Objectives: This study aimed to determine the relationship between assertion and aggression with addiction potential among students in Shahroud University of Medical Sciences.

Methods: In this cross-sectional study conducted in 2019, 500 students of Shahroud University of Medical Sciences, were selected by multistage random sampling, for a study using the Addiction Potential Scale, and Assertion and Aggression Questionnaires. Data were analyzed using ANOVA, Chi-square, t test, Pearson’s correlation coefficient, and the linear regression model.

Results: The mean scores of addiction potential, aggression, and assertion were 32.7 ± 17.2, 41.5 ± 12.9 and 139.4 ± 22.3, respectively. In this study, 38.8% (N = 194) of students had high aggression and 76.8% (N = 384) had high assertion. In the regression model, aggression, history of drug and addictive substances abuse, history of tobacco use, and history of alcohol abuse were significantly related to addiction potential (p ≤ 0.05). There was a negative relationship between assertion and addiction potential so that with one-unit increase in the assertion score, the addiction potential score decreased by -0.11.

Conclusion: Given the direct relationship between aggression and addiction potential, and since more than three-quarters of the students had moderate to high aggression, it is necessary to pay more attention to this issue. Interventions may play an important role in improving the current situation.

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Received: 24 September 2020 Revised: 27 October 2020 Accepted: 11 November 2020

Osong Public Health Res Perspect 2020;11(4):231-238

[10]. Assertion is an important social skill that reduces social anxiety and helps an individual adapt to social situations and interactions. A lack of assertiveness can result in negative outcomes such as aggression and addiction [4,9,11].

Aggressive behaviors are a problem in many societies, as they can harm people and endanger public health [12,13]. Aggression is defined as a behavior that is intended to harm oneself and/or others [5]. It is a set of cathartic behaviors that may be characterized by the violation of the rights of others and the harassing effect of these behaviors, and any intentional conduct (whether verbal or nonverbal) that leads to personal, psychological or physical harm, or financial harm to oneself and/or others to achieve emotional release [12-15]. Many factors including biological and hereditary, environmental learning and cognitive processing, as well as personal stimuli can influence aggression [16]. It has been reported that aggression is a predictor of the tendency to be addicted to substances and it increases addiction potential in individuals [17-21].

Addiction potential includes beliefs and attitudes to the abuse of addictive substances with an understanding of its positive and negative consequences [22,23]. Factors that influence youth addiction potential are generally divided into 2 categories including internal and external factors. The most important external factors include family relationships (poor parent-child relationship), presence of an addict in the family, peer pressure (friends who are addicted), economic and social status (unemployment, urbanization and geographical proximity to drug production areas), community policies, loneliness and isolation [24-30]. The most important internal factors affecting addiction potential are genetic factors, depression, stress, lack of confidence and self-esteem, lack of ability to say no to others, lack of mental health, aggression, personality traits, and poor religious beliefs [24,31-33]. In some Iranian studies, the average score of readiness for potential addiction has been reported to be high in student groups [5,31,34-36].

Given the high prevalence of drug dependence and the difficulty of treatment, it is necessary to identify risk factors in different populations including students [5]. Medical students after graduation will function as providers of health care services, and any long-term harm of addiction (in addition to the students themselves) can endanger a wide range of communities. Therefore, it is very important to identify the risk factors for addiction potential among this group. The purpose of this study was to determine the relationship between aggression and assertiveness with addiction potential among students in Shahroud University of Medical Sciences.

Materials and Methods

In this cross-sectional study, 500 students of Shahroud University of Medical Sciences were selected through a multi-stage random sampling method. There was a total of 1,700 students at associate, undergraduate, master’s, M.D and Ph.D. levels. The first stage of sampling was conducted in 4 faculties of medicine, nursing-midwifery, paramedical and health through strata sampling, and after specifying the number of students in each faculty, a proportional to size sample was determined. In the second stage, based on the list of majors and classes, and the required sample size, some classes were randomly selected as clusters and the students in those classes participated in the study. A total of 510 questionnaires were distributed and 500 were returned and analyzed.

The Ethics Council of Shahroud University of Medical Sciences approved the proposal for the study (IR.SHMU.REC.1397.129.) prior to data collection. Ethical considerations were completely voluntary and the questionnaires were anonymous.

