The Use and Utility of Wearable Devices for Tracking Sleep and Activity in Inpatient Mental Health Settings: Protocol for a Rapid Review

Gillian Strudwick, Hwayeon Danielle Shin, Iman Kassam, Karishini Ramamoorthi, Benjamin Rosen, Michelle Patriquin, Justin Baker, Nicholas Neufeld

Submitted to: JMIR Research Protocols
on: August 12, 2025

Table of Contents

The Use and Utility of Wearable Devices for Tracking Sleep and Activity in Inpatient Mental Health Settings: Protocol for a Rapid Review

Gillian Strudwick[1]; Hwayeon Danielle Shin[1]; Iman Kassam[1]; Karishini Ramamoorthi[2]; Benjamin Rosen[3]; Michelle Patriquin[4]; Justin Baker[5]; Nicholas Neufeld[1]

[1]1001 Queen St W Centre for Addiction and Mental Health Toronto CA
[2] University of Toronto Institute of Health Policy, Management and Evaluation Toronto CA
[3] Sinai Health Toronto CA
[4] UTHealth Houston John S. Dunn Behavioral Sciences Center Houston US
[5] McLean Hospital Belmont US

Corresponding Author:
Gillian Strudwick
1001 Queen St W
Centre for Addiction and Mental Health
1001 Queen St W
Toronto
CA

Abstract

Background: Wearable devices offer an opportunity objectively monitor and capture sleep and activity in psychiatric inpatient settings, where traditional approaches often rely on subjective reporting or staff observation which have inherent flaws. Technologies such as Fitbit, Garmin, Oura Ring, GENEActiv, Empatica, and WHOOP (among others) have been used to passively collect physiological data that may inform care planning and clinical decision-making. Despite growing interest, the extent to which these wearables are feasible, acceptable, and useful in inpatient mental health settings remains unclear. Synthesizing this evidence

Objective: The objective of this study is to conduct a rapid review to examine the current use, utility, feasibility, and implementation of wearable devices for tracking sleep and/or activity in inpatient mental health settings.

Methods: A rapid review will be conducted using Cochrane Rapid Review methods. Peer-reviewed literature will be searched in four databases: 1) Pubmed, 2) Embase, 3) PsycINFO, and 4) CINAHL. Studies will be included if they report on the use of wearable devices in inpatient psychiatric settings and evaluate outcomes related to feasibility, acceptability, clinical utility, or implementation. Data extraction will be conducted using a standardized extraction template, and findings will be synthesized narratively and via descriptive statistics.

Results: Database searches are currently underway. The review is expected to be completed by the fall of 2025. A manuscript detailing the findings of this review will be published thereafter.

Conclusions: This rapid review will provide timely evidence to support the integration of wearable technologies into psychiatric inpatient settings. Findings will inform future research and clinical practice focused on the use of wearables for sleep and activity monitoring, contributing to more responsive and data informed mental health care.

(JMIR Preprints 12/08/2025:82290)
DOI: https://doi.org/10.2196/preprints.82290

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

✓ **Please make my preprint PDF available to anyone at any time (recommended).**
Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users.
Only make the preprint title and abstract visible.
No, I do not wish to publish my submitted manuscript as a preprint.

2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?

✔ **Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).**

Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain v

Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in <a href="http

No. Please do not make my accepted manuscript PDF available to anyone. I understand that if I later pay to participate in <a href="https:/

Original Manuscript

The Use and Utility of Wearable Devices for Tracking Sleep and Activity in Inpatient Mental Health Settings: Protocol for a Rapid Review

Authors:

Gillian Strudwick[1,2], Hwayeon Danielle Shin[1,2], Iman Kassam[1,2], Karishini Ramamoorthi[1,2,] Benjamin Rosen[1,3,4], Michelle A. Patriquin[5,6,7], Justin Baker [8,9], Nicholas Neufeld[1,4]

Author Affiliations:

1. Campbell Family Mental Health Research Institute, Centre for Addiction and Mental Health, Toronto, Ontario, Canada

2. Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario, Canada

3. Sinai Health, Toronto, Ontario, Canada

4. Department of Psychiatry, Temerty Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

5. John S. Dunn Behavioral Sciences Center, UTHealth Houston, Houston, Texas, United States

6. Digital Health & Innovation, School of Behavioral Health Sciences, UTHealth Houston, Houston, Texas, United States

7. Department of Psychiatry & Behavioral Sciences, McGovern Medical School, UTHealth Houston, Houston, Texas, United States

