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RESEARCH

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Assessing emotional intelligence domains and levels in substance use disorders

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Abstract

Background Many individuals with substance use disorders face challenges in their social interactions and often have strained relationships with peers. Challenges related to problem-solving, stress management, and impulsivity often contribute to their substance use disorders. Emotional intelligence plays a pivotal role in assisting individuals with substance use disorders in coping with stress, enhancing peer connections, resolving problems, and preventing relapse. Consequently, our study aimed to assess emotional intelligence in individuals with substance use disorders and explore the factors influencing it. A cross-sectional study compared 50 individuals with substance use disorders and 50 healthy individuals. We assessed various factors, including clinical data, sociodemographic variables, family socioeconomic status, Addiction Severity Index (ASI) scores, and Emotional Intelligence (EI) scale scores.

Results Individuals with substance use disorders had significantly lower mean scores in total EI and its subscales compared to the healthy control group. Additionally, a higher percentage of individuals with substance use disorders exhibited low EI levels, while healthy individuals demonstrated better EI. Furthermore, there was a substantial association between higher ASI scores in individuals with substance use disorders and lower EI scores.

Conclusions Lower EI scores are associated with an increased risk of substance use disorders. Also, can contribute to difficulties in impulse control, and challenges in managing relationships and stress. These findings underscore EI crucial role in preventing and treating substance use disorders.

Keywords Substance use disorders, Addiction severity index, Emotional intelligence

Background

Substance use disorders have emerged as a significant threat to Egyptian society, particularly among young adults, with an estimated prevalence of over nine million substance users in Egypt [1]. Substance use disorders are characterized as a chronic dysfunction of the brain system involving reward, motivation, and memory [2]. Various factors, including genetics, pharmaceutical effects, peer pressure, emotional stress, anxiety, depression, and environmental stress, can contribute to substance use disorders [3]. Freud also emphasized the role of emotions in substance use disorders, suggesting that overcoming the psychological aspects of substance use disorders, such as fear, pain, and despair, is possible [4]. Additionally, substance use disorders are associated with low self-esteem, an inability to express feelings, a lack of assertiveness, and poor communication skills [5]. Research has emphasized the importance of social competence, self-awareness, impulse control, and empathy as essential traits that protect against risky behaviors. Consequently, EI has been linked to reduced risk behaviors, improved relationships, and overall well-being [6].

Hence, EI encompasses two types of awareness: interpersonal and intrapersonal. Interpersonal awareness

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refers to a person's ability to appropriately recognize and respond to the emotional signals and behaviors of others, while intrapersonal awareness pertains to the ability to measure and manage one's own emotional responses [7]. EI plays a crucial role in human interactions within the social environment, distinguishing itself from cognitive intelligence by incorporating the capacity to recognize and utilize emotions, make appropriate emotional decisions, regulate moods, control impulses, and possess effective social skills. It is a vital and rewarding aspect of dealing with everyday life situations [8].

A study by Ke and Barlas [9] indicated that individuals with poor emotional awareness, a lack of knowledge about when to express emotions, and an inability to manage their moods may struggle in various aspects of life, including coping with stress. This maladaptive coping strategies may serve as a link between low EI and substance use disorders, as evidence suggests that maladaptive coping is associated with the initiation, maintenance, and relapse stages of substance use [10]. Individuals with substance use disorders, in their attempts to manage irrational feelings, impulses, and internal tension, may turn to psychoactive substances as a form of self-treatment [11].

Drigas and Sideraki's study [12] suggested that individuals who understand and control their emotions can approach problems more flexibly, explore alternative solutions, and avoid rigid decision-making. On the other hand, Henneberger et al.'s study [13] demonstrated that substance use disorders in its early phases are linked to difficulties in managing relationships with parents and peers. Poor EI can lead to decision-making weaknesses, particularly in personal and social matters [13].

Furthermore, the choice of a specific substance depends on an individual's self-regulation and affect-regulation problems, as well as personality dysfunctions. People prone to violence, excessive emotion, and poor stress management may prefer opioids, while those with difficulty expressing emotions, repressed aggressiveness, emptiness, tendencies toward despair, and self-esteem issues may opt for stimulants [14].

