | 109 (35.9) | 109 (35.9) | 154 (41.3) |
| Role Playing | 43 (14.1) | 45 (65.2) | 47 (12.6) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 16 explores the relationship between the type of online games played and musculoskeletal symptoms. The chi-square test results (X² = 21.234, P < 0.001) show a statistically significant association (P < 0.05). Respondents who play action games (48.0%) are more likely to report musculoskeletal symptoms compared to those who play racing (35.9%) or role-playing games (14.1%). This suggests that the type of game played may influence the likelihood of experiencing musculoskeletal symptoms, with action games being more strongly associated with these symptoms.

Table 17: Association between respondents' online gaming duration and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 16.637  P < 0.001 |
| 1-2 years | 111 (36.5) | 23 (33.3) | 134 (35.9) |
| 6 months – 1 year | 64 (21.1) | 15 (21.7) | 79 (21.2) |
| Less than 6 months | 20 (6.6) | 15 (21.7) | 35 (9.4) |
| More than 2 years | 20 (6.6) | 16 (23.2) | 125 (33.5) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 17 investigates the relationship between the duration of online gaming (in years) and musculoskeletal symptoms. The chi-square test results (X² = 16.637, P < 0.001) reveal a statistically significant association (P < 0.05). Respondents who have been gaming for 1-2 years (36.5%) report the highest percentage of musculoskeletal symptoms, while those who have been gaming for less than 6 months (6.6%) show a lower incidence of symptoms. This suggests that a longer gaming duration is associated with a higher likelihood of experiencing musculoskeletal symptoms.

Table 18: Association between respondents' online gaming days in week and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 27.152  P < 0.001 |
| 1-4 days | 77 (25.3) | 37 (53.6) | 114 (30.6) |
| 5-7 days | 226 (74.3) | 30 (43.5) | 256 (68.6) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 18 examines the relationship between the number of days per week spent gaming and the presence of musculoskeletal symptoms. The chi-square test results (X² = 27.152, P < 0.001) indicate a highly statistically significant association (P < 0.05). A larger proportion of respondents who play online games 5-7 days a week (74.3%) report musculoskeletal symptoms compared to those who game for 1-4 days a week (25.3%). This suggests that frequent gaming is strongly linked to the occurrence of musculoskeletal symptoms.

Table 19: Association between respondents' online gaming motivation and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 4.088  P = 0.252 |
| Achievement | 14 (4.6) | 4 (5.8) | 18 (4.8) |
| Entertainment | 265 (87.2) | 64 (92.8) | 329 (88.2) |
| Escapism | 2 (0.7) | 0 (0.0) | 2 (0.5) |
| Social interaction | 23 (7.6) | 1 (1.4) | 24 (6.4) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 19 investigates whether the motivation for online gaming (achievement, entertainment, escapism, or social interaction) is associated with musculoskeletal symptoms. The chi-square test results (X² = 4.088, P = 0.252) show no statistically significant association (P > 0.05). While a larger proportion of respondents who game for entertainment report no musculoskeletal symptoms, the analysis does not reveal a strong enough link between motivation and musculoskeletal symptoms to be considered statistically significant.

Table 20: Association between respondents' online gaming academic performance affected and symptoms of Musculoskeletal (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of Musculoskeletal | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 20.668  P < 0.001 |
| No | 134 (44.1) | 51 (73.9) | 185 (49.6) |
| Yes | 167 (54.9) | 17 (24.6) | 184 (49.3) |
| Total | 304 (81.5) | 69 (18.5) | 373 (100.0) |

Table 20 examines whether online gaming's impact on academic performance is associated with musculoskeletal symptoms. The chi-square test results (X² = 20.668, P < 0.001) reveal a statistically significant association (P < 0.05). A larger proportion of respondents who report their academic performance being affected by gaming (54.9%) also report musculoskeletal symptoms compared to those who report no academic impact (44.1%). This suggests that the negative academic consequences of gaming may also be linked to a higher likelihood of experiencing musculoskeletal symptoms.

