ISSN-e [2763-8847]

Global Clinical Research Journal

REFLECTION ARTICLE

The impact on young adults' mental health of fentanyl and cocaine addiction

El impacto de la adicción al fentanilo y la cocaína en la salud mental de los adultos jóvenes

O impacto na saúde mental dos jovens adultos na dependência de fentanila e cocaína

Aline Voltarelli[1*]
ORCID: 0000-0002-3491-616X
Elda Garbo Pinto[2]
ORCID: 0000-0003-0443-7501
Camilla Estevão de França[3]
ORCID: 0000-0003-3226-8709
Renato Philipe de Sousa[4]
ORCID: 0000-0002-6586-2205
Christiano Miranda[5]
ORCID: 0000-0003-2616-8744
Crisna Rodrigues Pereira[6]
ORCID: 0000-0001-7948-3890
Rosangela Sakman[7]
ORCID: 0000-0003-1738-9490
Ellen Alvim Nascimento[1]
ORCID: 0009-0004-6343-3249
Milena Carla Queiróz[8]
ORCID: 0000-0003-0209-6379
Wagner Rafael da Silva[8]
ORCID: 0000-0002-0952-4877

[1]Universidad de Ciências Empresariales Y Sociales. Buenos Aires, Argentina.
[2]Universidade Estadual Paulista. São Paulo, Brazil.
[3]Anhanguera Educacional. São Paulo, Brazil.
[4]Universidade Federal do Estado do Rio de Janeiro. Rio de Janeiro, Brazil.
[5]Universidade Cruzeiro do Sul. São Paulo, Brazil.
[6]Centro Universitário Atenas. Minas Gerais, Brazil.
[7]Faculdade Sequencial. São Paulo, Brazil.
[8]Universidade Brasil. São Paulo, Brazil.
[*]**Corresponding author**: E-mail: alivolter@yahoo.com.br

Abstract

This reflection study aims to reflect on the impact on the mental health of young adults of fentanyl and cocaine dependence, highlighting the consequences for the body and the implications for clinical management. This reflective study was carried out according to a review of books and articles indexed in SciELO and Google Scholar, with a time frame from 2018 to 2023, using the descriptors: “Mental Health”, “Patient Assistance Team”, “Fentanyl” and “Drugs of Improper Use”. The study revealed that cocaine and fentanyl dependence is associated with physical and mental complications, including neurological, cardiovascular, and psychiatric dysfunctions. The combined use of these drugs worsens adverse effects, making treatment more complex. The use of these substances occurs in both pharmacological and recreational contexts throughout the world. Understanding the complications associated with the use of fentanyl and cocaine is essential for appropriate patient management. Prevention and treatment policies must be prioritized to reduce the impact of these drugs on public health, and health units must be equipped to provide specialized and continuous care, promoting integration with social assistance services for comprehensive support.

Descriptors: Mental Health; Patient Assistance Team; Fentanyl; Cocaine; Misuse Drugs.

How to cite this article:
Voltarelli A, Pinto EG, França CE, Sousa RP, Miranda C, Pereira CR, Sakman R, Nascimento EA, Queiróz MC, Silva WR. The impact on young adults' mental health of fentanyl and cocaine addiction. Glob Clin Res. 2024;4(1):e71. https://doi.org/10.5935/2763-8847.20210041

Submission: 04-24-2023
Approval: 08-27-2023

Resumén

El objetivo de este estudio de reflexión es reflexionar sobre el impacto en la salud mental de los adultos jóvenes de la dependencia del fentanilo y la cocaína, destacando las consecuencias para el organismo y las implicaciones para el manejo clínico. Este estudio reflexivo se realizó según una revisión de libros y artículos indexados en SciELO y Google Scholar, con un período de tiempo de 2018 a 2023, utilizando los descriptores: "Salud Mental", "Equipo de Asistencia al Paciente", "Fentanyla" y "Drogas de Uso Indebido". El estudio reveló que la dependencia de la cocaína y el fentanilo está asociada con complicaciones físicas y mentales, incluidas disfunciones neurológicas, cardiovasculares y psiquiátricas. El uso combinado de estos fármacos empeora los efectos adversos, complejizando el tratamiento. El uso de estas sustancias se produce en contextos tanto farmacológicos como recreativos en todo el mundo. Comprender las complicaciones asociadas con el uso de fentanilo y cocaína es esencial para el manejo adecuado del paciente. Se deben priorizar políticas de prevención y tratamiento para reducir el impacto de estos medicamentos en la salud pública, y equipar las unidades de salud para brindar atención especializada y continua, promoviendo la integración con los servicios de asistencia social para un apoyo integral.