8. McLean Hospital, 115 Mill Street, Belmont, MA, United States

9. Harvard Medical School, Boston, MA, United States

Corresponding Author:

Gillian Strudwick RN, PhD

1001 Queen St W Toronto, ON, Canada, M6J 1H1

(416) 535-8501

Gillian.strudwick@camh.ca

Abstract:

Background: Wearable devices offer an opportunity objectively monitor and capture sleep and activity in psychiatric inpatient settings, where traditional approaches often rely on subjective reporting or staff observation which have inherent flaws. Technologies such as Fitbit, Garmin, Oura Ring, GENEActiv, Empatica, and WHOOP (among others) have been used to passively collect physiological data that may inform care planning and clinical decision-making. Despite growing interest, the extent to which these wearables are feasible, acceptable, and useful in inpatient mental health settings remains unclear. Synthesizing this evidence is essential to inform their potential integration into psychiatric care.

Objective: The objective of this study is to conduct a rapid review to examine the current use, utility, feasibility, and implementation of wearable devices for tracking sleep and/or activity in inpatient mental health settings.

Methods: A rapid review will be conducted using Cochrane Rapid Review methods. Peer-reviewed literature will be searched in four databases: 1) Pubmed, 2) Embase, 3) PsycINFO, and 4) CINAHL. Studies will be included if they report on the use of wearable devices in inpatient psychiatric settings and evaluate outcomes related to feasibility, acceptability, clinical utility, or implementation. Data extraction will be conducted using a standardized extraction template, and findings will be synthesized narratively and via descriptive statistics.

Results: Database searches are currently underway. The review is expected to be completed by the fall of 2025. A manuscript detailing the findings of this review will be published thereafter.

Conclusions: This rapid review will provide timely evidence to support the integration of wearable technologies into psychiatric inpatient settings. Findings will inform future research and clinical practice focused on the use of wearables for sleep and activity monitoring, contributing to more

responsive and data informed mental health care.

Introduction

Accurate monitoring of sleep and physical activity in psychiatric inpatient settings is essential for understanding patients' mental health status and treatment response [1]. Sleep disturbances such as insomnia, hypersomnia, and fragmented sleep are highly prevalent across psychiatric conditions like depression, bipolar disorder, schizophrenia, and anxiety, serving both as core features of these disorders and potential triggers for relapse [2]. Poor sleep quality in psychiatric inpatients has been linked to worse clinical outcomes, including greater emotion regulation difficulties, elevated depression and anxiety, increased suicidal ideation, and more severe nightmares [3-5]. Similarly, low levels of physical activity are associated with poorer mental health, whereas increased activity can enhance emotional regulation and cognitive function, and reduce depressive and anxiety symptoms [6]. As both sleep and activity may signal shifts in mental state, objective and continuous assessment of these domains is important in inpatient settings where patients may lack self-awareness or the capacity to reliably self-report, enabling timely, data-driven clinical interventions.

Traditional methods of assessing or monitoring sleep and activity, such as self-report or staff observation (often by nurses), are often subjective and imprecise [7-9]. These approaches can be limited by recall bias, inconsistency across observers, and challenges in obtaining continuous or real-time data [10]. In settings where clinical acuity is high, and patients may be experiencing cognitive or emotional distress, reliable and objective data are required for care such as tailoring care plans, identifying early signs of deterioration, and evaluating treatment effectiveness over time [11].

Commercially available wearable technologies offer a promising solution [12] by providing passive, continuous, and generally non-invasive monitoring of sleep and physical activity via a wrist worn device or ring [13-14]. Devices such as Fitbit, Garmin, Oura Ring, GENEActiv, Empatica, and WHOOP, among others, can generate physiological data that may enhance clinical decision-making and has the potential to reduce clinician documentation burden [15]. In addition to supporting

personalized interventions and early detection of changes in mental health status, wearables have the potential to also empower patients by increasing engagement with and awareness of their health patterns (e.g., sleep length, sleep quality, step count) [14, 16]. However, the utility and implementation of these devices in the context of inpatient psychiatry, where safety concerns, patient acuity, organizational policies, and technology infrastructure differ from outpatient or non-psychiatric settings, are not well established. Understanding how these technologies are currently being used, and whether they are feasible, acceptable, and clinically useful in inpatient environments, is an essential step toward integrating them effectively into mental health care [17].