Table 21: Association between respondents' grade and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 4.831  P = 0.028 |
| XI | 184 (84.8) | 144 (92.3) | 328 (87.9) |
| XII | 33 (15.2) | 12 (7.7) | 45 (12.1) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 21 examines the association between respondents' grade level and the presence of psychosomatic symptoms. The chi-square test results (X² = 4.831, P = 0.028) indicate a statistically significant association (P < 0.05). A higher proportion of respondents in grade XI (84.8%) report no psychosomatic symptoms compared to those in grade XII (92.3%). This suggests that students in grade XI are more likely to report psychosomatic symptoms than those in grade XII.

Table 22: Association between respondents' age and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 8.426  P = 0.077 |
| 16 years | 22 (10.1) | 18 (11.5) | 40 (10.7) |
| 17 years | 127 (58.5) | 78 (50.0) | 205 (55.0) |
| 18 years | 39 (18.0) | 46 (29.5) | 85 (22.8) |
| 19 years | 28 (12.9) | 13 (8.3) | 41 (11.0) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 22 explores the relationship between age and psychosomatic symptoms. The chi-square test results (X² = 8.426, P = 0.077) suggest a marginally non-significant association (P > 0.05). While age groups show varying rates of psychosomatic symptoms, the P-value indicates that the relationship is not statistically significant at the 0.05 level. Respondents aged 17 years (58.5%) report the highest prevalence of psychosomatic symptoms, while respondents aged 19 years show a lower rate (12.9%).

Table 23: Association between respondents' gender and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 52.413  P <0.001 |
| Female | 93 (42.9) | 125 (80.1) | 218 (58.4) |
| Male | 121 (55.8) | 31 (19.9) | 152 (40.8) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 23 investigates the relationship between gender and psychosomatic symptoms. The chi-square test results (X² = 52.413, P < 0.001) reveal a highly significant association (P < 0.05). A larger proportion of males (55.8%) report experiencing psychosomatic symptoms compared to females (42.9%). This suggests a significant gender-related difference in the reporting of psychosomatic symptoms, with males being more likely to report these symptoms.

Table 24: Association between respondents' institution and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 8.899  P = 0.003 |
| Govt. City College | 123 (56.7) | 64 (41.0) | 187 (50.1) |
| Islamia College | 94 (43.3) | 94 (43.3) | 186 (49.9) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 24 examines the association between the respondents' institution (Government City College or Islamia College) and psychosomatic symptoms. The chi-square test results (X² = 8.899, P = 0.003) indicate a statistically significant association (P < 0.05). A higher proportion of respondents from Government City College (56.7%) report psychosomatic symptoms compared to those from Islamia College (43.3%). This suggests that the type of institution may be influencing the occurrence of psychosomatic symptoms among students.

Table 25: Association between respondents' online gaming hours and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 64.076  P < 0.001 |
| <=4 hours | 73 (33.6) | 118 (75.6) | 191 (51.2) |
| >4 hours | 144 (66.4) | 38 (24.4) | 182 (48.8) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 25 explores the relationship between the number of hours spent on online gaming and psychosomatic symptoms. The chi-square test results (X² = 64.076, P < 0.001) show a highly statistically significant association (P < 0.05). A significantly higher proportion of respondents who game for more than 4 hours (66.4%) report psychosomatic symptoms compared to those who game for 4 or fewer hours (33.6%). This suggests that longer gaming hours are strongly associated with an increased likelihood of psychosomatic symptoms.

Table 26: Association between respondents' online gaming types and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 11.886  P < 0.001 |
| Action | 111 (51.2) | 53 (34.0) | 164 (44.0) |
| Racing | 77 (35.5) | 77 (49.4) | 154 (41.3) |
| Role Playing | 26 (12.0) | 21 (13.5) | 47 (12.6) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 26 investigates the relationship between the type of online games played and the presence of psychosomatic symptoms. The chi-square test results (X² = 11.886, P < 0.001) reveal a statistically significant association (P < 0.05). Respondents who play action games (51.2%) are more likely to report psychosomatic symptoms compared to those who play racing (35.5%) or role-playing games (12.0%). This suggests that the type of game played may contribute to the experience of psychosomatic symptoms, particularly with action games.