Descriptores: Salud Mental; Equipo de Asistencia al Paciente; Fentanilo; Cocaína; Abuso de Drogas.

Resumo

O objetivo deste estudo de reflexão é refletir sobre o impacto na saúde mental dos jovens adultos na dependência de fentanila e cocaína, destacando as consequências para o organismo e as implicações para o manejo clínico. Este estudo reflexivo foi realizado conforme revisão de livros e artigos indexados na SciELO e *Google Scholar*, com recorte temporal de 2018 a 2023, utilizando os descritores: "Saúde Mental", "Equipe de Assistência ao Paciente", "Fentanila" e "Drogas de Uso Indevido". O estudo revelou que a dependência de cocaína e fentanila está associada a complicações físicas e mentais, incluindo disfunções neurológicas, cardiovasculares e psiquiátricas. O uso combinado dessas drogas agrava os efeitos adversos, tornando o tratamento mais complexo. O uso dessas substâncias ocorre tanto em contextos farmacológicos quanto recreativos em todo o mundo. A compreensão das complicações associadas ao uso de fentanila e cocaína é essencial para o manejo adequado dos pacientes. Políticas de prevenção e tratamento devem ser priorizadas para reduzir o impacto dessas drogas na saúde pública, e as unidades de saúde devem estar equipadas para fornecer atendimento especializado e contínuo, promovendo a integração com serviços de assistência social para um suporte abrangente.

Descritores: Saúde Mental; Equipe de Assistência ao Paciente; Fentanila; Cocaína; Drogas de Uso Indevido.

Introduction

Cocaine, benzoylmethylecgonine or benzoic acid ester, also called coca, is an alkaloid, stimulant, with anesthetic results, used mainly as a recreational drug. Cocaine is one of the most used psychoactive drugs worldwide, being extracted from the leaves of the Erytroxylus coca plant. The abusive use of cocaine can trigger several consequences for the human body, including the oral cavity[1].

Fentanyl is used as a fast-acting and high-potency analgesic drug. Before the infusion of the sedative and muscle relaxant and in lower doses compared to general anesthesia, which aims to minimize the exaggerated cardiovascular response (more significant in adults) and the increase in intracranial pressure (intravenous, bolus, intracranial pressure should not be administered). patients with intracerebral involvement). If fentanyl is mixed with other synthetic drugs, the anesthetic tends to be fifty times more addictive than heroin and a hundred times stronger than morphine. The primary line of investigation indicates that this substance would be used to be combined with other drugs, such as cocaine and probably synthetic drugs, as well as LSD and ecstasy[1,2].

The concept of mixing fentanyl with other drugs or medications is to generate more sales, causing people to become addicted to the substance. To demonstrate how lethal and addictive fentanyl is, just the tip of a pencil is enough for a person to die. Cocaine is the illicit drug most frequently associated with deaths, and its perioperative implications in highly intoxicated patients or with a history of chronic use need to be well-known by anesthesiologists. Understanding the neurophysiology, pharmacology, and pathophysiological consequences resulting from cocaine use may favor the care of these patients[1-3].

The objective was to reflect on the impact on the mental health of young adults of fentanyl and cocaine dependence, highlighting the consequences for the body and the implications for clinical management.

Methodology

This reflective study, of a descriptive and critical nature, was carried out according to a bibliographical review based on books and scientific articles. Data collection was carried out in indexed databases, such as SciELO and Google

Scholar, covering the period from 2018 to 2023. The research used the descriptors: "Mental Health", "Patient Assistance Team", "Fentanila" and "Drugs of Misuse" to identify relevant studies. The search and selection of studies, as well as the writing of the study, took place in March and April 2023.

The articles and books selected for this study were chosen based on the relevance and quality of the information presented. The systematic search included studies that address fentanyl and cocaine dependence and their consequences for the mental health of young adults. Only texts available in English, Portuguese, and Spanish were considered.

Studies that discuss the impact of fentanyl and cocaine use on mental health were included in the review, focusing on neurological, cardiovascular, and psychiatric disorders. Articles that did not directly address mental health or that focused on substances other than fentanyl and cocaine were excluded.