Given the increasing interest in digital health tools in psychiatry and the limited evidence specific to inpatient settings, there is a need to understand how wearables are currently being used and evaluated in these environments. Inpatient psychiatric settings present unique challenges such as restricted environments, high patient acuity, potentially unique privacy concerns, increased vulnerability of patients, and at times, limited digital infrastructure [18-19]. Despite these challenges, wearables could offer important benefits: passive data collection, reduced burden on clinical staff, and early detection of symptom exacerbation or treatment effect [12, 20]. Synthesizing the current literature on this topic is necessary to identify best practices, feasibility, and gaps in the literature that can guide future implementation and research. A rapid review will be therefore conducted with the following research questions:

RQ1: How are wearable devices being used to monitor sleep and/or activity in inpatient psychiatric settings?

RQ2: What is the reported feasibility, acceptability, and clinical utility of using wearable technologies in inpatient mental health care?

Methods

This rapid review will be conducted following the methodological guidance provided by the

Cochrane Rapid Reviews Group [21] and the approach described by Tricco et al. (2017; 2021) [22-23]. A rapid review design was selected due to its ability to generate timely, insights in a field where the evidence base is still emerging [24]. The process balances efficiency with methodological rigor and will take place over a three-month timeline.

The objective of this review is to explore the use, utility, feasibility, and implementation of wearable devices for tracking sleep and/or activity in inpatient psychiatric settings. The review will address three primary research questions described above.

Studies will be eligible for inclusion if they are primary empirical research (quantitative, qualitative, or mixed methods), conducted in inpatient psychiatric/mental health settings, and if they include the use of a commercially available wearable technologies such as Fitbit, Garmin, Oura Ring, GENEActiv, Empatica, or WHOOP (or other) to monitor sleep and/or activity. Included studies must report outcomes related to feasibility, acceptability, clinical utility, or implementation. Feasibility refers to the practicality and achievability of using wearables in a clinical environment, including factors like cost, workload for staff, and technical/infrastructure requirements. Acceptability assesses the attitudes and willingness of both patients and clinicians to use the technology. The concept of clinical utility focuses on whether the data collected from wearables provides meaningful and actionable insights that can inform patient care (e.g car planning), detect changes, and evaluate treatment effectiveness. Studies will be excluded if they focus solely on outpatient settings, or non-psychiatric/mental health inpatient areas. Only peer-reviewed articles published in English will be considered, and no restrictions will be placed on publication year, although it is likely that articles identified will be primarily in the last 5-10 years given the popularity and availability of these wearables during this time period.

A comprehensive search strategy was developed (See Figure 1 showing the search strategy for Pubmed which will be translated to the other databases) and was peer reviewed using the PRESS guideline [25]. Literature will be identified from four databases: 1) Pubmed; 2) Embase; 3)

PsycINFO; and 4) CINAHL. The search uses a combination of subject headings and keywords relating to wearable devices, sleep and activity monitoring, and inpatient psychiatric care.

All references identified from the databases will be imported into Covidence to manage duplicates and facilitate screening. Titles and abstracts will be screened by one reviewer, with the first 100 citations checked by a second reviewer for consistency. If 80% or more agreement is reached by the two reviewers, full text screening will proceed. If not, the reviewers will meet to discuss discrepancies and carry on to another 100 citations until 80% agreement is reached. Full-text screening will be conducted independently by two reviewers, with disagreements resolved through discussion or consultation with a member of the review team as needed. The selection process will be documented using a PRISMA flow diagram [26].

Data extraction will be carried out using a data extraction form which will be pilot tested initally. One reviewer will extract the data, and a second reviewer will verify its accuracy. Extracted data will include basic study details (authors, title etc), study characteristics (sample size, etc), type and version of wearable device, purpose of use, duration, outcomes monitored and assessed, and findings related to feasibility, acceptability, and utility. A narrative synthesis will be conducted. Quantitative findings will be summarized descriptively and presented in tables, while qualitative data will be thematically analyzed to capture insights on implementation and user experience. Results will be organized in relation to the three research questions, and key gaps in the literature will be identified.

To validate findings and enhance interpretation, the research team will engage in a consultation process with key knowledge users. These consultations will include clinicians, researchers, individuals with lived experience of inpatient psychiatric care, and digital health leaders. Consultations will be conducted virtually and will aim to validate the results, identify implications for clinical practice and policy, and help guide future research directions. Feedback obtained will be integrated into the discussion section of the final manuscript.

No ethics approval is required for this rapid review, as it involves the analysis of secondary data from published sources.

Results

The review will be conducted over a three-month period. In the first month, the review team will translate the Pubmed search strategy to other databases, carry out the database searches and screen titles and abstracts using the eligibility criteria. In the second month, full-text articles will undergo review and if they meet the inclusion criteria data extraction will occur. In the third month a narrative synthesis of the findings will be conducted. Data will be presented both quantitatively (device types used, common outcomes measured, etc.) and qualitatively (themes related to feasibility, acceptability, implementation factors, etc.). Results will be structured in alignment with the three research questions and key gaps in the literature will be highlighted. Knowledge user consultations will also occur in the final month, during which early synthesized findings will be shared and feedback will be obtained. These insights will enhance the contextual relevance of the review and guide the framing of the discussion for the final paper describing the findings.

Conclusion: This rapid review will generate timely, practical insights into the current use and utility of wearable devices for tracking sleep and activity in inpatient psychiatric settings. By synthesizing evidence across different commercially available wearable technologies and clinical contexts, the review will identify the feasibility, acceptability, and clinical utility of these tools, as well as common barriers and facilitators to implementation. Findings will provide a foundation for future clinical integration and research, particularly in tailoring digital health innovations to meet the needs of complex inpatient populations [27]. Ultimately, this work aims to support the development of safer, more responsive, and data-informed mental health care environments.

Funding: This study received no external funding.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Wulff K, Gatti S, Wettstein JG, Foster RG. Sleep and circadian rhythm disruption in psychiatric and neurodegenerative disease. *Nat Rev Neurosci* 2010 Jul 14; 11(1):589–599 [doi: 10.1038/nrn2868]
2. Harvey AG, Murray G, Chandler RA, Soehner A. Sleep disturbance as transdiagnostic: consideration of neurobiological mechanisms. *Clin Psychol Rev* 2011 Mar; 31(2): 225-35 [FREE Full Text] [doi: 10.1016/j.cpr.2010.04.003]
3. Blanchard AW, Rufino KA, Nadorff MR, Patriquin MA. Nighttime sleep quality & daytime sleepiness across inpatient psychiatric treatment is associated with clinical outcomes. *Sleep Med* 2023 Oct; 110(1):235-242 [doi: 10.1016/j.sleep.2023.08.011]
4. Rohr JC, Rufino KA, Alfano CA, Patriquin MA. Sleep disturbance in patients in an inpatient hospital mediates relationship between PTSD and suicidal ideation. *J Psychiatr Res* 2021 Jan; 133(1):174-180 [doi: 10.1016/j.jpsychires.2020.12.039]
5. Hartwig EM, Rufino KA, Palmer CA, Shepard C, Alfano CA, Schanzer B, Mathew SJ, Patriquin MA. Trajectories of self-reported sleep disturbance across inpatient psychiatric treatment predict clinical outcome in comorbid major depressive disorder and generalized anxiety disorder. *J Affect Disord* 2019 May 15; 251(1):248-255 [doi: 10.1016/j.jad.2019.03.069]
6. Smith PJ, Merwin RM. The role of exercise in management of mental health disorders: an integrative review. *Annu Rev Med* 2021 Jan; 72(1):45-62 [FREE Full Text] [doi: 10.1146/annurev-med-060619-022943]

7. Krahn LE, Lin SC, Wisbey J, Rummans TA, O'Connor MK. Assessing sleep in psychiatric inpatients: nurse and patient reports versus wrist actigraphy. *Annu Clin Psychiatry* 1997 Dec; 9(1):203-210 [doi: 10.3109/10401239709147799]
8. Gozalez R, Tamminga C, Tohen M, Suppes T. Comparison of objective and subjective assessments of sleep time in subjects with bipolar disorder. *J Affect Disord* 2013 Jul; 149(1-3):363-366 [FREE Full Text] [doi: 10.1016/j.jad.2013.02.013]
9. Matousek M, Cervena K, Zavesicka L, Brunovsky M. Subjective and objective evaluation of alertness and sleep quality in depressed patients. *BMC Psychiatry* 2004 May 26; 4(1):14 [FREE Full Text] [doi: 10.1186/1471-244X-4-14]
10. Ancoli-Israel S, Cole R, Alessi C, Chambers M, Moorcroft W, Pollak, CP. The role of actigraphy in the study of sleep and circadian rhythms. *Sleep* 2003 May; 26(3):342–392 [doi:10.1093/sleep/26.3.342]
11. Scott H, Biello SM, Woods HC. Social media use and adolescent sleep patterns: Cross-sectional findings from the UK millennium cohort study. *BMJ Open* 2019 Oct 22; 9(9), e031161[FREE Full Text] [doi 10.1136/bmjopen-2019-031161]
12. Johnson C, Mathew SJ, Oh H, Rufino KA, Najafi B, Colombo AE, Patriquin MA. Wearable technology: a promising opportunity to improve inpatient psychiatry safety and outcomes. J Psychiatr Res 2021 Mar; 135(1):104-106 [doi: 10.1016/j.j.psychires.2021.01.003]
13. Piwek L, Ellis DA, Andrews S, Joinson A. The rise of consumer health wearables: promises and barriers. *PLoS Med* 2016 Feb 2; 13(2): e1001953 [FREE Full Text] [doi: 10.1371/journal.pmed.1001953]
14. Hassan L, Milton A, Sawyer C, Casson AJ, Torous J, Davies A, Ruiz-Yu B, Firth J. Utility of consumer-grade wearable devices for inferring physical and mental health outcomes in severe mental illness: systematic review. *JMIR Ment Health* 2025 Jan 7; 12(1):e65143 [FREE Full Text] [doi: 10.2196/65143]

15. Povey J, Sweet M, Nagel T, Mills PPJR, Stassi CP, Puruntatameri AMA, Lowell A, Shand F, Dingwall K. Drafting the aboriginal and islander mental health initiative for youth (AIMhi-Y) app: results of a formative mixed methods study. *Internet Interv* 2020 Apr 11; 21(1):100318 [FREE Full Text] [doi: 10.1016/j.invent.2020.100318]
16. Naslund JA, Aschbrenner KA, Marsch LA, Bartels SJ. The future of mental health care: peer-to-peer support and social media. *Epidemiol Psychitr Sci* 2016 Apr; 25(2): 113-122 [FREE Full Text] [doi: 10.1017/S2045796015001067]
17. Robotham D, Satkunanathan S, Doughty L, Wykes T. Do we still have a digital divide in mental health? A five-year survey follow-up. *J Med Internet Res* 2016 Nov 22; 18(11): e309 [FREE Full Text] [doi: 10.2196/jmir.6511]
18. Westheimer JL, Smith RP, Iacobelli P, Oh H, Tezino L, Khan R, Broussard J, Meltzer G, Obeid N, Cunningham S, Boland RJ, Patriquin MA. (2024). The state of (mis) trust: Human-centered technology development & implementation in intensive mental health settings. *J Affect Disord* 2024 Dec 15; 367(1): 318–323 [doi: 10.1016/j.jad.2024.08.206]
19. Westheimer JL, Moukaddam N, Lindsay JA, Sabharwal A, Najafi B, Iacobelli PA, Boland RJ, Patriquin MA. Technology implementation for mental health end users: a model to guide digital transformation for inpatient mental health professionals. *JMIR Ment Health* 2023 Apr 6; 10(1): e40429 [FREE Full Text] [doi: 10.2196/40429]
20. Gazor A, Mathew SJ, Patriquin MA. Q-15 checks and 1:1 observations: exacerbating a problem we are trying to solve? *J Affect Disord 2020 Feb 15; 263(1):* 552–554 [doi: 10.1016/j.jad.2019.11.018]
21. Cochrane Rapid Reviews Methods Group. (2020). Guidance on Cochrane rapid reviews. Accessed August 11, 2025. https://methods.cochrane.org/rapidreviews/
22. Tricco AC, Garritty C, Boulos L, Lockwood C, Wilson M, Straus SE et al. Rapid review methods more challenging during COVID-19: commentary with a focus on 8 knowledge

synthesis steps. *J Clin Epidemiol* 2020 Oct; 126(1): 177–183 [FREE Full Text] [doi: 10.1016/j.jclinepi.2020.10.005]