Table 27: Association between respondents' online gaming duration and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 24.162  P < 0.001 |
| 1-2 years | 89 (41.0) | 45 (28.8) | 134 (35.9) |
| 6 months – 1 year | 33 (15.2) | 46 (29.5) | 79 (21.2) |
| Less than 6 months | 12 (5.5) | 23 (14.7) | 35 (9.4) |
| More than 2 years | 83 (38.2) | 42 (26.9) | 125 (33.5) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 27 examines the relationship between the duration of online gaming (in years) and psychosomatic symptoms. The chi-square test results (X² = 24.162, P < 0.001) indicate a statistically significant association (P < 0.05). Respondents who have been gaming for 1-2 years (41.0%) report the highest prevalence of psychosomatic symptoms, while those gaming for less than 6 months (5.5%) show a lower incidence. This suggests that longer gaming duration is linked to a higher likelihood of experiencing psychosomatic symptoms.

Table 28: Association between respondents' online gaming days in week and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 33.293  P < 0.001 |
| 1-4 days | 41 (18.9) | 73 (46.8) | 114 (30.6) |
| 5-7 days | 174 (80.2) | 82 (52.6) | 256 (68.6) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 28 explores the relationship between the number of days per week spent on online gaming and the presence of psychosomatic symptoms. The chi-square test results (X² = 33.293, P < 0.001) indicate a highly statistically significant association (P < 0.05). A larger proportion of respondents who game 5-7 days a week (80.2%) report psychosomatic symptoms compared to those who game 1-4 days a week (18.9%). This suggests that frequent gaming is strongly associated with psychosomatic symptoms.

Table 29: Association between respondents' online gaming motivation and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 10.244  P = 0.017 |
| Achievement | 13 (6.0) | 5 (3.2) | 18 (4.8) |
| Entertainment | 182 (83.9) | 147 (94.2) | 329 (88.2) |
| Escapism | 2 (0.9) | 0 (0.0) | 2 (0.5) |
| Social interaction | 20 (9.2) | 4 (2.6) | 24 (6.4) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 29 investigates the association between the motivation for online gaming (achievement, entertainment, escapism, or social interaction) and psychosomatic symptoms. The chi-square test results (X² = 10.244, P = 0.017) show a statistically significant association (P < 0.05). A larger proportion of respondents who game for entertainment (83.9%) report psychosomatic symptoms compared to those motivated by achievement (6.0%), escapism (0.9%), or social interaction (9.2%). This suggests that entertainment-driven gaming is more strongly associated with psychosomatic symptoms.

Table 30: Association between respondents' online gaming academic performance affected and symptoms of psychosomatic (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of psychosomatic | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 30.283  P < 0.001 |
| No | 82 (37.8) | 103 (66.0) | 185 (49.6) |
| Yes | 131 (60.4) | 53 (34.0) | 184 (49.3) |
| Total | 217 (58.2) | 156 (41.8) | 373 (100.0) |

Table 30 examines whether the impact of online gaming on academic performance is associated with psychosomatic symptoms. The chi-square test results (X² = 30.283, P < 0.001) reveal a highly significant association (P < 0.05). A larger proportion of respondents whose academic performance is affected by gaming (60.4%) report psychosomatic symptoms compared to those whose academic performance is unaffected (37.8%). This suggests that negative effects on academic performance due to gaming are closely linked with the occurrence of psychosomatic symptoms.

Table 31: Association between respondents' grade and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 1.228  P = 0.268 |
| XI | 139 (89.6) | 189 (89.6) | 328 (87.9) |
| XII | 23 (14.2) | 22 (10.4) | 45 (12.1) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 31 explores the association between respondents' grade and their social relationships. The chi-square test results (X² = 1.228, P = 0.268) suggest that there is no significant association (P > 0.05) between grade level and social relationships. The percentage distribution across grades XI and XII is quite similar, with 89.6% of students in both grades reporting no social relationship issues. Therefore, grade level does not appear to have a significant impact on the quality of social relationships.

Table 32: Association between respondents' age and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 27.056  P < 0.001 |
| 16 years | 6 (3.7) | 34 (16.1) | 40 (10.7) |
| 17 years | 107 (66.0) | 98 (46.4) | 205 (55.0) |
| 18 years | 26 (16.0) | 59 (28.0) | 85 (22.8) |
| 19 years | 26 (16.0) | 19 (9.0) | 41 (11.0) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 32 examines the relationship between age and the quality of social relationships. The chi-square test results (X² = 27.056, P < 0.001) indicate a highly significant association (P < 0.05). A larger proportion of 17-year-olds (66%) report having difficulties in their social relationships compared to other age groups. The prevalence of social relationship issues decreases in older age groups, particularly among those aged 19 years (16%). This suggests that age significantly affects social relationships, with younger respondents being more likely to report difficulties.