Data analysis was conducted qualitatively, with a descriptive and critical approach. The data were organized into thematic categories that reflect the main adverse effects of fentanyl and cocaine dependence, as well as the implications for the clinical management of these patients. The results were synthesized to highlight the most significant physical and mental impacts. This study respected the ethical principles of scientific research, using only secondary sources and guaranteeing the integrity and reliability of the data.

Results and Discussion

There are two forms in which cocaine is presented, hydrochloride (white powder) and free base (crack), created with the combination of hydrochloride and an alkali (sodium bicarbonate or ammonia). The hydrochloride form can be dissolved in water and injected intravenously or, more frequently, used by aspiration[3].

According to a study by the United States Centers for Disease Control and Prevention:

> *"[...] In 2021 alone, the most recent year of monitoring, there were approximately 106,000 overdose deaths. Of these, around 67% (71 thousand) of them were associated with Fentanyl. For cocaine, for comparison, there were 24 thousand victims; and for heroin, less than 10 thousand, when legally prescribed, Fentanyl can treat severe pain and can be administered with an injection, patch, or lozenge. Illegally, the drug is often used as a powder, dripped onto paper, or used in droppers or made into pills"[4].*

Cocaine is a benzoylmethylecgonine, ecgonine comes from tropine, an element like atropine, and is scopolamine. It is the only local anesthetic that occurs naturally. After intravenous administration, its plasma half-life alternates between 60 and 90 minutes, but may be longer after nasal or oral administration. When inhaled, it reaches the brain circulation within 6 to 8 seconds and, intravenously, within 12 to 16 seconds. Use through the nasal route can cause intense vasoconstriction, which limits absorption. Peak plasma concentrations are obtained within 60 minutes and remain for up to 6 hours[4,5].

Cocaine is approximately 80 to 90% metabolized. Metabolism occurs primarily in plasma by hydrolysis of the ester radical, the first metabolite is ecgonine methyl ester, which undergoes degradation to benzoylecgonine, the main urinary metabolite. Norcaide, another metabolite, is generated by demethylation in the liver through the cytochrome P450 system, 1 to 5% of the substance remains unchanged and the metabolites are expelled in the urine 6 to 14 hours after administration. Tests to analyze cocaine use can be done through blood, urine, and hair analysis. The urinary toxicological test is the reference test, it identifies the benzoylecgonine metabolite which can be detected 4 to 48 hours after exposure to the drug. It is emphasized that the use of this drug by pregnant women produces an irreversible effect on the fetus[5,6].

People who present emergencies with non-traumatic chest pain need to be asked about their cocaine use. Aortic dissection and rupture, dysrhythmias, myocarditis, and dilated cardiomyopathy need to be considered in users with chest pain. The link between cocaine, acute myocardial infarction (AMI), and myocardial ischemia was first noted in 1982. Long periods spent abusing fentanyl result in dysfunction in the brain. When opioid misuse occurs for a while, the dopamine receptors in the brain begin to malfunction and cannot function properly without the opioids that drive them[6-8].

Fentanyl is a synthetic opioid related to phenylpiperidines, it was designed for pharmaceutical use in 1960 by Paul Janssen (1926 – 2003), one of the greatest contemporary scientists and the most productive medicinal chemist in the world, creator of approximately 80 medicines. The analgesic potency of fentanyl is 50 – 100 times greater than that of morphine, in addition to having a shorter onset of action and faster absorption by the body. It is a relevant substance in anesthetic practice, being used for the treatment of severe chronic pain and postoperative pain, as well as in general and regional anesthesia[7].

As an opioid analgesic, which predominantly communicates with the μ-opioid receptor, fentanyl's main characteristics are its rapid action, short duration, and high potency. The period to achieve the maximum analgesic effect after intravenous administration of fentanyl is 5 min, and the duration of action of the analgesic effect is about 30 minutes after a single intravenous dose of up to 100 mcg. The penetration of analgesia is related to the dose and can be changed according to the level of pain caused by the surgical procedure[7,9].

A few days are enough to make the individual dependent. If use is prolonged, it can promote tolerance and therefore larger doses will be needed for an effective result. Probable adverse effects include respiratory depression, nausea, bradycardia, vomiting, and stiffness in some muscles, especially the chest wall[8-11].

According to the literature, cocaine:

> *"[...] in the synthesis of the alkaloid cocaine (cocaine hydrochloride), in 1862, by the German pharmaceutical industry (more specifically by chemists Albert Nieman and Wilhelm Lossen), the raw material for one of the most used and coveted psychoactive drugs worldwide, the classification of according to*

the pharmacological effects on the CNS 1. CNS Activity Depressants or Psycholeptics: alcohol; sleeping pills or hypnotics; anxiolytics; opiates; inhalants or solvents. 2. CNS Activity Stimulants or Psychoanaleptics: cocaine (and its derivatives such as crack and merla); amphetamines; tobacco. 3. Disturbing CNS Activity, Hallucinogenic or Psychodysleptic: mescaline (from the Mexican cactus); marijuana or THC (tetrahydrocannabinol); psilocybin (mushrooms); lily (trumpet, zabumba or white skirt); LSD; MDMA (ecstasy); anticholinergics"[10].

Specialized equipment is needed to provide adequate care for all the complexity of mental disorders resulting from drugs. A diversified network is needed, with broad coverage, as well as efficient professionals to deal with mild to critical cases[11].

Conclusion

Understanding and prior recognition of complications related to cocaine use are essential for the adequate management of patients who use this substance. If a rigorous methodology is used, prevention projects can be supported at all levels, contributing data and elucidating various issues, as the personal and social cost of addiction in developed countries has been much higher than the cost of prevention. In Brazil, even without practices or habits related to this issue, it is necessary to prioritize preventive policies.

The base of the health care pyramid must have greater quantity, without neglecting quality - for example, basic health units, outpatient clinics, and Psychosocial Care Centers must be able to provide continuity of care for the population that needs mental health care and treatment.

It is essential that, in conjunction with social assistance services, more studies are carried out to delve deeper into the issue of mixing cocaine with fentanyl, and the impact that these drugs have on the human body, also for discussion, and a possible algorithm, ensuring efficient treatment for the patient.

References

1. Office of the President of the United States. National drug control budget. Washington DC: Office of the President of the United States; 2018.
2. Santos GC, Rodrigues JL, Souza JR, Silva-Filho LC, Silva BHST. A química por trás dos medicamentos distribuídos pelo programa farmácia popular no brasil: rotas sintéticas, relação estrutura-atividade e perspectivas futuras. Quím Nova. 2021;44(10):1280–99. https://doi.org/10.21577/0100-4042.20170770.
3. Henriques BD, Reinaldo AMS, Ayres LFA, Lucca MS, Rocha RL. Uso de crack e outras drogas: percepção familiar em relação à rede de suporte em um centro de referência. Ciênc saúde coletiva. 2018;23(10):3453–62. https://doi.org/10.1590/1413-812320182310.13462016
4. Ministério da Saúde (BR). 20/02 - Dia Nacional de Combate às Drogas e ao Alcoolismo. Brasília (DF): MS; 2019.
5. Diagn JD. Psychological functioning of women taking illicit drugs during pregnancy and the growth and development of their offspring in early childhood. HHS Public Access. 2018;14(3):158-170. https://doi.org/10.1080/15504263.2018.1468946
6. Machado TO, Souza TCP, Lopes GMN, Silva MLL, Silva WGR, Santos RM, Neves MP, Silva WBH, Machado PRF, Marta CB. Uso de drogas ilícitas na gestação: quais os malefícios à integridade do bebê?Glob Acad Nurs. 2021;2(Spe.1):e102. https://dx.doi.org/10.5935/2675-5602.20200102
7. Stankowski RV, Kloner RA, Rezkalla SH. Cardiovascular consequences of cocaine use. Trends in cardiovascular medicine. 2015;25(6):517-526. https://doi.org/10.1016/j.tcm.2014.12.013
8. Miranda AVS, Rampellotti LF. Incidence of chest pain as a symptom of acute myocardial infarction in an urgent care unit. BrJP. 2019;2(1):44–8. https://doi.org/10.5935/2595-0118.20190009
9. Carvalho LF, Rodrigues LA, Pandossio JE, Gallassi AD. Análise crítica sobre medicamentos prescritos para o uso problemático de crack. Psic: Teor e Pesq. 2021;37:e372515. https://doi.org/10.1590/0102.3772e372515
10. Alarcon S, Jorge MAS. Álcool e outras drogas: diálogos sobre um mal-estar contemporâneo. Rio de Janeiro: Fiocruz; 2012.
11. Silva RR, Neves MP, Silva LA, Silva MVG, Hipolito RL, Marta CB. Consumo de drogas psicoativas em contexto sexual entre homens gays como fator de risco para transmissão de HIV/Aids. Glob Acad Nurs. 2020;1(3):e57. https://dx.doi.org/10.5935/2675-5602.20200057