23. Tricco AC, Langlois EV, Straus SE, editors. Rapid reviews to strengthen health policy and systems: a practical guide. Geneva: *World Health Organization;* 2017. Licence: CC BY-NC-SA 3.0 IGO [ISBN: 9789241512763]
24. Garritty C, Nussbaumer-Streit B, Hamel C, Devane D, Cochrane Rapid Reviews Methods Group. Rapid reviews methods series: assessing the appropriateness of conducting a rapid review. *BMJ Evid Based Med* 2025 Jan 22; 30(1), 55–60 [FREE Full Text] [doi: 10.1136/bmjebm-2023-112722]
25. McGowan J, Sampson M, Salzwedel DM, Cogo E, Foerster V, Lefebvre C. PRESS peer review of electronic search strategies: 2015 guideline statement. *J Clin Epidemiol* 2016 Jul; 75(1); 40–46 [FREE Full Text] [doi: 10.1016/j.jclinepi.2016.01.021]
26. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009 Jul 21; 6(7): e1000097 [FREE Full Text] [doi: 10.1371/journal.pmed.1000097]
27. Strudwick G, Kassam I, Torous J, Patenaude S. Building the infrastructure for sustainable digital mental health: it is “prime time” for implementation science. *JMIR Ment Health* 2025 Jul 21;12(1):e78791 [doi: 10.2196/78791]

Figure 1

MEDLINE Search Strategy: August 7, 2025

Concept	Query #	Search Terms	Results
Wearables This includes activity and sleep	1	"Accelerometry"[Mesh] OR “acceleromet*”[tw]	32,679
	2	"Fitness Trackers"[Mesh] OR "fitness tracker"[tw] OR "fitness trackers"[tw] OR "fitness tracking"[tw]	1,850
	3	"activity monitor*"[tw] OR "activity tracker*"[tw] OR	7,032

		"activity tracking"[tw]	
	4	“Wearable electronic devices”[MESH] OR “wearable electronic device*”[tw] OR “wearable device*”[tw] OR “wearable technolog*”[tw] OR “wearable sensor*”[tw] OR “wearable monitor*”[tw]	36,961
	5	“Smartphone”[MESH] OR “smartwatch*”[tw] OR “smart ring*”[tw] OR “oura ring”[tw] OR “fitbit”[tw] OR "garmin"[tw] OR "misfit shine"[tw] OR “whoop”[tw] OR "polar loop"[tw] OR "jawbone*"[tw] OR “Samsung”[tw] OR “geneactiv”[tw] OR “empatica”[tw] OR “mio”[tw] OR “actigraph*”[tw] OR "apple watch*"[tw] OR “withings”[tw] OR “pebble”[tw] OR “sensewear”[tw] OR “pedometer*”[tw]	36,817
	6	OR 1-5	95,974
Setting; in-patient	7	“hospitalis*”[tiab] OR “hospitaliz*”[tiab] OR “inpatient*”[tiab] OR “in-patient*”[tiab]	2,770,509
	8	“admission*”[tiab] OR “admit*”[tiab] OR “hospital*”[tiab] OR “institution*”[tiab] OR “unit*”[tiab] OR “ward*”[tiab]	3,459,630
	9	“mental*”[tiab] OR “psychiatr*”[tiab] AND (facilit*[tiab] OR institution*[tiab] OR unit*[tiab] OR ward*[tiab])	110,154
	10	"Hospitalization"[Mesh] OR "Inpatients"[Mesh]	343,330
	11	OR 7-10	5,457,272
Psychiatry/mental health	12	"Mental Health"[Mesh] OR "Mental Disorders"[Mesh] OR "Psychiatry"[Mesh] OR “mental health”[tiab] OR “mental illness*”[tiab] OR “mental disorder*”[tiab] OR “psychiatric”[tiab] OR “psychiatry”[tiab] OR “psychological”[tiab] OR “psychosocial”[tiab] OR “behavioural health”[tiab] OR “behavioral health”[tiab]	2,239,521
	13	6 AND 11 AND 12	2,560 results