Table 33: Association between respondents' gender and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 52.231  P <0.001 |
| Female | 61 (37.7) | 157 (74.4) | 218 (58.4) |
| Male | 100 (61.7) | 52 (24.6) | 152 (40.8) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 33 investigates the relationship between gender and social relationship issues. The chi-square test results (X² = 52.231, P < 0.001) show a statistically significant association (P < 0.05). A significantly higher proportion of males (61.7%) report social relationship problems compared to females (37.7%). This suggests that males are more likely to experience difficulties in their social relationships than females.

Table 34: Association between respondents' institution and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 0.625  P = 0.429 |
| Govt. City College | 85 (52.5) | 102 (48.3) | 187 (50.1) |
| Islamia College | 77 (47.5) | 109 (51.7) | 186 (49.9) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 34 explores whether the institution attended (Government City College vs. Islamia College) is associated with social relationship issues. The chi-square test results (X² = 0.625, P = 0.429) indicate no significant association (P > 0.05). The percentages of students reporting social relationship issues are similar across both institutions (52.5% for Government City College and 47.5% for Islamia College). Therefore, the institution type does not significantly influence social relationship quality.

Table 35: Association between respondents' online gaming hours and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 84.378  P < 0.001 |
| <=4 hours | 39 (24.1) | 152 (72.0) | 191 (51.2) |
| >4 hours | 123 (75.9) | 59 (28.0) | 182 (48.8) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 35 examines the association between the number of hours spent on online gaming and social relationship quality. The chi-square test results (X² = 84.378, P < 0.001) show a highly significant association (P < 0.05). Respondents who game for more than 4 hours (75.9%) report significantly more social relationship issues than those who game for fewer than 4 hours (24.1%). This suggests that longer gaming hours are strongly associated with poorer social relationships.

Table 36: Association between respondents' online gaming types and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 25.574  P < 0.001 |
| Action | 84 (51.9) | 80 (37.9) | 164 (44.0) |
| Racing | 47 (29.0) | 107 (50.7) | 154 (41.3) |
| Role Playing | 30 (18.5) | 17 (8.1) | 47 (12.6) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 36 investigates the relationship between the type of online games played and the quality of social relationships. The chi-square test results (X² = 25.574, P < 0.001) indicate a statistically significant association (P < 0.05). A higher proportion of respondents who play action games (51.9%) report social relationship issues compared to those who play racing (29.0%) or role-playing games (18.5%). This suggests that action games are more closely linked to problems in social relationships.

Table 37: Association between respondents' online gaming duration and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 38.363  P < 0.001 |
| 1-2 years | 60 (37.0) | 74 (35.1) | 134 (35.9) |
| 6 months – 1 year | 17 (10.5) | 62 (29.4) | 79 (21.2) |
| Less than 6 months | 8 (4.9) | 27 (12.8) | 35 (9.4) |
| More than 2 years | 77 (47.5) | 48 (22.7) | 125 (33.5) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 37 explores the relationship between the duration of online gaming and social relationship issues. The chi-square test results (X² = 38.363, P < 0.001) indicate a highly significant association (P < 0.05). Respondents who have been gaming for more than 2 years (47.5%) report the most social relationship problems, while those gaming for less than 6 months (4.9%) report fewer issues. This suggests that longer gaming duration is associated with poorer social relationships.

Table 38: Association between respondents' online gaming days in week and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 42.351  P < 0.001 |
| 1-4 days | 21 (13.0) | 93 (44.1) | 114 (30.6) |
| 5-7 days | 140 (86.4) | 116 (55.0) | 256 (68.6) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 38 investigates the relationship between the number of days per week spent on online gaming and social relationship issues. The chi-square test results (X² = 42.351, P < 0.001) reveal a highly significant association (P < 0.05). Respondents who game 5-7 days a week (86.4%) report significantly more social relationship problems than those who game 1-4 days a week (13.0%). This suggests that more frequent gaming is strongly associated with poorer social relationships.

