



## Full Length Research Article

Advancements in Life Sciences – International Quarterly Journal of Biological Sciences

## ARTICLE INFO

Date Received:  
19/07/2019;  
Date Revised:  
16/02/2020;  
Date Published Online:  
25/05/2020;

## Authors' Affiliation:

1. Department of Pharmacy, Kohat University of Science and Technology, Kohat 26000, KPK - Pakistan.
2. Drug Detoxification & Health Welfare Research Center, Bannu 28100 KPK – Pakistan
3. Experimental Medicine Research Center, School of Medicine, Tehran University of Medical Sciences, Tehran – Iran
4. Universidade Federal de Pernambuco, Campus da UFPE – CCB/CCS, CEP: 50901-970, Recife - Brazil
5. Razi Institute for Drug Research, Iran University of Medical Sciences - Tehran, Iran

## \*Corresponding Author:

Muhammad Imran Khan  
Email:  
[muhammad\\_ik12@yahoo.com](mailto:muhammad_ik12@yahoo.com)

## How to Cite:

Abdullah M, Khan MI, Mumtaz F, Shah F, Ximenes RC, Nikoui V, Wahab A, (2020). Risk factors associated with relapse of drug dependence after treatment and rehabilitation in areas under the influence of war on terror. *Adv. Life Sci.* 7(3): 117-121.

## Keywords:

Drug addiction; Relapse; War on terror; Depression

## Open Access



# Risk factors associated with relapse of drug dependence after treatment and rehabilitation in areas under the influence of war on terror

Muhammad Abdullah<sup>1</sup>, Muhammad Imran Khan<sup>1,2\*</sup>, Faiza Mumtaz<sup>3</sup>, Faridullah Shah<sup>2</sup>, Rosana C Ximenes<sup>4</sup>, Wahid Nikoui<sup>5</sup>, Abdul Wahab<sup>1</sup>

## Abstract

**B**ackground: People exposed to war on terror are more prone to neuropsychiatric disorders and drug addiction. The present study was aimed to investigate the risk factors associated with relapse of drug dependence after treatment and rehabilitation in areas under the influence of war and terrorism.

**Methods:** Total 57 individuals who had a relapse from the war affected area were included in current study. Retrospective data were collected from Drug Detoxification and Health Welfare Research Center, Bannu, KPK, Pakistan. Along with demographic characteristics, current study also focused on the prevalence of psychological problems due to war, in association with prevalence of relapse.

**Results:** A total of 93% of Individuals with relapse have concurrent stress. Similarly, depression was also common in 78.9% of relapsed individuals. Relapse was more common in Polydrug abusers (66.7%) as compared to single drug abusers. As far as abstinence duration is concerned, subjects having depression and stress due to war, relapsed in less time as compared to individuals with no psychological disorders.

**Conclusion:** Wars are related with mental and psychological problems like stress and depression and these factors significantly contribute to the relapse of drug dependence as suggested by results of current study.



## Introduction

Drug dependence is a chronic relapsing medical illness comprising of physical and physiological dependence characterized by drug seeking and craving usually associated with disturbed social and occupational life [1,2] It is a wide spread problem, according to United Nations office on Drugs and Crime (UNODC) 5% of the world adult population has abused drugs in 2015 and 0.6% which makes 29.5 million people globally are drugs addicts in 2017 [3]. In Pakistan estimated around 6.7 million people had used controlled substances in 2013 including 4.2 million drugs addicts [4].

Treatment of drug dependence and addiction include treatment with medication in combination with behavioral therapy. However like other medical condition treatment and rehabilitation is followed by relapse [5]. About 75% of the people relapse within second month of treatment and around 85% relapse has been reported within 1 year of treatment [6]. Relapse is taken in a different way by different researchers. Where some consider even a slight slip to be a relapse (i.e. first cigarette for chain smokers after treatment), while other consider it a dynamic process in which complete return of previous behavior or symptoms reappear [7,8].