1. Measurements

In this study, 4 questionnaires including a demographic, Addiction Potential Scale, Aggression Scale, and Assertion Inventory were administered to the participants. In this study, 17 questions were asked about demographic and general characteristics of the participants, 41 specific questions about addiction potential, 40 questions about assertiveness, and 30 questions about aggression. The specifications of the questionnaires used in the study are described below.

1.1. Addiction potential scale

The addiction potential scale was developed by Weed et al [37], translated into Persian by Zargar [38], and developed to evaluate the psychosocial properties of this scale in the Iranian population. The validated Persian version of the questionnaire consists of 2 factors and 36 items, plus 5 lie-detecting items [38]. Examples of some included questions, “I do not like everyone I know” or “Cannabis use is not addictive.” The score for each item ranged on a 4-point continuum from 0 (strongly disagree) to 3 (strongly agree). Items 6, 12, 15, 21 were reverse-scored. This questionnaire had 5 lie-detecting items 12, 13, 15, 21 and 33. The final score ranged from 0 to 108. Higher scores indicated the greater potential of the respondent for addiction and vice versa (scores ranged from 0 to 36) indicated a low potential of respondents for addiction. A score between 36 and 54 indicated a moderate potential of respondents for addiction. A score above 54 indicated a greater potential of the respondents for addiction. Zargar et al [38] showed that the Persian version of Addiction Potential Scale clearly
distinguished the addicts from the non-addicts (criterion validity). The construct validity of the scale was evaluated with the 25-item Clinical Symptom Index using the calculation of correlation coefficient (r = 0.45). The reliability of the Persian version of this scale was calculated as 0.90 using Cronbach’s alpha method [36, 38].

1.2. Assertion inventory

This inventory was developed by Gambrill and Richey [39] and included 40 items. Each item represented a situation in which the participant must determine the degree of his or her concern and the probability of answering the item. Examples of some included questions were, “turn off a talkative friend” and “request a meeting or a date with a person”. The answer to each item ranged on a 5-point scale from 5, (very high) to 1 (low). The total score was the sum of the 40 item scores. The minimum possible score was 40 and the maximum was 200. A score between 40 and 80 indicated low assertiveness, a score between 80 and 120 indicated moderate assertiveness, and a score above 120 indicated high assertiveness of the person. The factor validity of the different items was reported to be between 0.39 and 0.70, and the reliability coefficient of the whole inventory was 0.81 [39].

1.3. Aggression questionnaire

The Ahvaz aggression scale developed by Zahedifar et al [40] in 2000, has 30 items and 3 subscales (anger and rage, aggression and insult, stubbornness and malice). This questionnaire was used to evaluate aggression in individuals and measures the components of anger and rage (items 1 to 14), aggression and insult (items 15 to 22), and stubbornness and malice (items 23 to 30). Examples of some included questions were “I blame myself” and “Others consider me a violent and aggressive person.” Respondents were required to select 1 of 4 options ranging from rarely (0), to always (3). Item 18, which has a negative factor loading was reversed in scoring. The scores were summed up and the total score ranged from the minimum possible score of 0, to a maximum of 90. A score between 0 and 30 indicated low aggression, a score between 30 and 45 indicated moderate aggression, and a score above 45 indicated high aggression. The Cronbach’s alpha reliability for the whole scale and the 3 subscales were 87%, 85%, 76%, and 75%, respectively. The test-retest reliability coefficients were 60%, 74%, 72% and 70%, respectively [40].

After informing the students of the purpose of the study and demonstrating how to answer the questions, the battery of the questionnaires was administered to the students. Data were analyzed using SPSS 16 software through Chi-square, Pearson correlation coefficient and linear regression model at the significance level of 0.05. The qualitative data were presented by frequency and percent, and quantitative variables were illustrated as mean ± SD.

Results

In this study, 42.4% of the participants (N = 212) were males and the rest were females. Medical students (30.6%) and nursing students (21.2%) had the highest frequency of participants. The response rate was 98.04%. The mean score of addiction potential was 32.7 ± 17.2. Results showed that 21% of participants (N = 105) had a low level of aggression, 40.2% (N = 201) had a moderate level of aggression and 38.8% (N = 194) had high levels of aggression. Moreover, 0.4% (N = 2) showed a low level of assertiveness, 22.8% (N = 114) showed a moderate level of assertiveness and 76.8% (N = 384) showed a high level of assertiveness (Table 1).