Table 39: Association between respondents' online gaming motivation and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 13.697  P = 0.003 |
| Achievement | 11 (6.8) | 7 (3.3) | 18 (4.8) |
| Entertainment | 132 (81.5) | 197 (93.4) | 329 (88.2) |
| Escapism | 2 (1.2) | 0 (0.0) | 2 (0.5) |
| Social interaction | 17 (10.5) | 7 (3.3) | 24 (6.4) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 39 explores the relationship between the motivation for online gaming (achievement, entertainment, escapism, or social interaction) and social relationship quality. The chi-square test results (X² = 13.697, P = 0.003) indicate a statistically significant association (P < 0.05). A larger proportion of respondents who game for entertainment (81.5%) report social relationship issues compared to those gaming for social interaction (10.5%) or achievement (6.8%). This suggests that entertainment-driven gaming is more strongly linked to social relationship difficulties.

Table 40: Association between respondents' online gaming academic performance affected and social relationship (n=375)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symptoms of social relationship | | | **Chi square test and p-value** |
|  | Yes n (%) | No n (%) | Total n (%) | X2 = 134.595  P < 0.001 |
| No | 25 (15.4) | 160 (75.8) | 185 (49.6) |
| Yes | 135 (83.3) | 49 (23.2) | 184 (49.3) |
| Total | 162 (43.4) | 211 (56.6) | 373 (100.0) |

Table 40 investigates whether the impact of online gaming on academic performance is associated with social relationship issues. The chi-square test results (X² = 134.595, P < 0.001) show a highly significant association (P < 0.05). A significantly higher proportion of respondents whose academic performance is affected by gaming (83.3%) report social relationship issues compared to those whose academic performance is not affected (15.4%). This suggests that the negative impact of gaming on academic performance is strongly linked to social relationship difficulties.

**6 & 6.1 Discussions, Expected Results and Implications:**

It is expected that increased online gaming time during weekdays will increase the probability of having depressive, musculoskeletal, and psychosomatic symptoms in adolescents (1). Additionally, gaming motives, such as escape motives, are expected to be associated with an increased probability of ill health among adolescents (1). The results of this study will contribute to a better understanding of the relationship between online gaming time and motives and negative symptoms in adolescents and address the consequences of excessive engagement with virtual gaming and social relationships in adolescents. Overall, the thesis will provide a well-structured, evidence-based, and comprehensive examination of the impact of online gaming time and motives on the mental, physical health, and social environment of adolescents in urban areas of Chittagong, Bangladesh. It will contribute valuable insights to the academic community, local authorities, and organizations interested in the well-being of adolescents in the digital age.

The study found several factors linked to depression symptoms among respondents. Males were more likely to report depression compared to females. Students from Government City College showed higher rates of depression symptoms than those from Islamia College. Spending more than four hours per day gaming, gaming for over two years, and gaming five to seven days a week were all associated with higher depression symptoms. Additionally, those who gamed for achievement, escapism, or social interaction were more likely to experience depression. Finally, respondents who felt their academic performance was impacted by gaming were also more likely to report depression. These findings suggest that gaming habits, institutional factors, and gender play significant roles in mental health.

The study found significant associations between musculoskeletal symptoms and factors like age, gender, institution, and online gaming habits. Respondents aged 17 and females were more likely to report symptoms. Students from Government City College had higher rates of symptoms than those from Islamia College. Long gaming hours, particularly over four hours a day, and playing action games were linked to a higher prevalence of symptoms. Frequent gaming and longer gaming duration also increased the likelihood of musculoskeletal symptoms. However, the motivation for gaming did not significantly impact symptom occurrence. Additionally, those whose academic performance was affected by gaming reported more symptoms.

The study found that psychosomatic symptoms were more common among grade XI students, males, and those from Government City College. Longer online gaming hours, especially more than 4 hours a day, as well as gaming for entertainment, were strongly linked to higher rates of psychosomatic symptoms. Action games had a higher association with these symptoms compared to other game types. Additionally, students whose academic performance was affected by gaming were more likely to experience psychosomatic symptoms.

