JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH
ISSN: 2576-0017
2024, VOL 7, NO S12

"Mental Health Interventions by Pharmacists During Disasters and Crises"

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Abstract

Disasters and crises, whether natural or man-made, have profound psychological impacts, often leading to an increased prevalence of mental health disorders such as anxiety, depression, and post-traumatic stress disorder (PTSD). Pharmacists, as accessible healthcare professionals, are uniquely positioned to deliver mental health interventions during such emergencies; however, their roles in these contexts remain underexplored and inadequately defined. This study aimed to evaluate the impact and scope of mental health interventions provided by pharmacists during disasters and crises. A systematic review and meta-analysis were conducted using data from peer-reviewed articles published between 2000 and 2023, focusing on pharmacists' contributions to mental health management in these scenarios. Databases such as PubMed, Scopus, and Web of Science were searched using keywords including “pharmacists,” “mental health,” “disasters,” and “crises.” Studies that met the inclusion criteria were analyzed to identify intervention strategies, patient outcomes, and pharmacists' perceived barriers. Additionally, qualitative data from semi-structured interviews with pharmacists and other healthcare providers were incorporated to provide insights into real-world applications. The review included 45 studies and 20 qualitative interviews, revealing that pharmacists played a significant role in medication management for mental health conditions, psychoeducation, early identification of high-risk individuals, and referrals to specialized care. Pharmacist-led interventions demonstrated significant contributions to stabilizing mental health conditions in 68% of the cases analyzed, particularly in post-disaster settings. However, barriers such as insufficient mental health training, lack of formalized protocols, and the stigma associated with mental health discussions were identified. Meta-analysis further indicated that pharmacist-led interventions were associated with a 25% reduction in symptom severity for conditions like anxiety and PTSD ($p < 0.05$). These findings underscore the critical yet underutilized role of pharmacists in addressing mental health challenges during disasters. Their accessibility and medication expertise position them to provide timely and effective interventions, yet structural and educational barriers limit their full potential. Expanding training in mental health first aid, establishing collaborative protocols with other healthcare providers, and integrating pharmacists into disaster response teams are essential steps toward optimizing their contributions. Overall, pharmacists play a pivotal role in mental health interventions during disasters, offering significant improvements in patient outcomes. To enhance their effectiveness, targeted training, policy reforms, and multidisciplinary collaboration are

necessary. Future research should focus on longitudinal studies to evaluate the sustained impact of pharmacist-led mental health initiatives in disaster scenarios.
Keywords: Pharmacists, Mental health, Disasters, Crises, Post-traumatic stress disorder (PTSD), Anxiety, Depression, Medication management, Psychoeducation, Disaster response, Healthcare collaboration, Mental health first aid, Systematic review, Meta-analysis.

Introduction:

Every type of disaster or crisis-natral ones such as earthquakes, floods, and hurricanes and man-made incidents such as terrorism, infectious diseases, and conflict-disrupts health systems globally. Most important consequences are mental health repercussions, although such effects are often neglected. During disasters, the occurrence of mental disorders such as post-traumatic stress disorder (PTSD), anxiety, and depression tend to increase significantly alongside the onset of substance use disorders [1][2]. For instance, studies have reported a prevalence of PTSD in disaster-affected populations ranging from 30 to 50%, with anxiety and depression affecting as many as 40% of individuals [3].

Mental health symptoms most often unnoticed may finally find a channel for expression. Thus, very simply, pharmacists are the most readily available health professionals who are just asked about the availability of the health system at the most crucial period of a disaster and out of the hospital in many cases. Out of the hospital, the first point of contact in the healthcare system is in many low-resource settings and especially with scarce healthcare providers like physicians and mental health specialists[4][5]. Their expertise in medications managing their trustworthy relationship with the patients enables them to quickly recognize through assessments and intervene appropriately concerning mental health issues.

The damage by disasters has disrupted services in healthcare, brought a shortage of medicines, and increased stress levels, which would add to the challenges of managing pre-existing mental illness and finding new cases. A case study during Hurricane Katrina found that 40% of individuals with existing mental health conditions relapsed due to lack of access to medication [6]. Pharmacists are very important in continuity of care through the management of psychotropic medications and addressing medication-related concerns [7].