Table 1. Basic demographic variable mean scores of study participants.

| Variables             | Mean ± SD     | Minimum | Maximum |
|-----------------------|---------------|---------|---------|
| Age (y)               | 21.44 ± 2.52  | 17      | 37      |
| Semester              | 4.19 ± 2.71   | 1       | 14      |
| Addiction potential   | 32.67 ± 17.24 | 1       | 85      |
| Aggression            | 41.54 ± 12.94 | 0       | 80      |
| Assertion             | 139.42 ± 22.29| 66      | 200     |
| Anger and rage        | 24.05 ± 7.39  | 0       | 41      |
| Aggression and insult | 8.54 ± 4.21   | 0       | 24      |
| Stubbornness and malice | 8.96 ± 4.86 | 0       | 24      |
The results of the Chi-square test showed a significant relationship between gender, student's current residence, student's economic status, student's economic activity, and education with assertiveness ($p \leq 0.05$). However, there was no significant relationship between assertion and marital status, semester, educational level, being local or non-local, parents' residence, parental life status, and their educational level and family size ($p \geq 0.05$; Table 2).

Table 2. Comparison of demographic variables in terms of assertion categories.

| Variable                        | Assertion, N (%)                                                                 | $\chi^2$ | $p$   |
|---------------------------------|----------------------------------------------------------------------------------|----------|-------|
|                                | Low: 2 (0.4)                                                                      |          |       |
| Sex                             |                                                                                  |          |       |
| Male                            | 1 (0.5)                                                                          |          |       |
| Female                          | 1 (0.3)                                                                          |          |       |
| Educational level               |                                                                                  |          |       |
| Associate                       | 0 (0)                                                                            | 9.57     | 0.008*|
| BSc.                            | 0 (0)                                                                            | 12.78    | 0.120 |
| M.D.                            | 2 (1.3)                                                                          |          |       |
| MSc. & Ph.D.                    | 0 (0)                                                                            |          |       |
| Marital status                  |                                                                                  |          |       |
| Single                          | 2 (0.4)                                                                          | 0.306    | 0.858 |
| Married                         | 0 (0)                                                                            |          |       |
| Locality                        |                                                                                  |          |       |
| Local                           | 1 (2)                                                                            | 3.77     | 0.152 |
| Non-local                       | 1 (2)                                                                            |          |       |
| Current residence               |                                                                                  |          |       |
| Dormitory                       | 0 (0)                                                                            | 18.54    | 0.005*|
| Lodging                         | 1 (2.4)                                                                          |          |       |
| Parental house or a relative's house | 1 (4.17)                                                                | 0.52     | 0.770 |
| Economic status of the family   |                                                                                  |          |       |
| Poor                            | 0 (0)                                                                            | 16.64    | 0.002*|
| Moderate                        | 0 (0)                                                                            |          |       |
| Good                            | 2 (2.1)                                                                          |          |       |
| Economic activity along with education |                                                             |          |       |
| Yes                             | 0 (0)                                                                            | 6.50     | 0.040*|
| No                              | 2 (0.5)                                                                          |          |       |
| Parental residence              |                                                                                  |          |       |
| City                            | 2 (0.4)                                                                          | 0.52     | 0.770 |
| Village                         | 0 (0)                                                                            |          |       |
| Family size                     |                                                                                  |          |       |
| 3                               | 0 (0)                                                                            | 5.65     | 0.460 |
| 4                               | 2 (1.0)                                                                          |          |       |
| 5                               | 0 (0)                                                                            |          |       |
| 6 and above                     | 0 (0)                                                                            |          |       |
| Semester                        |                                                                                  |          |       |
| 1-2                             | 0 (0)                                                                            | 7.47     | 0.110 |
| 3-4                             | 2 (0.9)                                                                          |          |       |
| 5-above                         | 0 (0)                                                                            |          |       |
| Parental life status            |                                                                                  |          |       |
| Both are alive                  | 2 (0.4)                                                                          | 0.272    | 0.870 |
| One is alive                    | 0 (0)                                                                            |          |       |

* Significant.
The results of the Chi-square test also showed a significant relationship between students’ economic status and family size with levels of aggression (p ≤ 0.05). However, there was no significant relationship between aggression with gender, marital status, current student’s place of residence, educational level, being a local or non-local student, parental residence, student’s economic activity associated with education, semester, parental life status and educational level (p ≤ 0.05; Table 3).

