

# A Bibliometric Study of Neuropharmacology Journal Articles and the Pharmacology Biochemistry and Behavior Journal Articles and Implications for Pharmacy Practice

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## Abstract

**Objective:** The goal of this research is to explore the retrieval of clinical terms applicable to the practice of pharmacy through a bibliometric study of Neuropharmacology Journal articles from 2007-2026, Pharmacology Biochemistry and Behavior Articles, 2007-2026, comparison of Medical Subject Headings or MESH Terminology and Pharmacological, and selected pharmacological dissertations located in WorldCat.

**Materials and Methods:** An Internet-based bibliometric study is conducted to locate Neuropharmacology journal articles, Pharmacology Biochemistry and Behavior journal articles, and doctoral dissertations in pharmacy in WorldCat.

**Results:** Both Neuropharmacology and the Pharmacology Biochemistry and Behavior journal articles arms of the bibliographic study reveal that many pharmacological terms are not in the Medical Subject Headings and there are few, if any, dissertations discussing pharmacology and treatments.

**Conclusion:** Improved patient education and drug delivery mechanisms are key to improving clinical pharmacy practice.

**Keywords:** Patient Information, Bibliometric Study, Pharmacology

## 1. Introduction

With the advent of pharmacy knowledge and the need to keep the needs of patients at the forefront in patient-centric pharmacy practice, it is important to use a library science lens to identify how to improve patient education and drug delivery systems in pharmacy. A bibliometric study seeks to demonstrate that bibliometric analysis paves the way for potential improvements in pharmacy practice.

## 2. Materials and Methods

If one goes to WorldCat, 2026, an international database of library holdings, and searches for the keyword, “pharmacy” in dissertations using the search toolbar, it becomes apparent that pharmacy is a social detriment of health [1]. As Islam notes public understanding of the detriments of health is from the coverage in the mainstream media, the WorldCat, the research question

becomes how does pharmacy practice influence social detriments of health? [1,2].

To answer this question, one goes to WorldCat, an international database of library holdings, and searches for “pharmacy and social detriments of health” using the WorldCat search bar and selecting “Thesis, Dissertation” in the “Format” tab of the WorldCat website and the results did not reveal any dissertations which was very surprising since many health professions focus on the detriments of health in clinical practice [1].

Using a simple computer with an Internet connection, an Internet Browser, and Google, random sampling Neuropharmacology articles from 2007-2026 are hand-counted and the following table 1 is designed to identify the terms or keywords from the Neuropharmacology journal articles from 2007-2026 which are

than are compared against the National Library of Medicine Medical Subject Headings, MESH, browser in Table 2 to give credence to the WorldCat results as the MESH is used internationally to locate pharmacy, medical, and allied health works [1,3,4].

Year	Author(s)	Title	Keywords
2026	Yuanyuan Tang, Liping Guan, Zeyang Li, Ran Li, Sufang Liu, Boya Chen, Yan Jin, Feng Tao	Synbiotics inhibits gut microbiome perturbation-induced prolongation of migraine-like pain by restoring short-chain fatty acid signaling	Gut microbiome, fatty acid signaling
2007	Charles D. Kopec, Helmut W.H.G. Kessels, David E.A. Bush	A robust automated method to analyze rodent motion during fear conditioning	Fear conditioning, rodent motion, automated method
2007	Yann Humeau, Andreas Luthi	Dendritic calcium spikes induce bi directional synaptic plasticity in thez lateral amygdala	Dendritic calcium spikes
2007	Rose-Marie Vouimba, Dan Yaniv, Gal Richter-Levin	Glucocorticoid receptors and $\beta$ adrenoceptors in basolateral amygdala modulate synaptic plasticity in hippocampal dentate gyrus, but not in area CA1	Glucocorticoid receptors

**Table 1: Selected Neuropharmacology Journal Articles, 2007-2026**

Term(s)	In MESH? (Y/N)
Glucocorticoid receptors, Dendritic calcium spikes, Fear conditioning, rodent motion, automated method, Gut microbiome, fatty acid signaling, functional consequences, chronic sleep restriction, Cognitive deficits, glucose uptake defect, mouse model, Developmental lead exposure, Hydroxy radical generation, posterior cingulate cortex, retrosplenial cortex, Neuropsychiatric disorders, cognitive enhancement, drug targets, Rats, acute novel stressors, psychosocially stressed, Food-derived,	Glucocorticoid receptors(Y), Dendritic calcium spikes(N), Fear conditioning(N), rodent motion(N), automated method(N), Gut microbiome(Y), fatty acid signaling(N), functional onsequences(N), chronic sleep restriction(N), Cognitive deficits(N), glucose uptake defect(N), mouse model(N), Developmental lead exposure(N), Hydroxy radical generation(N), posterior cingulate cortex(Y), retrosplenial cortex(Y), Neuropsychiatric disorders(N), cognitive enhancement(Y), drug targets(N), Rats(Y),
peptides, Bing consumption, drug/food dependence, Clozapine-induced dyslipidemia, Fentanyl response, Receptor 3 agonist treatment, Neurobiological response, caffeine administration, rat decision making, neuroinflammation, impaired sociability	acute novel stressors(N), psychosocially stressed(N), Food-derived, peptides(N), Bing consumption(N), drug/food dependence(N), Clozapine-induced dyslipidemia(N), Fentanyl response(N), Receptor 3 agonist treatment(N), Neurobiological response(N), caffeine administration(N), rat decision making(N), neuroinflammation(N), impaired sociability(N)