Along with this, the pharmacist is also one of the health-care professionals who promote psychoeducation, a major intervention that enables individuals to understand and manage their mental health conditions. Evidence shows that psychoeducation improves the degree of medication adherence and symptom severity in anxiety and depressive disorder patients [8]. It also helps pharmacists identify high-risk individuals such as those with acute stress responses and refer them for specialized care [9].

They really could do much, but these barriers have greatly inhibited their participation. They have lacked training on the mental health first aid aspect, and there are no established protocols with regards to managing mental health in disaster settings, besides stigma associated with discussing mental health [10][11]. In addition, fragmented integration of pharmacists into disaster response teams compromises their ability to deliver holistic care [12].

With the ever-increasing onset and intensity of disasters all over the world due to climate change, geopolitical strife, and pandemics, the time has come to formalize and expand the role of pharmacists in mental health-care during crises. Addressing the gaps in training, policy, and interdisciplinary collaboration will enable pharmacists to contribute much more extensively to the mental health resilience of populations affected by disasters, as indicated in [13][14].

Methods

Study Design

This mixed-methods study designed consisted of both qualitative data with systematic review and meta-analysis for a complete understanding of disaster and crisis mental health interventions by pharmacists. The systematic review and meta-analysis were conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [15]. Qualitative data were collected through semi-structured interviews to capture the real-world views on barriers and facilitators obstructing the participation of pharmacists in mental health care during crises [16].

Systematic Review:

The systematic literature search was carried out in three electronic data bases, namely, PubMed, Scopus and Web of Science. Boolean operators like AND and OR are used, whereby the searches could be refined into more precise queries. Inclusion criteria included:

1.Peer-reviewed articles published between January 2000 and June 2023.

2. Studies related to the pharmacists' role in mental health care during disaster (natural disaster, pandemic, and man-made crisis).

3. Articles that report results in definitions of quantitative or qualitative outcome of pharmacist involvement.

Exclusion criteria included studies that do not pertain to mental health, those which are devoid of pharmacists, and gray literature-type material such as conference proceedings or editorials. The original search yielded a pool of 1,235 articles that screened duplicates and eventually narrowed to 248 articles according to relevance through title and abstract screening. The full texts were assessed by two independent reviewers for eligibility, resulting in a final sample of 45 studies for analysis. All discrepancies were resolved through consensus or consultation with a third reviewer.

Meta-Analysis:

Quantitative data extracted from the studies included were evaluated with respect to pharmacist-led interventions and mental health outcomes. Conducted outcomes included severity of symptoms score-related reduction for anxiety, depression, PTSD (measured using validated scales such as Generalized Anxiety Disorder-7 (GAD-7), Patient Health Questionnaire-9 (PHQ-9), and PTSD Checklist (PCL)). A random-effects model has been used to incorporate heterogeneity among studies [17]. Heterogeneity was assessed with the aid of the I^2 statistic whereas the publication bias was evaluated using funnel plots and Egger's regression test [18].

Qualitative Component:

Thus, semi-structured interviews were conducted with 20 pharmacists and healthcare practitioners involved in disaster management. Participants were purposively sampled from hospitals, community pharmacies, and disaster relief organizations. Interviews were conducted online by video conferencing, based on a pretested interview guide covering pharmacists' roles, perceived barriers, adequacy of training, and collaboration with mental health professionals. Each lasted approximately 45-60 minutes and was audio-recorded with participant consent. Thematic analysis

was performed[19] to identify recurring themes and patterns. Qualitative data were coded and organized using NVivo 12 software.

Data Extraction and Analysis:

Quantitative data extractions included study design, sample size, disaster type, intervention characteristics, and outcome measurements, whereas qualitative data extraction touched on themes related to pharmacists' experiences and perceived barriers. Triangulation of data from both components was employed to facilitate the better validity of findings [20].

Ethical Considerations:

Ethical approval for qualitative component has been granted by the Institutional Ethics Review Board (IRB) of the institution to which the primary researcher belongs. The subjects signed a form of written informed consent before entering the study and ensured confidentiality during the entire study.

Results:

Thoroughly investigated, the study looked at the roles of pharmacists in mental healthcare during disasters and crises as revealed and confirmed by evidence from 45 studies and 20 semi-structured interviews. The evidence is strong, showing that pharmacists tend to support individuals with mental health challenges under emergency situations in innumerable ways.

Quantitative Analysis:

1. **Intervention Types and Prevalence:**
    - **Medication Management:**
    - They managed comprehensive psychotropic medications: antidepressants, antipsychotics, and anxiolytics. The management included ensuring maintenance care for patients with previously diagnosed mental health disorders and initiations of therapy for patients developing symptoms anew. In 85% of research, access to medication was facilitated by pharmacists during disaster-related supply chain shortages.
    - **Psychoeducation:**
      Something around 60% of research studies pointed out the involvement of pharmacists in psychoeducational counseling. There are counseling and psycho-educating activities to patients and caregivers in the right usage, side effects, adherence, and more about medicines, along with concerns regarding mental health stigma.

Intervention Type	Description	Prevalence (% of studies)
Medication Management	Ensuring continuity of psychotropic medications, adjusting dosages, and managing side effects	85%
Psychoeducation	Educating patients on mental health conditions, medication adherence, and reducing stigma	60%
Early Identification and Referral	Screening for anxiety, depression, PTSD, and referral to mental health specialists	40%
Telepharmacy Support	Providing mental health services via telepharmacy platforms	22%
Community-Based Interventions	Trust-building and stigma reduction through localized, pharmacist-led initiatives	35%

Table 1: This table summarizes the main types of mental health interventions provided by pharmacists during disasters and their prevalence based on the systematic review.

Early Identification and Referrals:

Pharmacists use standardized tools like the Generalized Anxiety Disorder Scale (GAD-7) and the Patient Health Questionnaire (PHQ-9) to screen a patient for a mental health condition. Forty percent of research papers indicated that it would have allowed early detection for high-risk subjects with mental disorders; pharmacists could then refer 30% of these cases to specialized services.

2. **Impact on Patient Outcomes:**
    - Pharmacist-led interventions showed about the following mean reductions in symptom severity: 22% for anxiety, 18% for depression, and 25% for PTSD.
    - Medication adherence rates increased 35% within disaster-hit populations where pharmacists were actively involved in educational efforts and follow-ups.
    - Reported patient satisfaction increased by 48% in areas where pharmacists supported psychoeducation activities.

Outcome	Measured Impact	Change (%)
Reduction in Anxiety Symptoms	Improvement in anxiety scores following interventions	22-25%
Reduction in Depression Symptoms	Improvement in depression scores	18-20%
Reduction in PTSD Symptoms	Decrease in PTSD symptom severity	25-28%
Improvement in Medication Adherence	Increased adherence to prescribed psychotropic medications	35%
Patient Satisfaction with Services	Increase in satisfaction rates with mental health services	48%

Table 2: This table highlights the outcomes of pharmacist-led mental health interventions based on quantitative analysis.

3. **Barriers Identified:**
    - **Educational Barriers:**
    - There is a below-average training in all aspects of mental health first aid, psychological screening tools, and trauma-informed care from more than 70% of pharmacists. Thereby limiting the intervention that they can give.

- **Operational Barriers:**
- Disruption caused by crises in the pharmaceutical supply chain was mentioned in 60% of studies, making it necessary to raise considerable challenges to accessing medication for mental health conditions.
- **Systemic Barriers:**
- There was a failure associated with the non-integration of pharmacists into the formal responses that have been earmarked for disasters. Only 35% of studies reported the involvement of these in-preparedness and post-disaster efforts.

Qualitative Insights:

1. **Pharmacists' Perspectives:**
2. Many interviewees reaffirmed the trend of pharmacists being underused in disaster times and showed that most of them were willing to extend their roles into mental health if they receive training and support. Pharmacists also refer to their emotional or psychological burden and emphasize the need for them to have self-care and peer-support systems.
3. **Healthcare Providers' Perspectives:**
4. On the part of pharmacists, their roles in dealing with medication issues in general were recognized by physicians and mental health specialists. Any complex case of mental illness, on the other hand, was totally viewed under-involvement for the same by understanding the differences for comprehensive handling by very few pharmacists. Collaboration that held much promise to the interested and knowledgeable parties remained promising and unfruitful since no formalized working multidisciplinary protocols could be used.

Barrier Type	**Description**	**Prevalence (% of studies)**
Educational	Lack of training in mental health first aid and trauma-informed care	70%
Operational	Disruptions in medication supply chains during crises	60%
Systemic	Limited integration of pharmacists into disaster response frameworks	65%
Stigma	Patients' reluctance to discuss mental health issues with pharmacists	40%

Table 3: This table identifies the primary barriers pharmacists face during disasters in providing mental health care.

Meta-Analysis Findings:

A meta-analysis of intervention outcomes revealed:

- Decrease of Anxiety Symptoms- Pharmacist psychoeducation and modifications in medicine led to a 25% decrease in the anxiety symptom score (95% CI: 20-30%; $p < 0.05$) .
- Improvement in PTSD Symptoms: Screening and referral initiatives by pharmacists were linked to significant improvements in PTSD symptoms, with symptom severity scores decreasing by 20-28% ($p < 0.05$).
- Increased Mental Health Service Utilization: Regions in which pharmacists actively engaged with mental health care saw a 40% increase in mental health service utilization during and after disasters.

Outcome	Effect Size (Mean Reduction)	Confidence Interval (95%)	Significance (p-value)
Anxiety Symptoms	25% reduction in symptom severity	20-30%	< 0.05
PTSD Symptoms	20-28% reduction in severity	18-32%	< 0.05
Medication Adherence	35% increase in adherence	30-40%	< 0.05
Service Utilization	40% increase in mental health service use	35-45%	< 0.05

Table 4: This table presents the quantitative effects of pharmacist-led interventions on mental health outcomes.

Emerging Trends:

- Technology Integration:
- The Pharmacists have conducted ten research studies using telepharmacy and online media for the delivery of mental health interventions specifically during catastrophes in rural areas or places otherwise hard to get through. Such improved access has also been delayed in the provision of care.
- Community-Based Interventions:
- Community pharmacists serve a vital purpose in establishing trust and destigmatizing mental health conditions in underserved populations.

Qualitative Insights from Interviews:

Theme	Description	Frequency
Willingness to Expand Roles	Pharmacists expressed eagerness to take on expanded mental health roles if trained adequately	80% of interviews
Psychological Toll on Pharmacists	Pharmacists reported experiencing secondary trauma during disaster response	50% of interviews
Collaboration Gaps	Physicians noted the lack of formalized multidisciplinary protocols involving pharmacists	65% of interviews
Importance of Stigma Reduction	Emphasis on pharmacists' role in reducing mental health stigma in community settings	55% of interviews

Table 5: This table summarizes the themes identified from interviews with pharmacists and healthcare providers.

Discussion:

These research outcomes draws the significance of the neglected role of pharmacists in mental health interventions during disasters and crises. Even post disaster, they could prove most accessible of health care in communities; thus better placed to address the mental health needs of affected persons. Indeed, it is in the earliest stages of a crisis that action can be taken to reduce the onset of mental disorders; thus, they will intervene at these times. This article highlights the main findings, barriers, and future directions as they would pertain to maximizing what pharmacists can contribute toward mental health care during emergencies.

Role of Pharmacists in Mental Health Interventions:

Pharmacology has been their specialized area where they have been trained in chronicity treatment or management of certain diseases like various phobias or disorders of depression and post-traumatic stress disorder (PTSD). During disasters, they usually serve frontline providers and offer advice on medication use, side effect management, and treatment adherence. Further, these

professionals specialize in early detection of the onset of such mental health conditions and thus can very well intervene before their progression into chronicity against final health complications. The review found that pharmacists significantly impacted the continuity of care for patients with prior psychiatric disorders, most of whom suffered from disruptions in access to health care systems during emergencies. Stabilization was done by providing psychoeducation and supply of medications. Such pharmacist-led changes included the community outreach program and mental health workshops, whereby they were able to reduce stigma on and increase awareness about mental health among the disaster-affected areas.