Table 3. Comparison of demographic variables in terms of aggression categories using Chi-square test.

| Variable                        | Aggression, N (%) | \( \chi^2 \) | p       |
|---------------------------------|-------------------|--------------|---------|
|                                | Low (21)          | Moderate (40.2) | High (38.8) |
| Sex                             |                   |              |         |
| Male                            | 43 (20.3)         | 82 (38.7)    | 87 (41)  | 0.777 | 0.680 |
| Female                          | 62 (21.5)         | 119 (41.3)   | 107 (37.2) |       |       |
| Educational level               |                   |              |         |
| Associate                       | 2 (22.2)          | 4 (44.4)     | 3 (33.3) | 12.00 | 0.151 |
| BSc.                            | 70 (21.7)         | 125 (38.8)   | 127 (39.4) |       |       |
| M.D.                            | 26 (17.1)         | 63 (41.4)    | 63 (41.4) |       |       |
| MSc. & Ph.D.                    | 7 (41.18)         | 9 (52.94)    | 1 (5.88)  |       |       |
| Marital status                  |                   |              |         |
| Single                          | 98 (21.3)         | 182 (39.5)   | 181 (39.3) | 1.28 | 0.530 |
| Married                         | 7 (17.9)          | 19 (48.7)    | 13 (33.3) |       |       |
| Locality                        |                   |              |         |
| Local                           | 9 (17.6)          | 22 (43.1)    | 20 (39.2) | 0.428 | 0.807 |
| Non-local                       | 96 (21.4)         | 179 (39.9)   | 174 (38.8) |       |       |
| Current residence               |                   |              |         |
| Dormitory                       | 95 (21.8)         | 168 (38.6)   | 172 (39.5) |       |       |
| Lodging                         | 6 (14.6)          | 17 (41.5)    | 18 (43.9) | 10.63 | 0.100 |
| Parental house or a relative's house | 4 (16.67)     | 16 (66.66)   | 4 (16.67) |       |       |
| Family’s economic status        |                   |              |         |
| Poor                            | 10 (23.8)         | 15 (35.7)    | 17 (40.5) | 16.42 | 0.003* |
| Moderate                        | 64 (17.7)         | 143 (39.5)   | 155 (42.8) |       |       |
| Good                            | 31 (32.3)         | 43 (44.8)    | 22 (22.9) |       |       |
| Economic activity along with education |            |              |         |
| Yes                             | 19 (23.5)         | 32 (39.5)    | 30 (37)   | 0.367 | 0.830 |
| No                              | 86 (20.5)         | 169 (40.3)   | 164 (39.1) |       |       |
| Parental residence              |                   |              |         |
| City                            | 98 (21.6)         | 186 (41.0)   | 170 (37.4) | 3.87 | 0.150 |
| Village                         | 7 (15.2)          | 15 (32.6)    | 24 (52.2) |       |       |
| Family size                     |                   |              |         |
| 3                               | 18 (39.1)         | 17 (37.0)    | 11 (23.9) | 14.06 | 0.030* |
| 4                               | 39 (19.9)         | 86 (43.9)    | 71 (36.2) |       |       |
| 5                               | 26 (17.1)         | 58 (38.2)    | 68 (44.7) |       |       |
| 6 and above                     | 22 (20.8)         | 40 (37.7)    | 44 (41.5) |       |       |
| Semester                        |                   |              |         |
| 1-2                             | 33 (21.3)         | 67 (43.2)    | 55 (35.5) | 7.03  | 0.130 |
| 3-4                             | 58 (24.7)         | 85 (37.4)    | 86 (37.9) |       |       |
| 5-above                         | 16 (13.6)         | 49 (41.5)    | 53 (44.9) |       |       |
| Life status of the parents      |                   |              |         |
| Both are alive                  | 100 (20.9)        | 189 (39.5)   | 190 (39.7) | 3.85  | 0.150 |
| One is alive                    | 5 (23.81)         | 12 (57.14)   | 4 (19.05) |       |       |

* Significant.
Pearson’s correlation coefficient also showed a significant relationship between addiction potential and aggression scores ($r = 0.259, p < 0.001$), assertiveness ($r = -0.162, p < 0.001$), aggression and insult ($r = 0.328, p < 0.001$), stubbornness and malice ($r = 0.323, p < 0.001$). However, there was no significant correlation between anger and rage score ($r = 0.055, p = 0.219$) and addiction readiness score ($r = 0.428, p = 0.001$).

In the regression model, only aggression, history of drug and addictive substances abuse, history of tobacco use, and history of alcohol abuse had a significant relationship with addiction potential ($p \leq 0.05$). On average, with 1 score of increase in the history of drug and addictive substances abuse, the addiction potential score increased by 9.69. This figure for a history of smoking, aggression, and history of alcohol abuse stood at 7.31, 0.23, and 14.41 respectively. There was also a reverse relationship between addiction potential and assertion so that with a 1 score increase in the assertion, addiction potential decreased by -0.11 (Table 4).

### Discussion

The results of this study showed a significant relationship between gender, student’s current residence, student’s economic status, student’s economic activity, and education with assertiveness. In addition, a significant relationship was observed between students’ economic status and family size with levels of aggression. In the regression model, aggression, history of drug and addictive substances abuse, history of tobacco use, and history of alcohol abuse were significantly related to addiction potential. There was a negative relationship between assertion and addiction potential.

The mean aggression score in this study was 41.54 ± 12.94. Some studies have reported a lower mean score than the present study [3-5,9] and in another study, it is higher than the mean of this study, which is inconsistent with our results [41]. Perhaps 1 of the reasons for inconsistent results is the type of university and geographical area of study.

The mean score of assertion was 139.42 ± 22.29. In some studies, the reported mean score was lower than the present study [9,36,42]. Perhaps 1 of the reasons for the higher score of assertion in the present study is that the participants were students of medical sciences and they achieved more in their studies.

The mean score of addiction potential was 32.67 ± 17.24. In some studies, the mean score of addiction potential was higher than the results of this study, which is inconsistent with our results [5,31,34-36]. The results of this study are consistent with the low mean score of addiction potential reported in other studies [3,4,9,22,43]. Perhaps one of the reasons for the discrepancy is the study environments and types of university.

There was no significant relationship between addiction potential and age. This is in line with the results of some studies in Iran and internationally [22,31,44-46]. However, it is inconsistent with the results of Lechner’s study [47]. Perhaps one of the reasons for the similarity of results is the similarity of the mean age of individuals in the different studies.

Although the score of addiction potential was lower among
women, there was no significant relationship between addiction potential and gender. A number of studies reported a significant relationship between sex and addiction potential which is inconsistent with the present results [22,31,35,45]. A number of other studies, however, indicated a significant relationship between sex and addiction potential, which is consistent with the present results [44,46,47]. Men are more likely than women to engage in social, occupational and income issues, and if they do not feel satisfied with themselves at achieving their social goals, they may turn to addictive and/or narcotic substances to obtain the satisfaction that they have failed to achieve with their social goals. This can be a reason for the increased addiction potential and substance abuse among men.

In this study, there was no significant relationship between addiction potential and marital status, which is inconsistent with the results of a study [35] but consistent with some others [22,31,44]. Marriage is a preventive factor of psychological trauma that can be a promising factor in the prognosis of treatment.

There was a significant relationship between aggression and addiction potential. Some studies have reported such a relationship, which is consistent with the present results [1,3-5,9,17-20]. To explain this finding, it can be argued that aggressive people do not use drugs for pleasure only. Rather, they may use substances to suppress and overcome their inner turmoil. Moreover, aggressive behavior is likely to lead to the individual’s isolation by positive peers who have logical and phlegmatic responses to life problems and issues, thus aggressive behavior may lead an individual to join deviant groups. This, in turn, can provide a likely context for drug addiction.

There was also a negative relationship between assertion and addiction potential such that with an increase in the assertion score, there was a decrease in addiction potential score. This is consistent with some studies [4,9,36,38]. It may be argued that people who are less assertive have poorer self-esteem, and are not able to decline the irrational requests of others because of their low self-esteem. These people may even end up identifying with and being assimilated with their addicted friends for approval, saving them from being rejected.

Limitations of this study include being a cross-sectional study, measurement of 3 variables among medical students and not assessing stress levels in study participants (which may be associated with addiction) [48].

**Conclusion**

Students’ assertiveness scores were acceptable. Given the direct relationship between aggression and addiction potential, and that more than three-quarters of the students had moderate to high levels of aggression, it is important to pay attention to this. Interventions may play an important role in improving the relationship between aggression and addiction potential.

**Conflicts of Interest**

The authors have no conflicts of interests to declare.

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