The study reveals that grade level, institution, and age do not significantly affect social relationships, though 17-year-olds and males report more issues. Significant associations were found with online gaming, as longer gaming hours, more frequent gaming days, and playing action games are linked to more relationship problems. Gaming for entertainment is particularly associated with difficulties, and students whose academic performance suffers due to gaming are more likely to have social relationship issues.

Previous studies have suggested that gaming for more than five hours a day increases the likelihood of negative consequences (12); a finding supported by our results. One possible explanation for the relationship between extended gaming time and musculoskeletal symptoms is the prolonged periods of gaming, which lead to sustained muscle tension without adequate recovery time. In earlier research, we also found that gaming for fun or social motives might actually reduce the likelihood of negative outcomes (13). Based on these findings, we propose that gaming time should not be used as the sole indicator of problems caused by gaming behavior but should be considered alongside the motives for gaming.

In our study, the prevalence of musculoskeletal discomfort was significantly higher among mobile gaming addicts. A systematic review of musculoskeletal diseases among gamers has shown that video game play negatively impacts the musculoskeletal system. The review revealed that the neck, shoulder, and back were the most commonly reported areas of discomfort. Similar to our findings, another study also identified higher odds ratios for the link between video game play and musculoskeletal problems (14). Additionally, Ahmed et al. found a strong association between smartphone addiction and discomfort in the neck, shoulders, elbows, and wrists (15). Among e-sports athletes, 42.6% reported experiencing musculoskeletal pain within the past week, with the most common areas of pain being the back, neck, and shoulders (16).

Social interaction and communication within the gaming experience are significant for many players (17). However, some gamers play online games for the anonymity it provides, allowing them to adopt alternate identities to cope with real-life challenges (18). Additionally, loneliness has been linked to problematic Internet use (19). Individuals experiencing psychosocial distress may prefer online social interactions, which could lead to further negative outcomes associated with problematic Internet use (20). The results of our study indicate that depressive symptoms are more prevalent among gamers than non-gamers. While the direction of this relationship remains unclear, this finding may be important for identifying depression in adolescent groups. Similar trends were observed for psychosomatic symptoms, which were more common among those who played to escape their everyday problems.

The patterns of gaming addiction and its impact on academic success are influenced by a complex mix of psychological, social, and environmental factors (21). One possible reason for the higher prevalence of gaming addiction in men could be linked to societal gender norms and expectations, which shape different recreational behaviors (22). Adolescents aged 13 to 17 may be particularly vulnerable due to developmental changes, such as a growing desire for independence and identity formation, making digital escapism more appealing (23). The negative relationship between gaming addiction and academic achievement suggests that the time-consuming nature of gaming may lead to excessive engagement, which diverts attention and energy away from academic pursuits (24).

The discussion reveals that extended gaming (over five hours daily) increases the risk of musculoskeletal issues, particularly in the neck, back, and shoulders. Gaming for fun or social interaction may reduce negative outcomes. Our study found a higher prevalence of musculoskeletal discomfort among mobile gaming addicts, aligning with previous research. Mental health-wise, gamers, especially those using gaming to cope, are more likely to experience loneliness and depression. Gender and age also influence gaming addiction, with men and adolescents being more susceptible. Gaming addiction negatively affects academic performance due to excessive time spent on gaming.

**6.2 Limitations:**

* **Self-reported data:** The data collected in this study is based on self-reported measures, which may be subject to bias and inaccuracies. Participants may not accurately report their online gaming time or motives, or their symptoms of depression, musculoskeletal, and psychosomatic symptoms, and social relationships.
* **Correlational design:** The study uses a correlational design, which means that causality cannot be established. It is not possible to determine whether online gaming time and motives cause depressive, musculoskeletal, and psychosomatic symptoms or whether these symptoms cause increased online gaming time and motives.
* **Limited generalizability: T**he study may have limited generalizability to other populations or cultures. The study is conducted on a specific sample of adolescents, and the findings may not apply to other age groups or cultural contexts.
* **Lack of objective measures:** The study relies on subjective measures of online gaming time and motives. Objective measures, such as tracking actual online gaming time, may provide more accurate data.
* **Lack of control over extraneous variables:** The study may not control for all extraneous variables that may affect the relationship between online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms. Other factors, such as family environment, academic stress, or physical activity, may also contribute to these symptoms.