Drug dependence disorder is mainly associated with a major player dopamine [9] affecting the common circuitry mesolimbic pathway which include Ventral tegmental area (VTA) and Nucleus Accumbens (NAc) [10]. However the rule is not strictly limited to dopamine, whereas dopamine independent mechanism like mediation of mesolimbic circuit indirectly by cannabinoid and opioid mediators may occur [9,10]. Like drug dependence, relapse is also dopamine dependent where dopamine increases in the reward circuit directly by taking drugs or indirectly by stimuli [11,12]. Risk factors associated with relapse are found to have effect on reward process which is a shared process between drug dependence and relapse [6,11] i.e., HPA axis activation due to stress cause high level of adrenal hormones, cortisol in particular which cause increase in dopamine mediated transmission in reward pathway [13,14].

Various risk factors associated with drug dependence and relapse are commonly shared. Some well-known risk factors for initiation of drug abuse and drug dependence are factors like adverse life events, stress, depression [15], genetics [12], lack of hobbies, drug use for treatment purpose (i.e. opium use for sexual problems, diabetes mellitus, hypertension, pain and sleep problems etc.), peer networking, familial history of drug abuse and drugs as part of culture [16-18]. Similar factors are also associated with relapse including family history, stress, availability of drugs [6,19], younger age, low literacy, social pressure, peer networks, adverse life events, depression, anxiety [19,20], boredom (related to lack of hobbies and activities), and craving during and after withdrawal and rehab [6].

Along with dependence and relapse some of these risk factors like depression, anxiety, stress, and adverse life events, are also shared by war and terrorism affected people [21,22]. As for as drugs availability is concerned with relapse, which is also common in war affected areas

like Afghanistan and nearest countries Iran where the relapse and dependence is broadly connected to drug availability due to Afghan war [20]. Various studies have shown a positive relationship between war and terrorism and increased drug use [21]. Current study aimed to find the relation between war and terrorism with relapse through factors like depression and stress.

## Methods

Retrospective data of subjects from the war-torn area, who had relapse for drug dependence after treatment and rehabilitation were collected from a rehabilitation center in Bannu, KPK, Pakistan. Around 57 subjects who had relapse in 2-year duration from 2014 to 2016 are included in the study by Random selection. Proper consent form was signed by every individual ready to participate in the current study and all steps in the study were approved by the institutional board of study. All the subjects included in the study were from terrorism and war affected areas of Bannu and adjacent tribal areas. Selected duration of study is when terrorism and war was at its peak and various foreign elements and terrorist groups were conflicting with security forces. Terrorist groups in these areas were active from 2001 due to Afghan war. In Bannu and adjacent tribal areas, there was lose control of Government over drug smuggling and drug availability till the neutralization of foreign elements and terrorist groups. Due to such smuggling and widespread availability the use of illegal drugs particularly marijuana (chars) and opium were common. All the Data of each individual subject were checked for the possible cause of relapse and for concurrent diagnosis of symptoms or factors associated with war like depression, stress, and their possible relation with relapse.

| Variables   | Numbers (%) |
|---|-------------|
| <b>Educational Background</b>                           |             |
| Illiterate  | 21 (36.8%)  |
| Elementary Education                                    | 11 (19.2%)  |
| Secondary Education and Matriculation                   | 16 (28%)    |
| Higher Secondary and Above                              | 9 (15.9%)   |
| <b>Marital Status</b>                                   |             |
| Single  | 5 (8.8%)    |
| Married   | 46 (80.7%)  |
| Unknown Marital Status                                  | 6 (10.5%)   |
| <b>Type of drug Consumed (Except Cigarette smoking)</b> |             |
| Poly Drug Abusers                                       | 38 (66.7%)  |
| Opium   | 8 (14%)     |
| Marijuana   | 2 (3.5%)    |
| Heroin  | 9 (15.8%)   |
| <b>First Consumed Drugs other than cigarettes</b>       |             |
| Cannabis  | 24(42.1%)   |
| Opium   | 11 (19.3%)  |
| Benzodiazepines   | 3 (5.3%)    |
| Alcohol   | 2 (3.5%)    |
| Heroin  | 17 (29.8%)  |
| <b>Economic Aspects</b>                                 |             |
| Poor  | 50(87.7%)   |
| Middle class  | 7(12.3%)    |
| Upper Class   | -----       |

**Table 1:** Demographic and key characteristics of all subjects who has dependence relapse

Demographic and key characteristics were found in order to relate relapse, subject individual characteristics and war factors. In relapsed high numbers of subjects were uneducated (36.8%) and subjects with lower than basic education (elementary education) were (19.2%).

