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# The prevalence of social anxiety and its relationship with tendency to addiction and sleep quality among high school students in Divandareh in 2018

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### ARTICLE INFO

#### Article History:

Received 6 October 2019  
Revised 16 February 2020  
Accepted 27 April 2020

#### Keywords:

Social anxiety  
Sleep quality  
Students  
Addiction  
Iran

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### ABSTRACT

**Introduction:** Tendency toward addiction in adolescence can affect not only the youth but also whole life periods of an individual. Recent studies indicated that addiction is a severe and progressive issue in Iran. The aim of this study was to determine the prevalence of social anxiety and its relationship with addiction tendency and sleep quality among high school students in Divandareh in 2018.

**Methods:** The study population in this cross-sectional study included high school students (16-18 years old) in Divandareh city, Kurdistan, Iran in 2018. The sample size was calculated 386 subjects based on Cochran equation and sampling was performed using cluster sampling method. Data collection instruments included Puklek social anxiety questionnaire, Zargar et al. tendency to addiction questionnaire and Pittsburgh Sleep Quality questionnaire. Chi-square was used for analytical statistics.

**Results:** This study revealed that low, moderate and high levels of social anxiety were present in 31 (8%), 252 (68%) and 87 (23%) students respectively. Desirable sleep quality was observed in 76 (20.5%) students while 294 (79.5%) students had sleep disorder. In our study, there was a significant relationship between sleep quality and social anxiety ( $P < 0.001$ ), social anxiety and tendency to addiction in adolescents ( $P < 0.001$ ) and also there was a significant relationship between sleep quality and addiction tendency ( $P < 0.001$ ). Also, social anxiety was significantly related to gender ( $P < 0.001$ ), grade ( $P < 0.001$ ), grade point average ( $P = 0.008$ ) and economic status ( $P = 0.038$ ).

**Conclusion:** The findings of this study indicate that pay attention to sleep in children, providing a calm and supportive environment for adolescents should be one of the priorities in families.

## Introduction

Addiction is among the major health concerns globally (1). Annual mortality due to substance abuse is estimated to be nearly 4 million. The mortality due to substance abuse is estimated to go beyond 10 million people in 2030 and that 70% of the mortality occurs in developing countries (2). While the increasing rate of drug use has been declined in developing countries, the rate of drug abuse among adolescents is increasing in Iran (3). The reason for the increased drug abuse among adolescents in Iran might include economic status of the family and level of parental education (4). Recent studies indicate that addiction is a serious and growing condition in Iran and reached 3 per 1000 population (5).

Social anxiety or social phobia is due to the presence of an individual in public and fear of being judged. Individuals with social anxiety cannot control their anxiety and stress that result in social withdrawal. Socially withdrew individuals might experience reduced self-confidence and tendency towards drug

abuse (6). More than 20% of the individuals who are referred to psychologist for anxiety disorders suffer from social anxiety (7). Sleep duration and quality have a role in addiction. Based on neuroscience point of view, cognitive domains including memory, learning, attention, and performance are seriously affected by sleep quality. (8). Studies documented that psychological disorders including depression and hopelessness are related to drug use and sleep disorders (9, 10).

Child rearing is among the fundamental subjects in preventing future dangers. It is documented that an efficient child rearing can reduce the incidence of behavioral disorders in children, including aggression (11). Child abuse is also due to child rearing method and can result in future behavioral disorders in children (12, 13). Parental health is an important factor that can reduce the incidence of behavioral disorders, including oppositional defiant disorder, in children (14).

Regarding the difficulties in drug quitting and the probability of relapse, identifying the risk factors for drug addiction in different population groups is necessary (15). The aim of this study was to identify the prevalence of social anxiety and its relationship with addiction potential and sleep quality among high school students in Divandareh in 2018.

## Methods

### Samples

The sample population in this cross-sectional study included all high school students (16-18 years old) in Divandareh, Kurdistan, Iran in 2018. Sampling was performed using cluster sampling. Each cluster was selected randomly. Sample size was determined using the Cochran equation considering  $p=0.05$ . The sample size was calculated as 386 subjects. Inclusion criteria were willingness to participate in the study by signing an informed consent and providing complete, precise, and correct responses to the questionnaire questions. Exclusion criteria were refusal to participate in the study or incomplete questionnaires.

### Ethical issues

The Ethics Committee of University of Kurdistan approved the study (with number: 1398.015). Required permissions were obtained from the Provincial Department of Education and school managers before conducting the study. High school students were required to sign an informed consent before participating in the study after being informed about the study aims and ensured regarding the confidentiality of the data.