Many individuals with substance use disorders are struggling with deficiencies in their social skills and have strained relationships with their peers. Other contributing factors to substance use disorders may include problems with problem-solving, stress management, and impulsivity [15]. Assessing EI skills of individuals with substance use disorders can have a positive impact on their ability to cope with stress, cultivate healthier relationships with peers, improve their problem-solving abilities, and reduce the likelihood of relapse. Therefore, our objective was to assess the levels of EI among individuals with substance use disorders and identify the factors that influence it.

Methods

A cross-sectional study was conducted within the inpatient sector of the addiction management unit at the Psychiatry, Neurology, and Neurosurgery Hospital at Assiut University between January 2022 and June 2022. The study included males aged 18 years and older who were substance use disorders, whether a single substance or a combination of substances. Participants with cognitive impairments due to any cause (such as Alzheimer's disease or mild cognitive impairment), organic brain disorders (including delirium, dementia, and amnesia), comorbid medical disease, and comorbid psychotic disorders were excluded. individuals with substance use disorders were randomly chosen using computer-generated random numbers. On the other hand, healthy control individuals had to be males 18 years or older, with no history of substance use disorders, psychiatric disorders, or other medical conditions, and negative on a urine substance abuse screening.

Sample size

A purposive sample of 50 individuals with substance use disorders was utilized for the study. The sample size was determined using Open Epi Info version (3) based on the prevalence of individuals with substance use disorders reported in a study conducted by Rabie et al. [1], with a 90% confidence level and a 5% confidence limit.

Study tools

All individuals with substance use disorders were evaluated using a semi-structured interview designed by psychiatrists from Assiut University addiction department. The Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5) [16] was used to diagnose psychiatric disorders, and the Structured Clinical Interview for DSM-5 Disorders—Clinician Version (SCID-5-CV) during the psychiatric interview [17] was used to confirm the diagnosis and exclude comorbidities.

The following scales were administered:

Tool 1: sociodemographic and clinical data

This data sheet, developed by the researcher, includes information such as age, marital status, residence, occupation, and level of education. Additionally, it captures clinical data, including diagnosis, type of substance use, method of substance use, duration of substance use, and motivations behind initiating substance use.

Tool 2: scale for measuring family socioeconomic status

This scale, originally Sawsan and AF [18] and updated by El-Gilany, et al. [19], assesses family socioeconomic status. It consists of seven domains: education and culture, Occupation, Family, Family possessions, Economics, Home sanitation, and Healthcare access. The total scores range from 0 to 84, with scores below 42 indicating a very low level of socioeconomic status, scores between 42 and less than 63 indicating a low level of socioeconomic status, scores between 63 and less than 71.4 indicating a middle level of socioeconomic status, and scores between 71.4 and 84 indicating a high level of socioeconomic status. The scale demonstrates high reliability, with Pearson correlation coefficients for inter- and intra-observer reliability ranging from 0.84 to 1.00.

Tool 3: Emotional Intelligence Scale

Developed by Bar-On in 1997 [20], this scale measures emotional intelligence using a four-point Likert scale ranging from 1 (never) to 4 (often). It comprises 60 items divided into six domains: personal competency, social competence, stress management, adaptation, general mood, and positive impression. The total scores on the scale amount to 240, representing 100%. Emotional intelligence is categorized as high if the percent score is above 75%, moderate if the total score falls within the range of 60% to 75%, and low if the total score is below 60%. It was translated into Arabic language by Ahmed Abdel Salam with a Cronbach's Alpha coefficient of 0.910 the scale exhibits strong internal consistency and demonstrates convergent and discriminant validity, encompassing a wide array of emotional components [21].

Tool 4: the Addiction Severity Index (ASI)

Developed by McLellan et al. [22] in 1980, the ASI assesses patients' functional status in various domains over the recent 30 days and their lifetime. It comprises 200 questions organized into 7 subscales: medical status, employment and support, drug use, alcohol use, legal status, family and social status, and psychiatric status. Scoring ranges from 0 to 1 (no problem), 2 to 5 (mild to moderate problems), and 6 to 9 (severe problems). The ASI demonstrates good reliability, with Cronbach's alpha coefficients ranging from 0.64 to 0.77 across different domains. Test–retest reliability and concurrent validity are also favorable, with moderate to high levels of reliability and validity for the ASI composite scores. The ASI is considered a reliable and valid assessment tool [23].