**Table 2: Pharmacological Terminology Located in MESH (2026)**

The fact that the majority of the pharmacological terms mentioned in both the Neuropharmacy and Pharmacology and Biochemistry and Behavior journal articles do not appear in MESH makes it difficult to implement such patient education strategies as what Liao and colleagues call bibliotherapy to improve the social determinants of health, especially around the area of health information literacy on commonly prescribed pharmaceutical treatments, such as Wegovy [4,5]. Simply having patients read additional information freely available on the Internet, library, and elsewhere may reduce anxiety or other concerns about commonly prescribed pharmaceuticals. Additionally patient education extends to pharmacological agents used in veterinary treatments as dogs and other pets are prescribed

some of the same pharmaceuticals as humans.

Also, as AlHudaiti and Gianninni and colleagues note pharmacological agents are used during orthodontic treatment, it is also investigated what keywords can be used to answer how the social detriments of health impact pharmacology [1,6]. To investigate what keywords can be used to answer how the social detriments of health impact pharmacology, a review of random Pharmacology Biochemistry and Behavior journal articles from 2007 to 2026 is conducted using a computer, Internet connection, and the Google browser, and the following table 3 is designed [1].

Year	Author(s)	Title	Keywords
2026	Kaitlyn M. Little, Carlos A. Lopez Arteago, Gabrielle N. Kostecki, Therese A. Kosten, Colin N. Haile	Greater persistence of responding for fentanyl in female versus male rats	Fentanyl response
2025	Jiamei Lian, Bo Pan, Chao Deng	The dosage dependent effects of cevimeline in preventing clozapine induced dslipademia in female rats	Clozapine-induced dyslipidemia
2022	Dennis F. Lovelock, Patrick A. Randall, Kalynn Van Voorhies, Ryan P. Vetreno, Fulton T. Crews, Joyce Besheer	Increased alcohol self-administration following repeated Toll-like receptor 3 agonist treatment in male and female rats	Receptor 3 agonist treatment
2021	Meenu Mihas, Cheryl L. Limebeer, Evan Stroam, Linda A. Parker, Francesco Leri	High fructose corn syrup alters behavioural and neurobiological responses to oxycodone in rats	Neurobiological response

2020	Graham Blair, Corinne Wells, Ashley Ko, John Modarres, Caroline Pace, James M. Davis, Amir H. Rezvani, Jed E. Rose, Edward D. Levin	Dextromethorphan and bupropion reduces high level remifentanyl selfadministration in rats	
2019	Geoffrey A. Dunn, Joel T. Nigg, Elinor L. Sullivan	Neuroinflammation as a risk factor for attention deficit hyperactivity disorder	neuroinflammation
2018	Jacqueline-Marie N. Ferland, Madison R. Carr, Angela M. Lee, Myrthe E. Hoogeland, Catherine A. Winstanley, Tommy Pattij	Examination of the effects of cannabinoid ligands on decision making in a rat gambling task	Rat decision making
2017	Peirong Du, Zhixiong He, Zhenlu Cai, Xin Hao, Na Dong, Wei Yuan, Wenjuan Hou, Jinfeng Yang, Rui Jia, Faodao Tai	Chronic central oxytocin infusion impairs sociability in mandarin voles	Impaired sociability
2016	Gemma M. Paech, Siobhan Banks, Maja Pajcin, Crystal Grant, Kayla Johnson, Gary H. Kamimori, Chris B. Della Vedova	Caffeine administration at night during extended wakefulness effectively mitigates performance impairment but not subjective assessments of fatigue and sleepiness	
2015	Manuel Alcaraz Iborra, Immaculada Cubero	Do Orexins contribute to impulsivity-driven binge consumption of reward stimulus and transition to drug/food dependence?	Binge consumption, drug/food dependence
2014	Josh Lister, Paul J. Fletcher, Jose N. Nobrega, Gary Remington	Behavioral effects of food-derived opioid like peptides in rodents: Implications for schizophrenia?	Food-derived, peptides
2013	Matthew D. Puhl, Matthew Boisvert, Zhiwei Guan, Jidong Fang, Patricia S. Grigson	A novel model of chronic sleep restriction reveals an increase in the perceived incentive reward value of cocaine in high drug taking rats	Chronic sleep restriction
2012	Dongmei Wang, Kai Gao, Xiaying Li, Xinhua Shen, Xu Zhang, Chummei Ma, Chuan Qin, Lianfeng Zhang	Long-term naringin consumption reverses a glucose uptake defect and improves cognitive deficits in a mouse model of Alzheimer's disease	Cognitive deficits, glucose uptake defect, mouse model
2011	Tanya L. Wallace, Theresa M. Ballard, Bruno Pouzet, Wim J. Riedel, Joseph G. Wettstein	Drug targets for cognitive enhancement in neuropsychiatric disorders	Neuropsychiatric disorders, cognitive enhancement, drug targets
2010	Larissa A. Pohorecky	Acute novel stressors modify ethanol intake of psychosocially stressed rats	Rats, acute novel stressors, psychosocially stressed
2009	J. Jacobus, S. Bava, M. Cohen-Zion, O. Mahmood, S.F. Tapert	Functional consequences of marijuana use in adolescents	Functional consequences
2008	Angelica Rocha, Rodrigo Valles, Nigel Hart, Gerald R. Bratton, Jack R. Nathon	Developmental lead exposure attenuates methamphetamine dose-effect self administration performance and progressive ratio responding in the male rat	Developmental lead exposure
2007	Dai-Ying Zuo, Ying Liang Wu, Wen-Xue Yao, Yue Cao, ChunFu Wu, Masatoshi Tanaka	Effect of MK-801 and ketamine on hydroxyl radical generation in the posterior cingulate and retrosplenial cortex of free-moving mice, as determined by in vivo microdialysis	Hydroxy radical generation, posterior cingulate cortex, retrosplenial cortex