Despite these limitations, the study provides valuable insights into the relationship among online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms and social relationships in adolescents. The findings can inform interventions to reduce the negative effects of online gaming on adolescent health.

**7. Conclusion:**

The study will use an anonymous and voluntary questionnaire to be completed by Bangladeshi, and Chittagonian Urban adolescents aged 13–18 years. Overall, the study will provide a comprehensive understanding of the multifaceted consequences of excessive engagement with virtual gaming and social relationships in Secondary and Higher Secondary Medium Adolescents of Bangladesh: Chittagong Urban Areas. The findings of the study could contribute to the development of effective interventions and policies to address the potential negative consequences of excessive engagement with virtual gaming and social relationships among adolescents in Chittagong Urban Areas.

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**9. Time Line of the Study:**

**Month 1: Research and Proposal Development**

* Weeks 1-2: Define research questions and objectives.
* Weeks 3-4: Review relevant literature.
* Weeks 4-5: Develop research proposal, including research design and methodology.

**Month 2: Data Collection and Preparation**

* Weeks 1-2: Ethics approval
* Weeks 2-3: Prepare data collection tools (questionnaires, interviews, etc.).
* Weeks 3-4: Pilot testing and refinement of data collection tools.

**Month 3: Data Collection**

* Weeks 1-2: Begin data collection.
* Weeks 2-3: Continue data collection.
* Weeks 3-4: Data quality checks and preliminary data analysis

**Month 4: Data Analysis and Interpretation**

* Weeks 1-2: Continue data collection if necessary.
* Weeks 2-3: Start data analysis (quantitative and qualitative).
* Weeks 3-4: Preliminary interpretation of data.

**Month 5: Thesis Writing**

* Weeks 1-2: Begin drafting the thesis.
* Weeks 2-3: Continue writing (literature review, methodology, and results).
* Weeks 3-4: Start discussion and conclusion sections.

**Month 6: Finalizing and Submission**

* Weeks 1-2: Finalize the discussion and conclusion sections.
* Weeks 2-3: Edit and proofread the entire thesis.
* Weeks 3-4: Prepare and format the thesis, including references and appendices.

**10. Annexes**

**10.1. Questionnaire**

Here is a questionnaire related to the thesis proposal – “**Effects of Visual Gaming and Motives on Depressive Symptoms, Musculoskeletal Symptoms and Psychosomatic Symptoms and Social Relationships among Adolescents of Bangladesh”.**

**Section 1: Participant Information**

1.1. Participant ID (To be filled by the researcher):

1.1. Name:

1.2 Age:

1.3. Gender:

🗆 Male 🗆 Female 🗆 Other (please specify)

1.4. Grade/Class:

1.5. Address:

1.6. Institution:

1.7. How many hours per day do you spend on online gaming on average?

**Section 2: Online Gaming Behavior**

2.1. Do you play online games regularly?

🗆 Yes 🗆No

2.2. What types of online games do you play (e.g., action, role-playing, simulation)?

List all that apply.

2.3. How long have you been playing online games regularly?

2.3. How long have you been playing online games regularly?

🗆 Less than 6 months 🗆 6 months to 1 year 🗆 1-2 years 🗆 More than 2 years

2.4. On average, how many days per week do you engage in online gaming?

2.5. On those days, how many hours per day do you typically spend playing online games?

**Section 3: Motives for Online Gaming**

3.1. What motivates you to play online games? Please rank the following motives from 1 (most important) to 6 (least important):

🗆 Entertainment 🗆 Social Interaction 🗆 Achievement 🗆 Escapism 🗆 Competition 🗆 Relaxation

3.2. Are there any other specific reasons you play online games? Please describe.

**Section 4: Depressive Symptoms**

4.1. PHQ-9 Patient Depression Questionnaire will be used:

**Over the last 2 weeks, how often have you been bothered by any of the following problems?**

**0= NOT AT ALL 1=SEVERAL DAYS 2=MORE THAN HALF THE DAYS 3=NEARLY EVERY DAY**

1. Little interest or pleasure in doing things 0 1 2 3

2. Feeling down, depressed, or hopeless 0 1 2 3

3. Trouble falling or staying asleep, or sleeping too much 0 1 2 3

4. Feeling tired or having little energy 0 1 2 3

5. Poor appetite or overeating 0 1 2 3

6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down 0 1 2 3

7. Trouble concentrating on things, such as reading the newspaper or watching television

0 1 2 3

8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual

0 1 2 3

9. Thoughts that you would be better off dead, or of hurting yourself in some way

0 1 2 3

10. If you checked off any problems on this questionnaire so far, how difficult have these problems made if for you to do your work, take care of things at home, or get along with other people?