Pilot study

A pilot study was conducted with five individuals with substance use disorders to evaluate the applicability and clarity of the tools who were not included in the final study. The pilot study intended to investigate 10% of the sample to assure the accuracy and relevance of the research tools, but no modifications have been adopted based on the results of the pilot study.

Statistical analysis

For data input and statistical analysis, the SPSS 26 Statistical Soft Ware Package was utilized. Qualitative data were presented as numbers and percentages; the χ^2 or Fisher's exact test was used to compare categorical variables, as applicable. The mean and standard deviation were used to describe quantitative data. independent *t* test was used for comparison between two groups. Multivariate regression analysis was used to examine the relationship between the difference in total EI and other parameters. The *P*-value was considered statistically significant if it was <0.05.

Results

Sociodemographic characteristics of participants

There was no significant statistical differences with regard to sociodemographic characteristics and family socioeconomic status of the individuals with substance use disorders and healthy control group (Table 1). Most of participants were from urban areas, age 30 or more, had secondary education level and manual workers.

Clinical characteristics of individuals with substance use disorders

Regarding clinical characteristics of individuals with substance use disorders, most of them use a single substance, especially opioids, used by inhaling, starting substance use between 20 and 30 years old, and using substances because of adverse peer effects (Table 2).

EI domains and levels

There were statistically significant differences of total and subscales of EI between individuals with substance use disorders and healthy control group (Table 3). The mean scores of the total and subscales of EI in individuals with substance use disorders were found to be significantly lower than the mean scores of the total and subscales of EI in healthy control group.

A comparison between the two groups, low level of EI was higher percentage in individuals with substance use disorders group than healthy control group while high level of EI was in healthy control group than individuals with substance use disorders group (Fig. 1).

ASI results

Regarding ASI, most participants had no problems in medical status, alcohol abuse, and legal status while

Table 1 Sociodemographic characteristics of studied groups (individuals with substance use disorders and healthy control group)

Variables	Individuals with substance use disorders *n* = 50		Healthy control group *n* = 50		Chi or *t* value	*P*-value
	No	%	No	%		
Age: (mean ± SD)	28.32 ± 8.17		29.10 ± 6.25		−0.536	0.593
< 30	35	70.0	28	56.0		
≥ 30	15	30.0	22	44.0	2.102	0.147
Residence						
Rural	18	36.0	16	32.0	0.178	0.673
Urban	32	64.0	34	68.0		
Levels of education						
Read and write	9	18.0	5	10.0	4.026	0.259
Preparatory	12	24.0	8	16.0		
Secondary	23	46.0	25	50.0		
University	6	12.0	12	24.0		
Marital status						
Single	26	52.0	23	46.0	0.360	0.548
Married	24	48.0	27	54.0		
Occupation						
Manual workers	40	80.0	32	64.0	3.175	0.075
Employee	10	20.0	18	36.0		
Family socioeconomic status					4.149	0.126
Very low	26	52.0	17	34.0		
Low	18	36.0	28	56.0		
Middle	6	12.0	5	10.0		

Chi-square test, *t*: independent *t*-test

employment status, drug abuse, and psychiatric status had severe problems (Table 4).

Regression

In a multivariate linear regression analysis involving the total scores of EI and various other parameters, it was observed that an increase in the total scores of ASI among individuals with substance use disorders was significantly associated with a decrease in the total scores of EI ($P = 0.006$) (Table 5).

Discussion

An individual's EI plays a crucial role as a risk factor in substance use disorders. Good emotional control, adept social skills, and competencies enable individuals to exercise better control over their substance use consumption, reducing the likelihood of developing substance use disorders [24].