**Table 3: Selected Pharmacology Biochemistry and Behavior Journal Articles, 2007-2026**

To further answer the question of pharmacology social detriments of health in pharmacology, one goes to WorldCat, an international database of library holdings, and searches for “social detriments of health and pharmacy” using the WorldCat search bar and selecting “Thesis, Dissertation” in the “Format” tab of the WorldCat website and the results are displayed [1,4,7].

The dissertations from WorldCat did not discuss social detriments of health but rather revealed that focus is given on how to restore the mandible which makes these dissertations more of a parking lot idea and not necessarily germane to this article [4].

Additionally, the terms or keywords from the Pharmacology Biochemistry and Behavior journal articles from 2007-2026 are

compared against the National Library of Medicine Medical Subject Headings, MESH, browser to give credence to the WorldCat results as the MESH is used internationally to locate pharmacy, medical, and allied health works and is displayed in Table 2 below

The fact that many pharmacological terms do not appear in MESH as noted in Table 2 makes it difficult to implement such patient education strategies as what Liao and colleagues call bibliotherapy to improve the social determinants of health, especially around the area of health information literacy on commonly prescribed pharmacological treatments [1,4,8]. Simply having patients read additional information freely available on the Internet, library, and elsewhere may reduce anxiety or other concerns about commonly

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prescribed pharmacological treatments, such as what local anesthetics are administered during medical procedures.

### 3. Results

The dearth of pharmacy and pharmacological terms available in MESH makes it difficult for pharmacists and patients to understand existing literature and systemic effects of commonly prescribed pharmaceuticals.

### 4. Discussion

Noted by Graf and colleagues, physiological changes during pregnancy negatively affect the social detriments of health due to concerns about drug safety and metabolism. Noted by Fekonja and colleagues, digital twins can help to bridge the lessons that are learned from the Neuropharmacology articles and the Pharmacology Biochemistry and Behavior Journal articles in that researchers can test the effect of novel pharmaceuticals on pregnant women or even existing pharmaceuticals to further understand how such pharmaceuticals impact pregnant women [9,10].

### 5. Conclusion

While the field of pharmacology has a long history dating back to the 1800s, shortcomings in patient education as evidenced by a deficit of pharmacology terms in MESH, a commonly used database by libraries and patients for finding medical and allied health information, combined with the recent advances in the usage of digital twins has the potential to improve clinical practice but at the same time warrants additional feasibility, culture, and other studies to gauge how easy it is to change clinical practice to both improve patient education as well as improve and modify how digital twin models are used.

Greg Tharp has over 20 years of experience as a librarian. Tharp holds a Paralegal Certificate from Boston University, a Master's Certificate in Acquisition and Contract Management from American Graduate University, an Advanced Certificate in Archives Management from Simmons University, a Master of Library Science from Southern Connecticut State University, and a Bachelor of Science from Sacred Heart University where he was elected to Phi Eta Sigma and received the Passion for Learning Award. Tharp also holds a Certificate of Professional Librarianship from the Commonwealth of Massachusetts Board of Library Commissioners and is a licensed Massachusetts Pharmacy Technician and a licensed New

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Tharp has authored on commercial government contracts in the Contracting Excellence Journal

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Research Symposium. Tharp has written a book on commercial government contracts with Eliva Press and wrote a book on website reviews with Eliva Press. He has also co-authored an article on Chinese academic libraries in the Library Hi Tech journal, presented on virtual reality in academic libraries at the Library Research Seminar VII, and has published library website reviews in Tech Services Quarterly.

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