Subjects with basic education up to matriculation (28%) and 15.9% were with high education including 2 medical doctors. Relapse is directly correlated with the low educational status. Overall 80.7% of the married male had relapse, while 8.8% were unmarried and 10.5% with unknown marital status. The type of drug used has a huge impact on relapse, poly drug abusers (PDAs) or people abusing more than one drug shown high figure among relapsed rising to 66.7%. Majority (42.1%) of the abusers started their journey of addiction with Cannabis (chars) which is widely available in this area. Those who started with heroin are 29.8%, lagging behind Cannabis abusers. While traces of other substances as a starting drug were also found including opium tablets 19.3%, Benzodiazepines 5.3% and alcohol only 3.5%. Economically, majority of those having relapsed were poor (87.7%) while only 12.3% participants were from middle class.

## Results

The table 2 relates depression with relapse where 78.9% of the relapsed subjects are having positive signs of depression while 21% are those having no signs or diagnosis of depressions in their histories. It was noted that 84.4 % of the subject with depression and relapse were using more than one drug at a time (PDAs), while 15.6% were single drug abusers. Age distribution in those having relapse and concurrent depression was widespread. Drug abusing screening test (DAST) is still a gold standard test used for the screening of addictive drugs other than alcohol. It is an excellent tool for screening population, clinical cases and treatment evaluation related to drug addiction and substance use disorders. Subjects scoring above 11 on this test has confirm substance use disorders. In current study, DAST test scores were also reported high in those having relapse and concurrent depression compared to those having no depression.

| Total Number of Subjects Relapsed 57              |   |
|---|---|
| Percentage of subjects having signs of Depression | Percentage of subjects having no signs of Depression in History |
| 45 (78.9%)  | 12 (21%)  |

**Table 2:** Depression and Relapse for Drug Dependence in War and Terrorism affected Areas

| Total Number of Subjects Relapsed 57                                |   |
|---|---|
| Number and percentage of subjects having signs of stress in history | Number and percentage of subjects having negative no signs of stress in history |
| 53 (93%)  | 4 (7%)  |

**Table 3:** Chronic Stress and Relapse for Drug Dependence in War and Terrorism affected Areas

The above given tables are proving the notion true that stress induces relapse for drug use disorder. About 93% subject who had relapse have concurrent stress disorder while 7% were lacking signs of stress in their histories. This high figure shows that there is a strong association of stress with relapse. Same as depression, subjects with concurrent stress were having high scores of DAST test and majority of them were falling in sustained (11-15) and severe levels (16-20). People with poly drug abuser PDAs 84.5% were more depressed then those who were

single drug abusers 15%. Age was also poorly correlating with concurrent relapse and stress and age factor was widespread. Similar study published from Lahore city of Pakistan, where relapse in addicts was studied has reported that stress is one of the major factor for the relapse of drug addiction. However, that stress was not due to war and terrorism induced stress [18].

## Duration of Restrain from Addiction and Reasons for Relapse

We extracted the duration of relapse in which the individuals were restrained from relapse along with the reason why they started again. The average abstinence time after treatment for relapse in all 57 individuals who were commonly reported for relapse was 8 months. Those 78.9% individuals who were reported with concurrent depression and relapse their average duration of abstinence after treatment was 4.53 months, which is less compared to average 7.4 months in those 93% individuals who were reported with relapse along with stress. It took less time to relapse for those individuals having depression as compared to those having stress.

There were various reasons for relapse. Among the relapsed, 18 (31.6%) individual were reported blaming their society and relatives for the relapse, including one graduate reporting his brother as motivational source for drug abuse. Around 11 (19.2%) individuals were reported who relapsed due to work and social stressor. Fun was also one of the factors which caused relapse in 10 (17.5%) percent of the individuals including 3 who reported sexual satisfaction as a cause of relapse. Almost 8 (14%) individuals were unable to control their withdrawal symptoms, therefore found relapsed. Family grief and sadness caused relapse in four (7%) individuals. Failure in love was one of the factors reported in (1.7%) individual for cause of relapse and 5 persons (8.8%) were reported with no reasons for relapse.

## Discussion

The current study determined the prevalence of drug dependence relapse after treatment and rehabilitation. The study was confined to the resident men of the areas where there were ongoing terrorist activities and war and conflicts against terrorists by Pakistani security agencies. Among various factors which are associated with war and terrorism like depression, stress, PTSD anxiety, adverse life events and drug availability, we searched to find the prevalence of depression and concurrent chronic stress in relapsed subjects. At the same time subjects demographic and key characteristic were also found which are also considered to be relapse inducers.

According to previous studies that war and terrorism is one of the factors for depression, we found the higher ratio of relapse and concurrent depression as compare to sole relapse with no concurrent depression. Poly drug users were suffering more with depression and relapse as compare to single drug abusers. The results for relapse and concurrent depression, in current study are

in line with early study which was in War and terrorism free areas, reporting that depression is among one of the factor for returning to drinking showing 95% relapse due to depression [23]. Domino *et al.* has reported the similar results of 95% relapse in subjects having concurrent psychiatric disorder using major opioids [19].

Similarly stress which is considered one of the factors for drug dependence relapse, the relapse and concurrent stress ratio was also high in war and terrorism affected people, indicating that stress as one of the war factor which induces relapse. Overall a high ratio of relapse and concurrent stress (93%) was found compared to the relapse and concurrent depression (78.9%). Current study is in line with other studies whose claims and finding are that stress is one of the factor for relapse to drug abuse [14,24,25].

Terrorism and war induced psychological insults are considered to be affecting more people in early ages[26]. But the age factor in current study was not correlating with the depression and stress and concurrent relapse. Almost there was equal distribution of the relapse associated with concurrent depression and stress in all ages from 21 to 66 year of age. In contrast to age educational status, poverty level was strongly associating with the relapse. Married subjects were high in number, but it is a common practice in this area that addicts are married for quitting the drug abuse. DAST test scores were reported high in all the subjects having relapse along with concurrent depression and stress. Duration of abstinence for relapse was short in individuals with concurrent stress and depression compared to those having no depression and stress. All these findings are directing us toward assumptions, that if depression and anxiety are associated with war, terrorism and relapse, then we might conclude that war and terrorism induces relapse, and by dealing with war and terrorism factors like depression and stress the problem of relapse can be effectively handled.

## Supporting data

Data includes the consent form of the patients and reports which is confidential and will be provided anonymously (without showing the names and ID of the patients) on demand.

## Ethical approval and participation consent

All patients were willing to participate and patient consent form was signed by every individual or theirs spouse.

## Competing interest

All the authors declare that they have no competing interest that can affect the current study.

## Funding

This research was supported by grant-DDHWRC/18/001 from Drug detoxification and Health Welfare Research Center, Bannu, KPK, Pakistan.

## Authors' Contribution

All the authors equally contributed in designing, execution, analysis of data and drafting of this manuscript to be enlisted as an author.

## References

1. Koob GF, Ahmed SH, Boutrel B, Chen SA, Kenny PJ, *et al.* Neurobiological mechanisms in the transition from drug use to drug dependence. *Neuroscience & Biobehavioral Reviews*, (2004); 27(8): 739–749.
2. Wikler A. Dynamics of Drug Dependence: Implications of a Conditioning Theory for Research and Treatment. *Archives Of General Psychiatry*, (1973); 28(5): 611–616.
3. The drug problem and organized crime, illicit financial flows, corruption and terrorism in World Drug Report 2017, United Nations, (2017); 1–45.
4. UNODC and Ministry of Interior and Narcotic Control Govt of Pakistan, "Drug Use in Pakistan", (2013); 1–71.
5. NIDA, Abuse, "Drugs, Brains, and Behavior: The Science of Addiction." [Online]. Available: <https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/treatment-recovery>. [Accessed: 11-Mar-2018].
6. Sinha R. New Findings on Biological Factors Predicting Addiction Relapse Vulnerability. *Current Psychiatry Reports*, (2011); 13(5): 398–405.
7. Brandon TH, Vidrine JI, Litvin EB. Relapse and Relapse Prevention. *Annual Review of Clinical Psychology*, (2007); 3(1): 257–284.
8. See RE, Fuchs RA, Ledford CC, McLaughlin J. Drug Addiction, Relapse, and the Amygdala. *Annals of the New York Academy of Sciences*, (2003); 985(1): 294–307.
9. Martin-Soelch C, Leenders KL, Chevalley AF, Missimer J, König G, *et al.* Reward mechanisms in the brain and their role in dependence: evidence from neurophysiological and neuroimaging studies. *Brain Research Reviews*, (2001); 36(2–3): 139–149.
10. Nestler EJ. Is there a common molecular pathway for addiction? *Nature Neuroscience*, (2005); 8(11): 1445–1449.
11. Self DW. Neural substrates of drug craving and relapse in drug addiction. *Annals of Medicine*, (1998); 30(4): 379–389.
12. Koob G. Drug Addiction, Dysregulation of Reward, and Allostasis. *Neuropsychopharmacology*, (2001); 24(2): 97–129.
13. Fox HC, Jackson ED, Sinha R. Elevated cortisol and learning and memory deficits in cocaine dependent individuals: Relationship to relapse outcomes. *Psychoneuroendocrinology*, (2009); 34(8): 1198–1207.
14. Sinha R. How does stress increase risk of drug abuse and relapse? *Psychopharmacology*, (2001); 158(4): 343–359.
15. Hasin D, Liu X, Nunes E, McCloud S, Samet S, Endicott J. Effects of Major Depression on Remission and Relapse of Substance Dependence. *Archives of General Psychiatry*, (2002); 59 (4): 375–380.
16. Jafari S, Movaghar AR, Craib K, Baharlou S, Mathias R. Socio-cultural Factors Associated with the Initiation of Opium Use in Darab, Iran. *International Journal of Mental Health and Addiction*, (2009); 7(2):376–388.
17. Mahfoud Y, Talih F, Strem D, Budur K. Sleep Disorders in Substance Abusers: How Common Are They? *Psychiatry*, (2009); 6(9): 38–42.
18. Batool S, Manzoor I, Hassnain S, Bajwa A, Abbas M, *et al.* Pattern of addiction and its relapse among habitual drug abusers in Lahore, Pakistan. *Eastern Mediterranean Health Journal*, (2017); 23(3): 168–172.
19. Domino KB, Hornbein TF, Polissar NL, Renner G, Johnson J, *et al.* Risk Factors for Relapse in Health Care Professionals With Substance Use Disorders. *JAMA*, (2005); 293(12): 1453–1460.
20. Mohammadpoorasl A, Fakhari A, Akbari A. Addiction Relapse and Its Predictors: A Prospective Study. *Journal of Addiction Research & Therapy*, (2012); 3(1): 1-3.
21. Schiff M, Benbenishty R, McKay M, DeVoe E, Liu X, Hasin D. Exposure to Terrorism and Israeli Youths' Psychological Distress and Alcohol Use: An Exploratory Study. *American Journal on Addictions*, (2006); 15(3): 220–226.
22. Khan MI, Sameem B, Nikoui V, Dehpour AR. Is the war on terror induced-post traumatic stress disorder; the cause of suicide attack? An approach from psycho-cognitive and neurobiological

- perspective. *Advancements in Life Sciences*, (2016); 3(4): 109–111.
23. Greenfield SF, Weiss RD, Muenz LR, Vagge LM, Kelly JF, *et al*. The Effect of Depression on Return to Drinking: A Prospective Study. *Archives of General Psychiatry*, (1998); 55(3): 259.
  24. Sinha R. The role of stress in addiction relapse. *Current Psychiatry Reports*, (2007); 9(5): 388–395.
  25. Sinha R, Garcia M, Paliwal P, Kreek MJ, Rounsaville BJ. Stress-Induced Cocaine Craving and Hypothalamic-Pituitary-Adrenal Responses Are Predictive of Cocaine Relapse Outcomes, *Archives of General Psychiatry*, (2006); 63(3): 324.
  26. Pfefferbaum BJ, Devoe ER, Stuber J, Schiff M, Klein TP, Fairbrother G. Psychological Impact of Terrorism on Children and Families in the United States. *Journal of Aggression, Maltreatment & Trauma*, (2005); 9(3–4): 305–317.



This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License. To read the copy of this license please visit: <https://creativecommons.org/licenses/by-nc/4.0/>