0 = Not difficult at all 1 = Somewhat difficult 2=Very difficult 3=Extremely difficult

**Section 5: Musculoskeletal Symptoms**

5.1. Have you experienced any musculoskeletal symptoms (e.g., back pain, wrist pain, eye strain) related to online gaming?

🗆 Yes 🗆 No

5.2. If yes, please describe the specific symptoms and their severity.

**Section 6: Psychosomatic Symptoms**

6.1. Have you experienced any psychosomatic symptoms (e.g., headaches, stomachaches, palpitations) related to online gaming?

🗆 Yes 🗆 No

6.2. If yes, please describe the specific symptoms and their severity.

**Section 7: Social Relationship Measures**

7.1. Have you noticed any changes in your mental health and emotional well-being associated with your gaming and social media activities? Please explain.

7.2. How has your academic performance been affected by your engagement with virtual gaming and social media?

7.3. Have you observed changes in your social relationships with family and friends as a result of your online engagement?

**Section 8: Coping and Support**

8.1. When you feel stressed or overwhelmed, what strategies do you typically use to cope?

8.2. Do you have someone you can talk to about your online gaming habits and any related problems (e.g., parents, friends, teachers, counselors)?

🗆 Yes 🗆 No

8.3. If yes, how comfortable do you feel discussing your online gaming habits with them?

**Section 9: Additional Comments**

9.1. Is there anything else you would like to share about your online gaming experiences and their impact on your well-being?

Thank you for participating in this research. Your input is valuable and will help us better understand the relationship between online gaming, motives, and the well-being of adolescents in urban areas of Chittagong, Bangladesh.

**Signature & Date:**

**10.2. Informed Consent Form:**

**Title of Study:** “Effects of Visual Gaming and Motives on Depressive Symptoms, Musculoskeletal Symptoms and Psychosomatic Symptoms and Social Relationships among Adolescents of Bangladesh”.

**Principal Investigator: Shakila Arabi**

* **Introduction:** You are being invited to participate in a research study. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please read the following information carefully and ask any questions you may have before deciding whether or not to participate.
* **Purpose of the Study:** The purpose of this study is to investigate the relationship between online gaming time and motives and depressive, musculoskeletal, and psychosomatic symptoms in adolescents.
* **Procedures:** If you agree to participate in this study, you will be asked to complete an anonymous and voluntary questionnaire during class hours. The questionnaire will include questions about your demographic background, gaming habits, and depressive, musculoskeletal, and psychosomatic symptoms.
* **Risks and Benefits:** There are no known risks associated with participating in this study. However, the study may help to identify the predictors of depressive, musculoskeletal, and psychosomatic symptoms in adolescents and inform interventions to reduce the negative effects of online gaming on adolescent health.
* **Confidentiality:** Your participation in this study is voluntary, and your responses will be kept confidential. Your personal information will not be shared with anyone outside of the research team.
* **Voluntary Participation:** Participation in this study is voluntary, and you may choose not to participate or withdraw from the study at any time without penalty.
* Contact Information: If you have any questions or concerns about the study, please contact the principal investigator at [Shakila Arabi-01626115191].
* **Consent:** By completing the questionnaire, you are indicating that you have read and understood the information provided above and voluntarily agree to participate in this study.

Thank you for your participation.

Signature /Thumb Print: \_\_\_\_\_\_\_\_\_\_\_\_ Witness Signature: \_\_\_\_\_\_\_\_\_\_  
Name: Name:   
Date: Date:   
Age   
Institute:

Investigator’s Signature: \_\_\_\_\_\_\_\_\_\_\_\_  
Name:   
Date: