

## Typifying discoveries and quality of research in the most highly cited research papers on drug addiction

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### Introduction

Peer-reviewed articles' importance and impact are often measured by their number of citations<sup>1</sup>. Studies mapping global research in specific addictions, like tobacco<sup>2</sup>, alcoholism<sup>3</sup>, and cocaine<sup>4</sup>, have been published.

Purpose: This work aims to identify, revise, and categorize highly cited papers in drug addiction and drug use disorder of illicit drugs: cannabis, opioids, cocaine and other stimulants, or hallucinogens.

### Methods

The search for papers was performed in Science Citation Index and Social Science Citation Index from Web of Science's database, on December 12, 2019. The modified Khalili<sup>2</sup> search profile was used for document retrieval. Documents were manually reviewed to verify that all were relevant. To reach the 100 most frequently cited works, 48 papers about opiate-overdose in pain patients and nicotine were discarded. Several of these papers' characteristics were studied: number of citations, citations per year, journals, authors, institutions, funding institutions, and countries of publication.

### Results

The number of citations ranged from 649 to 4,672, averaging 884 citations. Most articles (83) were published between 1991 and 2010 and in 40 different journals: 11 articles in Science, seven in Psychopharmacology, seven in Proceedings of the National Academy of Sciences, and six in Nature. The 5-year impact factors (2018 edition) ranged from 2.753 (in the Journal of Substance Abuse Treatment) to 70.331 (in the New England Journal of Medicine). Journals that have published more than two articles are listed in table 1. The United States is the most productive country (72 papers), followed by the United Kingdom (8), France (5), Australia (3), and Germany (3).

The most cited article (4,672 citations) was published in 1993 in Brain Research Reviews and describes the neural basis of drug-craving as an incentive-sensitization theory of addiction. The second most cited paper, which was published in 1992 in the Journal of Substance Abuse Treatment (2,876 citations), discusses the clinical and research uses of the Addiction Severity Index (see Table 2). The main funding institutions were the agencies dependent on the National Institutes of Health (NIH) in the United States: National Institute on Drug Abuse (36), National Institute on Alcohol Abuse and Alcoholism (8), and National Institute of Mental Health (6).

Table 1. Journals of publication, citations, funded papers and impact factor in most productive journals (>2 published articles)

Journal	Country	Papers	Citations	Citations / papers	Funded papers	5-Year Impact Factor(*)
Science	United States	11	10,210	928	10 (90.9%)	43.644
Psychopharmacology	Germany	7	7,081	1,012	5 (71.4%)	3.300
PNAS**	United States	7	5,317	760	6 (85.7%)	
Nature	England	6	5,263	877	6 (100.0%)	45.819
Neuron	United States	5	4,583	917	5 (100.0%)	16.319
Nature Reviews Neuroscience	England	5	5,320	1,064	3 (60.0%)	39.845
American Journal of Psychiatry	United States	5	6,352	1,270	5 (100.0%)	14.095
Addiction	England	4	3,330	833	2 (50.0%)	6.450
Jama-journal of the American Medical Association	United States	4	3,460	865	4 (100.0%)	46.312
Nature Neuroscience	United States	3	3,997	1,332	3 (100.0%)	13.870
Neuropsychopharmacology	England	3	4,736	1,579	3 (100.0%)	21.607
Pharmacological Reviews	United States	3	2,559	853	2 (66.7%)	6.705
Trends in Neurosciences	Netherlands	3	2,420	807	1 (33.3%)	21.403

(\*) 2018 JCR edition; \*\* Proceedings of the National Academy of Sciences of the United States of America

Table 2. Five most cited papers and citations per year

Authors	Title	Source	Citations	Citations / years
Robinson, TE; Berridge, KC	The neural basis of drug craving - an incentive-sensitization theory of addiction	Brain Research Reviews 1993; 18(3): 247-291	4.672	180
McLellan, At; Kushner, H; Metzger, D; Peters, R; Smith, I; Grissom, G; et al.	The 5th edition of the addiction severity index	Journal of Substance Abuse Treatment 1992; 9(3): 199-213	2.876	107
Koob, GF; Volkow, ND	Neurocircuitry of Addiction	Neuropsychopharmacology 2010; 35(1): 217-238	2.361	262
Everitt, BJ; Robbins, TW	Neural systems of reinforcement for drug addiction: from actions to habits to compulsion	Nature Neuroscience 2005; 8(11): 1481-1489	2.095	150
Koob, GF	Drugs of abuse - anatomy, pharmacology and function of reward pathways	Trends in Pharmacological Sciences 1992; 13(5): 177-184	1.769	66

### Conclusions

Highly-cited articles' identification and description has allowed the characterization of the greatest impact topics and trending topics of addiction research. The citations' frequencies and patterns are objective parameters for evaluating scientific performance within the area of addictions. The topics addressed and the study design of these papers may influence clinical practice and can help plan the design of future research.

**References:** 1) Tanner-Smith EE, Polanin JR. Brief alcohol intervention trials conducted by higher prestige authors and published in higher impact factor journals are cited more frequently. J Clin Epidemiol. 2016; 75:119-25; 2) de Granda-Orive JI, Alonso-Arroyo A, López-Padilla D, Segrelles-Calvo G, Jiménez-Ruiz CA, Solano-Reina S. Bibliometric analysis of IBERPOC and EPI-SCAN studies. Contribution of the smoking variable on the Iberpoc study. Semergen. 2018;44(2):90-99. 3) Clifford A, Shakeshaft A. A bibliometric review of drug and alcohol research focused on Indigenous peoples of Australia, New Zealand, Canada and the United States. Drug Alcohol Rev. 2017;36(4):509-522. 4) Zyoud SH, Waring WS, Al-Jabi SW, Sweileh WM. Global cocaine intoxication research trends during 1975-2015: a bibliometric analysis of Web of Science publications. Subst Abuse Treat Prev Policy. 2017;12(1):6. 5) Khalili, M., Rahimi-Movaghar, A.; Shadloo B.; Mojtatabi R.; Mann K; Amin-Esmaeili M.b (2018). Global scientific production on illicit drug addiction: A two-decade analysis". European Addiction Research; 24 (2): 60-70.