A study by Bodrogi et al. [25] highlighted that low EI hinders individuals from efficiently managing life's stresses, potentially leading to increased substance use disorders and engagement in illicit activities. It also impedes individuals from regulating their moods and expressing their emotions effectively [25]. Moreover, Goleman, a prominent figure in emotional intelligence research, argued in his book that emotional intelligence can wield significant influence, often surpassing the impact of IQ [26]. He emphasized that academic intelligence has limited bearing on an individual's emotional life, noting that individuals with high IQ scores may struggle in social domains and exhibit uncontrolled passions and impulses. Goleman's assertion that emotional intelligence contributes approximately 80% to life successes, compared to IQ's 20%, underscores the significance of emotional intelligence in personal and professional achievements [26]. Thus, the primary aim of the present study was to assess the levels of EI among individuals with substance use disorders.

Table 2 Clinical characteristics of individuals with substance use disorders group

Variables	Individuals with substance use disorders ($n=50$)	
	No.	%
Diagnosis		
Single substance	27	54.0
Poly substance	23	46.0
Types of substance use[a]		
Cannabinoids	17	34.0
Opioids	30	60.0
Tramadol	15	30.0
Amphetamines	15	30.0
Benzodiazepine	2	4.0
Methods of substance use[a]		
Oral	24	48.0
Inhalation	38	76.0
Injection	7	14.0
Age of at onset abuse (in years): (mean ± SD)	21.82 ± 5.98	
< 20	20	40.0
20–30	26	52.0
> 30	4	8.0
Duration of abuse (days)		
(mean ± SD) Median (interquartile range)	7855.20 ± 2151.03 7740 (2880)	
Motivation for initiating substance[a]		
Peer effect	38	76.0
Trial	19	38.0
Increase strength and energy	4	8.0
Escape from life stressors	10	20.0
Relieve chronic pain	1	2.0

[a] More than answer

Our current study unveiled that most individuals with substance use disorders primarily opted for inhaled substances. Notably, the most prevalent substances abused were cannabinoids and amphetamines, predominantly consumed through smoking. This method was widely utilized due to its ease, lower associated risks, enhanced efficacy, and accessibility for individuals with substance use disorders. In contrast, Kun et al. [24] reported that injectable substance were used by over 25% of participants in both experimental and control groups.

Furthermore, our study revealed that most individuals-initiated substance use during late adolescence and early adulthood, typically between the ages of 20 and 30. This pattern may be attributed to the multiple physical, psychological, emotional, and social challenges faced during this transitional period. Opioids emerged as the most used substance, given their capacity to induce pleasure and relieve pain through neurological mechanisms. Moreover, they are characterized by a strong, compulsive drive to consume even when medically unnecessary, making them particularly appealing to individuals in the 20 to 30 age group [27]. These findings align with those of Mohamed et al. [28], who reported an onset of substance use between 21 and 32 years in 83% of their participants.

Additionally, our study demonstrated that most individuals with substance use disorders typically relied on a single substance. Furthermore, a significant proportion attributed their substance use disorders to peer influence. This observation aligns with the notion that individuals with low EI may resort to substances to cope with mental and life challenges and when making decisions under peer pressure [29]. These findings corroborate Sayed et al. [30], who found that over 50% of experimental and control groups, mainly influenced by peer pressure.

Table 3 Emotional intelligence domains of studied group

Emotional intelligence domains	Individuals with substance use disorders ($n=50$)	Healthy control group ($n=50$)	*t* value	*P*-value
	Mean ± SD	Mean ± SD		
Personal competence	10.28 ± 3.15	17.20 ± 3.17	− 10.952	< 0.001*
Social competence	21.14 ± 5.41	37.82 ± 5.51	− 10.952	< 0.001*
Stress management	20.54 ± 5.17	35.16 ± 5.30	− 15.275	< 0.001*
Adaptation	17.42 ± 5.07	31.04 ± 5.58	− 15.275	< 0.001*
General mood	24.24 ± 6.71	43.88 ± 5.68	− 13.960	< 0.001*
Positive impression	10.94 ± 3.04	17.94 ± 2.72	− 13.960	< 0.001*
Total of Emotional Intelligence domains	104.44 ± 25.67	183.04 ± 21.77	− 12.772	< 0.001*

t independent *t*-test

*Statistically significant difference ($P < 0.05$)

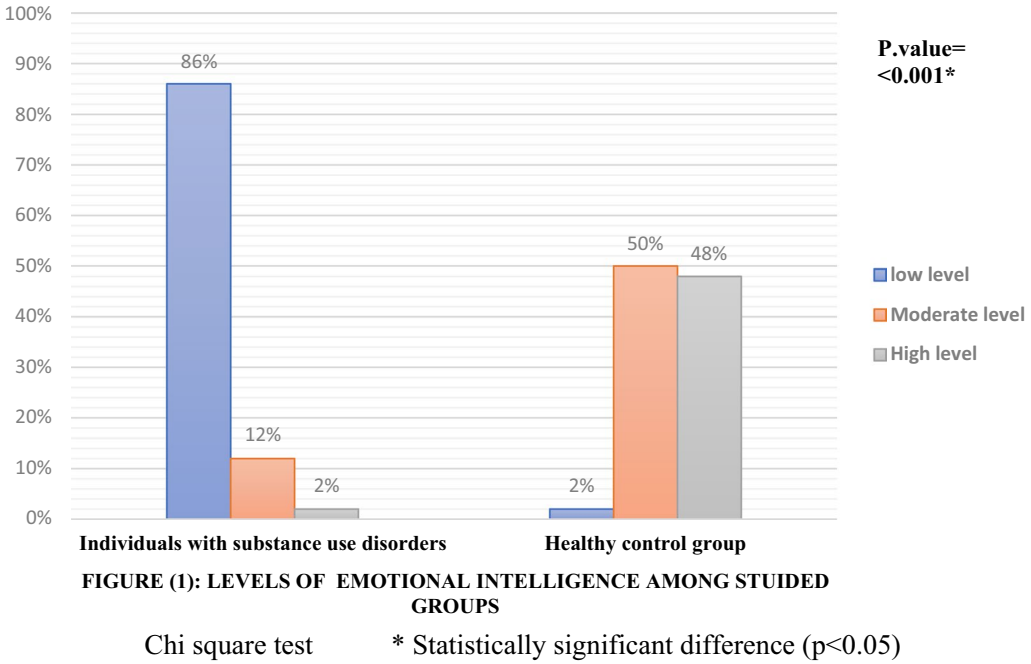

Fig. 1 Levels of emotional intelligence among studied groups. Chi-square test. *Statistically significant difference ($P < 0.05$)

Similarly, López et al. [31] reported that about two-thirds of both groups used a single type of substance.

Regarding socioeconomic status, our study found that most individuals with substance use disorders had very low levels, while most healthy individuals had low levels as well. This discrepancy can be attributed to participants in our study being predominantly manual workers with unstable incomes. This finding aligns with Bond et al.'s [32] discovery that more than half of individuals with substance use disorders fall into the low-income category. However, Mohamed et al. [28] reported contrasting results, with 28% of their research participants belonging to high socioeconomic status, 24% to low socioeconomic status, and 43% to middle socioeconomic status. Moreover, the previous study suggests that individuals with higher socioeconomic status may read the emotions of others poorly. This phenomenon is explained by the fact that higher-income individuals, having more resources, may be less dependent on others and less motivated to pay attention to others' emotions. On the other hand, individuals from lower socioeconomic backgrounds, who grow up in a culture of interdependency, learn to read facial expressions and consider others' perspectives [33]. In light of these findings, the 88% of our sample with a low socioeconomic level may actually present high emotional intelligence, challenging the association suggested in our study.

Furthermore, our study revealed that individuals with substance use disorders exhibited significantly lower levels of EI in all domains than healthy individuals. This outcome may be explained by the understanding that EI is a positive trait associated with effective coping strategies. It plays a pivotal role in an individual's physical and psychological well-being when facing stressful or adverse life events. Low EI, on the other hand, is linked to a reduced capacity to manage and control emotions, which may predispose individuals to substance use disorders [34]. Consistent with these findings, Kun et al. [24] reported lower EI levels in individuals with various substances, such as alcohol, opiates, and cannabis, than those without substance use disorders. Moreover, they found that polysubstance use were associated with even lower EI levels. A more recent study by Henning et al. [35] also supported these findings, showing that adults with substance use disorders scored considerably lower on EI assessments.

Lastly, our study identified that an increase in the total score of ASI among individuals with substance use disorders was significantly associated with a decrease in the total score of EI. This suggests that individuals with low EI struggle to manage intra and interpersonal

Table 4 Addiction Severity Index among individuals with substance use disorders

Variables	Individuals with substance use disorders *n* = 50	
	No	%
Medical status		
No problems	31	62.0
Mild to moderate	16	32.0
Severe problems	3	6.0
Employment status		
No problems	10	20.0
Mild to moderate	16	32.0
Severe problems	24	48.0
Alcohol abuse		
No problems	48	96.0
Mild to moderate	2	4.0
Drug abuse		
No problems	3	6.0
Mild to moderate	18	36.0
Severe problems	29	58.0
Legal status		
No problems	40	80.0
Mild to moderate	7	14.0
Severe problems	3	6.0
Family and social status		
No problems	15	30.0
Mild to moderate	19	38.0
Severe problems	16	32.0
Psychiatric status		
No problems	16	32.0
Mild to moderate	10	20.0
Severe problems	24	48.0

relationships, leading to employment, family, and social difficulties. Furthermore, their inability to control impulses and effectively cope with stressors due to emotional mismanagement can result in aggressive behavior, irritability, depression, and even psychotic symptoms [36]. These findings are in line with the research by Collins [7], who also found a negative correlation between substance use disorders and EI.

This study has a limitation due to the relatively small number of individuals with substance use disorders admitted during the research period, which could impact the applicability of the findings to a broader population. Furthermore, the researcher faced challenges in managing the behaviors of individuals with substance use disorders, resulting in extended time spent on their assessment.

Based on the study's outcomes, it may be beneficial to consider incorporating routine assessments of EI for individuals with substance use disorders. This could provide a more precise understanding of their EI levels and subsequently inform the integration of EI program into their rehabilitation efforts. Further research should be conducted to evaluate emotional intelligence and behavioral addiction in children and adults [37–39].

In conclusion, our findings found that lower EI scores are associated with increased vulnerability to substance use disorders. Individuals with low EI may turn to substances as a coping mechanism, struggle with impulse control, and face challenges in managing relationships and stressors. These insights shed light on the importance of EI in substance use prevention and intervention efforts.

Table 5 Multivariate linear regression between emotional intelligence domains and other psychometric scales among individuals with substance use disorders' group

Variables	*B*	Std. error	Beta	*T*	Sig	95.0% confidence interval for *B*	
						Lower bound	Upper bound
Cannabinoids	2.708	8.800	0.050	0.308	0.760	−15.064	20.481
Opioids	7.135	9.975	0.138	0.715	0.478	−13.010	27.280
Tramadol	−6.870	8.832	−0.124	−0.778	0.441	−24.708	10.967
Amphetamines	−14.151	10.381	−0.255	−1.363	0.180	−35.116	6.815
Benzodiazepine	19.596	19.883	0.151	0.986	0.330	−20.559	59.750
Total score of family socioeconomic status	0.183	0.302	0.088	0.606	0.548	−0.426	0.792
Total score of ASI	−0.985	0.342	−0.441	−2.876	0.006*	−1.676	−0.293
Single substance addiction[a]	8.530	11.126	0.167	0.767	0.448	−13.940	31.000

ASI Addiction Severity Index

[a] Poly substance addiction is the reference

*Statistically significant difference ($P < 0.05$)

Abbreviations
EI Emotional Intelligence
ASI Addiction Severity Index

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None.

Author contributions
HFM, AMD, NAEM, NAEAE and GKA recruited participants, analysis, and interpreted data, and were the contributors in writing the manuscript. All participants read and approved the final manuscript.

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Availability of data and materials
All data generated or analyzed during this study are available from corresponded on request.

Declarations

Ethics approval and consent to participate
The study received ethical approval from the nursing faculty (343) on December 26/2021. Informed written consent was obtained from all participants, assuring them of the confidentiality and anonymity of their data. Participants had the right to refuse participation or withdraw from the study at any time. The study was conducted in accordance with the Declaration of Helsinki and its subsequent amendments, following the standards of the institution and/or national research committee.

Consent for publication
The participants have consented to publishing their data result.

Competing interests
The authors have no conflicts of interest to declare that are relevant to the content of this article.

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References

1. Rabie M, Shaker NM, Gaber E, El-Habiby M, Ismail D, El-Gaafary M, Lotfy A, Sabry N, Khafagy W, Muscat R. Prevalence updates of substance use among Egyptian adolescents. Middle East Curr Psychiatry. 2020;27:1–8.
2. Cadet JL, Bisagno V, Milroy CM. Neuropathology of substance use disorders. Acta Neuropathol. 2014;127:91–107.
3. Martini F, Fregna L, Bosia M, Perrozzi G, Cavallaro R. Substance-related disorders. In: Fundamentals of psychiatry for health care professionals. Springer; 2022. p. 263–95.
4. Mohagheghi A, Amiri S, Mousavi Rizi S, Safikhanlou S. Emotional intelligence components in alcohol dependent and mentally healthy individuals. Sci World J. 2015;2015: 841039.
5. Plantade-Gipch A, Bruno J, Strub L, Bouvard M, Martin-Krumm C. Emotional regulation, attachment style, and assertiveness as determinants of well-being in emerging adults. Front Educ. 2023;2023:1058519.
6. Blaik Hourani R, Litz D, Parkman S. Emotional intelligence and school leaders: evidence from Abu Dhabi. Educ Manag Admin Leadership. 2021;49(3):493–517.
7. Collins K. Relationship among attachment security, emotional intelligence, trait anxiety, and substance abuse. Walden University; 2016.
8. Waiswa HCA, Baguma PK, Oonyu J. Emotional intelligence and academic achievement among university upgrading (Grade V) teacher students. Afr J Educ Pract. 2020;6(4):39–64.
9. Ke T, Barlas J. Thinking about feeling: Using trait emotional intelligence in understanding the associations between early maladaptive schemas and coping styles. Psychol Psychother Theory Res Pract. 2020;93(1):1–20.
10. Davis RE, Doyle NA, Samuel KD, Wilkerson AH, Nahar VK. The relationship between trait emotional intelligence and problematic alcohol use among college students. Health Promot Perspect. 2022;12(1):101.
11. Alcaro A, Brennan A, Conversi D. The SEEKING drive and its fixation: a neuro-psycho-evolutionary approach to the pathology of addiction. Front Hum Neurosci. 2021;15: 635932.
12. Drigas A, Sideraki A. Emotional intelligence in autism. Technium Soc Sci J. 2021;26:80.
13. Henneberger AK, Mushonga DR, Preston AM. Peer influence and adolescent substance use: a systematic review of dynamic social network research. Adolesc Res Rev. 2021;6:57–73.
14. Kun B, Demetrovics Z. Emotional intelligence and addictions: a systematic review. Subst Use Misuse. 2010;45(7–8):1131–60.
15. Trigueros R, Sanchez-Sanchez E, Mercader I, Aguilar-Parra JM, López-Liria R, Morales-Gázquez MJ, Fernández-Campoy JM, Rocamora P. Relationship between emotional intelligence, social skills and peer harassment. A study with high school students. Int J Environ Res Public Health. 2020;17(12):4208.
16. American Psychiatric Association, Association AP. Diagnostic and statistical manual of mental disorders: DSM-5, vol. 5. Washington, DC: American Psychiatric Association; 2013.
17. First MB. Structured clinical interview for the DSM (SCID). In: The encyclopedia of clinical psychology. Wiley; 2015. p. 1–6.
18. Sawsan IF, El Sherbini AF. Determining simple parameters for social classifications for health research. Bull High Inst Public Health. 1983;8:95–107.
19. El-Gilany A, El-Wehady A, El-Wasify M. Updating and validation of the socioeconomic status scale for health research in Egypt. East Mediterr Health J. 2012;18(9):962–8.
20. Bar-On R. BarOn emotional quotient inventory. Multi-health systems. 1997; 40.
21. Ahmed Abdel Salam Ali Ali NEE, Samad AHA. Program for the development of the emotional intelligence and its impact on the self-efficacy of gifted students with learning disabilities. Ain Shams University; 2019.
22. McLellan AT, Luborsky L, Woody GE. O'BRIEN CP: an improved diagnostic evaluation instrument for substance abuse patients: the Addiction Severity Index. J Nerv Ment Dis. 1980;168(1):26–33.
23. Mohamed MN, Marican S, Othman M, Thurairajasingam S, Ali N. Validation of addiction severity index Bahasa Melayu version (ASI-5-BM). MOJ Addict Med Ther. 2017;4(2):243–7.
24. Kun B, Urbán R, Paksi B, Griffiths MD, Richman MJ, Demetrovics Z. The effects of trait emotional intelligence on adolescent substance use: findings from a Hungarian representative survey. Front Psych. 2019;10:367.
25. Bodrogi B, Bereczkei T, Deak A. Be aware, make it clear, and take the Lead: Emotion regulation difficulties and emotional intelligence as moderators of cognitive reappraisal. Curr Psychol. 2020;41:1–13.
26. Goleman D. Emotional intelligence. Why it can matter more than IQ. Learning. 1996;24(6):49–50.
27. Daga MK, Kumar L, Shukla J. Central nervous system depressants: overdose and management. Princ Pract Crit Care Toxicol. 2019;77.
28. Mohamed NR, El Hamrawy LG, Shalaby AS, El Bahy MS, Abd Allah MM. An epidemiological study of tramadol HCl dependence in an outpatient addiction clinic at Heliopolis Psychiatric Hospital. Menoufia Med J. 2015;28(2):591.
29. Hosseini FH, Anari AMZ. The correlation between emotional intelligence and instable personality in substance abusers. Addict Health. 2011;3(3–4):130.
30. Sayed SM, Ahmad HEK, Sayied NE, El-Aziz A, Mohamed A. Effect of psycho-educational program on depression among drug addict patients at Assiut University Hospital. Assiut Sci Nurs J. 2020;8(20):45–55.
31. López G, Orchowski LM, Reddy MK, Nargiso J, Johnson JE. A review of research-supported group treatments for drug use disorders. Subst Abuse Treat Prev Policy. 2021;16(1):1–21.
32. Bond KT, Yoon IS, Houang ST, Downing MJ, Grov C, Hirshfield S. Transactional sex, substance use, and sexual risk: comparing pay direction for an internet-based US sample of men who have sex with men. Sex Res Soc Policy. 2019;16:255–67.
33. Dietze P, Knowles ED. Social class and the motivational relevance of other human beings: evidence from visual attention. Psychol Sci. 2016;27(11):1517–27.

34. Nehra DK, Sharma V, Mushtaq H, Sharma N, Sharma M, Nehra S. Emotional intelligence and self esteem in cannabis abusers. J Indian Acad Appl Psychol. 2012;38(2):385–93.
35. Henning C, Crane AG, Taylor RN, Parker JD. Emotional intelligence: relevance and implications for addiction. Curr Addict Rep. 2021;8:28–34.
36. Olatoye R, Aderogba A. Harnessing the power of emotional intelligence, scientific literacy and problem-solving skills for successful living. Pac J Sci Technol. 2012;13(1):403–17.
37. Ahmed GK, Abdalla AA, Mohamed AM, Mohamed LA. shamaa HA: Relation between internet gaming addiction and comorbid psychiatric disorders and emotion avoidance among adolescents: a cross-sectional study. Psychiatry Res. 2022;312: 114584.
38. Ibrahim AK, Fouad I, Kelly SJ, El Fawal B, Ahmed GK. Prevalence and determinants of internet addiction among medical students and its association with depression. J Affect Disord. 2022;314:94–102.
39. Ahmed GK, Abdalla AA, Mohamed AM, Mohamed LA, Shamaa HA. Relationship between time spent playing internet gaming apps and behavioral problems, sleep problems, alexithymia, and emotion dysregulations in children: a multicentre study. Child Adolesc Psychiatry Ment Health. 2022;16(1):67.

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