### Gathering information

Study instruments included demographic questionnaire, consisting of age, gender, year of education, education status and economic status of the family, Puklek social anxiety scale for adolescents questionnaire (2004), Pittsburgh Sleep Quality Index (PSQI) and addiction potential questionnaire by Zargar et al. Puklek social anxiety scale for adolescents is a 28-item questionnaire that assesses the worries, fears and avoidant behaviors of adolescents in different social situations, including interaction with peers and school situations. This questionnaire consists of two domains, including perception and fear from negative judgment, tension, and prevention in social encounters. Questionnaire items are scored based on a 5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree). The final score was calculated by adding the scores in each domain ranging from 28 to 140. Low social anxiety was defined as scores between 28 and 46, moderate social anxiety was defined as scores between 46 to 93 and severe social anxiety was defined as scores higher than 93. The reliability and validity of the questionnaire was assessed in the study by Khodaei et al. (Cronbach's  $\alpha=0.83$ ) (16).

The PSQI questionnaire assesses the quality of sleep during the past 4 weeks in 7 domains. Each domain is scored from zero to three. The PSQI domains include general description of sleep quality, sleep latency, sleep duration, sleep quality (measured by dividing sufficient sleep duration by the total sleep duration), sleep disorders (including night wakefulness), use of sleep medication, and daytime dysfunction (defined as complications of poor quality sleep experienced in daytime). Each domain is scored from zero (no problem) to 3 (severe problem). The final score is calculated by summing up the scores in each domain (ranging from 0 to 21). Higher scores indicated worse sleep quality (917). Scores equal or higher than 6 is considered as sleep disorder. The reliability and internal validity of each domains of the questionnaire was acceptable (0.82 and 0.78 respectively). Addiction potential questionnaire by Zargar et al. (2004) is a Persian instrument to assess the potential for addiction based on psychosocial situation of Iran. This questionnaire includes 36

items plus 5 lie detecting questions. The questionnaire includes active and passive potential. Active potential relates to antisocial behaviors, desire to drugs, positive attitudes toward drugs, depression and sensation seeking. Passive potential relates mostly to and lack of self-expression and depression. Each question is scored in an answer sheet based on a three-point Likert scale ranging from zero (completely disagree) and 3 (completely agree). The scores in this questionnaire (excluding the lie detection questions), ranges between 0 to 108. Low potential is defined as scores below 36, moderate potential was defined as scores between 36 and 54, and high potential was defined as scores higher than 54. The reliability of the questionnaire was approved in the study by Zargar et al. (Cronbach's  $\alpha=0.90$ ) (19).

### Statistical analysis

The collected data was analyzed using the statistical package for social sciences (SPSS) software version 21. Descriptive statistics including mean and standard deviation were used for normally distributed data. The chi-square test and t-test were used for comparison of normally distributed variables, while the Mann-Whitney and Kruskal-Wallis test was used for non-normally distributed variables. The level of statistical significance was considered as 0.05 at 95% confidence limit.

## Results

The findings of this study revealed that of 370 high school students in Divandareh, 198 (54%) were boys and 172 (46%) were girls. The mean and standard deviation for age of the subjects were  $16.8 \pm 0.37$ .

Low, moderate, and high levels of social anxiety were observed in 31 (8%), 252 (68%) and 87 (23%) subjects. On the other hand, good sleep quality was observed in 76 (20.5%) subjects and sleep disorder was observed in 294 (79.5%) subjects.

Total social anxiety score was 36660 in boys and 31974 in girls. The Mann-Whitney U test revealed a significant difference in total anxiety scores between genders indicating a significant relationship between genders ( $P < 0.001$ ). The total social score was significantly higher in boys. The mean total social anxiety score was significantly higher among subjects with bad grade score and among subjects with good grade scores (202 vs 175 respectively,  $P = 0.002$ ). This indicates that students with higher level of anxiety had lower grade scores compared to students with lower anxiety scores.

High level of social anxiety was observed in 34% of students in the 12<sup>th</sup> year, 20% of students in 11<sup>th</sup> year and 24% of students in 10<sup>th</sup> year. On the other hand, 64% of the students with good economic status had lower social anxiety, while 70% of the students with lower social anxiety scores had poor economic status. There was a significant relationship between social anxiety score and gender ( $P < 0.001$ ), year of study ( $P < 0.001$ ), grade score ( $P = 0.008$ ) and economic status ( $P = 0.038$ ) (Table 1).

Poor sleep quality was observed in 77.2% of the subjects with high social anxiety scores. The chi-square test revealed a significant relationship between social anxiety and sleep quality ( $P < 0.001$ ) (Table 2). Low addiction potential was observed in 90.3% of the students with low level of social anxiety. The chi-square test also revealed a significant relationship between addiction potential and social anxiety ( $P < 0.001$ ) (Table 3). Low addiction potential was observed in subjects with good sleep quality. The chi-square test revealed a significant relationship between addiction potential and sleep quality ( $P < 0.001$ ) (Table 4).

**Table 1.** Relationship between social anxiety and gender, year of study, grade score, economic status among high school students in Divandareh in 2018

|                     |                  | Social anxiety |             |            | Total       | P value   |
|---------------------|------------------|----------------|-------------|------------|-------------|-----------|
|                     |                  | Low            | Moderate    | High       |             |           |
| Gender              | Boy              | 20 (64.5%)     | 129 (51.2%) | 49 (56.3%) | 198 (53.2%) | P < 0.001 |
|                     | Girl             | 11 (35.5%)     | 123 (48.8%) | 38 (43.7%) | 172 (46.8%) |           |
| Total               |                  | 31 (100%)      | 252 (100%)  | 87 (100%)  | 370 (100%)  |           |
| Grade               | 10 <sup>th</sup> | 13 (41.9%)     | 93 (36.9%)  | 34 (39%)   | 140 (37.8%) | P < 0.001 |
|                     | 11 <sup>th</sup> | 14 (45.1%)     | 128 (50.8%) | 35 (40.2%) | 177 (47.8%) |           |
|                     | 12 <sup>th</sup> | 4 (13%)        | 31 (12.3%)  | 18 (20.8%) | 53 (14.4%)  |           |
| Total               |                  | 31 (100%)      | 252 (100%)  | 87 (100%)  | 370 (100%)  |           |
| Grade point Average | Bad              | 11 (35.5%)     | 129 (51.1%) | 49 (56.3%) | 198 (53.5%) | P < 0.001 |
|                     | Good             | 20 (64.5%)     | 123 (48.9%) | 38 (43.7%) | 172 (46.5%) |           |
| Total               |                  | 31 (100%)      | 252 (100%)  | 87 (100%)  | 370 (100%)  |           |
| Economic status     | Poor             | 0 (0%)         | 119 (47.2%) | 61 (70.1%) | 201 (54.3%) | P = 0.001 |
|                     | Moderate         | 10 (32.3%)     | 104 (41.3%) | 22 (25.3%) | 136 (36.7%) |           |
|                     | Good             | 21 (67.7%)     | 29 (11.5%)  | 4 (4.6%)   | 33 (9%)     |           |
| Total               |                  | 31 (100%)      | 252 (100%)  | 87 (100%)  | 370 (100%)  |           |

**Table 2.** Relationship between social anxiety and sleep quality among high school students in Divandareh in 2018

|               |          | Social anxiety |            |            | Total       | P value   |
|---------------|----------|----------------|------------|------------|-------------|-----------|
|               |          | Low            | Moderate   | High       |             |           |
| Sleep Quality | Good     | 7 (22.5%)      | 50 (20%)   | 19 (21.8%) | 76 (20.5%)  | P < 0.001 |
|               | Not good | 24 (77.5%)     | 202 (80%)  | 68 (77.2%) | 294 (79.5%) |           |
| Total         |          | 31 (100%)      | 252 (100%) | 87 (100%)  | 370 (100%)  |           |

**Table 3.** Relationship between social anxiety and addiction potential among high school students in Divandareh in 2018

|                    |          | Social anxiety |            |            | Total       | P value   |
|--------------------|----------|----------------|------------|------------|-------------|-----------|
|                    |          | Low            | Moderate   | High       |             |           |
| Addiction Tendency | Low      | 28 (90.3%)     | 189 (75%)  | 62 (71.3%) | 279 (75.4%) | P < 0.001 |
|                    | Moderate | 2 (6.5%)       | 47 (18.6%) | 17 (19.5%) | 66 (17.8%)  |           |
|                    | High     | 1 (3.2%)       | 16 (63.4%) | 8 (9.2%)   | 25 (6.8%)   |           |
| Total              |          | 31 (100%)      | 252 (100%) | 87 (100%)  | 370 (100%)  |           |

**Table 4.** Relationship between addiction potential and sleep quality among high school students in Divandareh in 2018

|               |          | Addiction tendency |            |           | Total       | P value   |
|---------------|----------|--------------------|------------|-----------|-------------|-----------|
|               |          | Low                | Moderate   | High      |             |           |
| Sleep Quality | Good     | 61 (21.9%)         | 9 (13.6%)  | 6 (24%)   | 76 (20.5%)  | P < 0.001 |
|               | Not good | 218 (78.1%)        | 57 (76.4%) | 19 (76%)  | 293 (79.5%) |           |
| Total         |          | 103 (100%)         | 66 (100%)  | 25 (100%) | 369 (100%)  |           |

## Discussion

The current study revealed that the prevalence of social anxiety was high among high school students, as a non-clinical sample. The prevalence of high and moderate levels of social anxiety was 23% and 68% respectively. These findings were in line with the findings of the previous study by Mohammadkhani et al. on Payame-Noor University students in Kermanshah, Iran (20).

The current study revealed a significant relationship between social anxiety and grade score ( $p=0.002$ ) indicating that students with higher levels of social anxiety had lower grade scores compared to students with lower social anxiety scores. These findings were in line with the findings of the study by Gren-Landell et al. on Sudanese adolescents (24). But these findings were in contrast with the findings of the study by Mazhari et al. in Kerman, Iran, that reported no significant difference between academic performance among students with and without social anxiety disorder (22).

The current study revealed a significant relationship between social anxiety and economic status indicating that students with better social status had lower social anxiety (64%), while 70% of the students with higher social anxiety scores had worse economic status. Mokhtaripour et al also reported a significant relationship between social anxiety and economic status among medical students in Isfahan (25).

Furthermore, the current study revealed a significant direct relationship between social anxiety score and addiction potential.

The current study revealed that 90.3% of the students with low social anxiety scores had low addiction potential. The study by Grant et al. in the United States revealed that 28% of the American university students had social anxiety disorder and that these was a significant relationship between social anxiety and alcohol addiction potential among university students (26). Mohammadkhani et al. also reported significant direct relationship between social anxiety and addiction potential (20). This indicates that higher social anxiety scores were significantly related with higher potential for addiction.

The current study also assessed sleep quality and revealed a significant relationship between social anxiety score and sleep quality ( $p<0.001$ ) indicating that 80% of the students with good sleep quality had low addiction potential. However, in Zalta et al study, was shown that, the poor sleep quality reduces the effects of cognitive-behavioral therapy for social anxiety disorder (27), these results show the important effects of sleep quality on social anxiety. Smart phone addiction among adolescents is among the factors that affect sleep quality. In a study on adolescents, smart phone addiction was found to be significantly related to sleep quality but not social anxiety (28). On the other hand, another study revealed a significant relationship between smart phone addiction and depression and hopelessness (29). The findings of the study by Zargar et al. indicated a negative relationship between

sleep quality and addiction potential. In other words, subjects with better sleep quality had lower potential to addiction (30).

In conclusion, identifying and reducing the risk factors for addiction can have an important role in preventing drug abuse among adolescents and reduce drug demand in adults. The findings of the current study revealed that social anxiety disorder and quality of life are important predictors for addiction. Therefore, providing an acceptable and suitable environment based on the needs of adolescents should be considered as a one of the priorities of families. Furthermore, major political measures to treat and support addicts may not be effective without preventive education, identifying risk factors and modifying social determinants of addiction.

### Conclusion

One of the important results of our study is the existence of a significant relationship between sleep quality and social anxiety and on the other hand, the relationship between social anxiety and addiction in adolescents. These results show the importance of proper sleep in adolescents and treat their anxiety in reducing future risks, including addiction. The findings of this study on the factors affecting addiction potential in students indicate that pay attention to sleep in children, providing a calm and supportive environment for adolescents should be one of the priorities in families.

### Ethical disclosure

The Ethics Committee of University of Kurdistan approved the study (with number: IR.MUK.REC.1398.015).

### Acknowledgements

The authors of this article express their gratitude and thanks to all the directors and teachers of the schools in Sanandaj, as well as all the students who have helped to collect the correct data.

### Author contributions

All the authors have accepted responsibility for the entire content of this submitted manuscript and approved submission.

### Conflict of interest

There is no conflict of interest.

### Funding/Support

The authors of this article express their gratitude to the Vice-Chancellor for Research and Technology of Kurdistan University of Medical Sciences, as well as to all respected teachers and students of Divandarrah city who worked with us. This study was extracted from an approved research project with ID number: IR.MUK.REC.1398.015.

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