Barriers to Effective Interventions:

While having a potentiality, many constraints act against the proper enforcing of pharmacist-only mental health interventions during disasters- such for example by:

1. **Insufficient Training:**
2. Pharmacists do not have formal training in mental health first aid or interventions in most instances, and this makes them not very confident or competent during those problematic times when they recognize and need to address the complex mental health needs. Such individuals have proficiency in pharmacotherapeutics but may require additional skills in the domain of psychosocial support or in the identification of serious mental health
3. **Lack of Protocols and Integration:**
4. These poorly defined pharmacist roles in disaster response teams create conditions where they become little underutilized. Most times, no standard operating protocols exist for incorporating pharmacists in emergency mental health care pathways in such acute environments. Such vagueness creates gaps of opportunity for collaboration with potentially influential health professionals such as psychiatrists, psychologists, and social workers.
5. **Stigma and Cultural Barriers:**
6. Talking about mental health is still a taboo thing in most societies, thus leaving people unwilling to seek help from professionals. More so, in such settings, talking about mental health brings added burdens for pharmacists, as they may not be viewed as direct care providers for patients with mental disorders.
7. **Resource Constraints:**
8. In terms of calamities, pharmacies run short of drugs and manpower and they are not backed-up by infrastructure that could promote their service provision. But it will be more endured by low- and middle-income countries, where the already overstretched healthcare system is further penalized.

Implications for Policy and Practice:

This study's results emphasize the requirement for systemic reforms to maximize the role of pharmacists in the domains of disaster mental health care. The main recommendations include:

1. **Enhanced Training Programs:**
   Pharmacists would need specific training in basic health first aid, crisis communication, and psychological support. Specifically, the training program will prepare them to develop skill sets that will enable pharmacists to understand the early symptoms of disorders, provide basic interventions, and refer to specialized care when this is necessary.
2. **Development of Standardized Protocols:**
   An explicit guideline should be made available for the inclusion of pharmacy personnel in disaster response programs. The protocols will define clearly the role and responsibility that pharmacists will hold in the delivery of mental health care.

3. **Multidisciplinary Collaboration:**
   Mental Health Care in disasters should really be a collaborative interaction between all the health professionals. The pharmacist should liaise with psychiatrists, psychologists, and social workers. The shared interdisciplinary education and joint response practice would nurture such cooperation.
4. **Community Engagement and Education:**
   It would be beneficial pharmacists if conducted community education programs related to mental health. This will be a way by which people would open up to seek help while subsequently considering pharmacists as avenues for mental health care.
5. **Policy Reforms and Resource Allocation:**
   Essentially, they should integrate pharmacists into disaster preparedness and allocate resources for these activities. Pharmacy-related augmentations, such as available medication stocks and telehealth investment, further empower pharmacists to deliver their services during crises.

Future Research Directions:

The efficacy of those interventions is needed to ensure the intervention's longitudinal studies. The future studies could include long-term results of intervention effects on end result phenomena: quality of life, healthcare utilization return path recovery, and other conditions. Studies should develop technological innovations such as tele pharmacy and digital health platforms to enhance pharmacist roles in disaster mental health care.

Conclusion

This study shows that by opening a closed but tapped reservoir of such disciplines available in pharmacy education, which opens up a field for research into the significance of pharmacists contributing such employable skills and examining their potential for the development of an effective approach of training an interdisciplinary coverage. This study should reassure all course providers in pharmacy education where it will be opportune to exploit at least the closed but tapped reservoir of such disciplines available in pharmacy education in conducting research into the significance of pharmacists contributing such employable skills in workforce development toward effective interdisciplinary coverage and research in training.

The findings indicate the measurable impact of pharmacist-led interventions like medication reconciliation, psychoeducation, and early screening for mental health conditions in not only decreasing the severity of symptoms but also improving the patient outcome within the affected populations. They immediately provide stabilization but also stop them from turning into chronic problems from intervention at an early stage. By involving pharmacists in disaster response frameworks, communities might gain timely decentralized mental health care at times where no or limited health services would otherwise be available in resource-limited settings, or when health care workers are otherwise prohibited or overstressed.

However, research indicates that gaps in pharmacotherapy need filling if the practice is to become optimal among pharmacists' disaster mental health care. Without the formal education or training on mental health first aid and disaster preparedness, pharmacists have their overall capacity in rendering care restricted. These further hinder the development of multidisciplinary disaster response teams with the team pharmacist due to a lack of strong protocols and collaborative frameworks. In addition, there continues to be a stigma attached to mental illness that affects both pharmacists providing service and patients seeking it.

Such barriers call for multi-level, targeted interventions. First, educationally, pharmacy curricula should incorporate training in mental health care, disaster responses and communication strategies for addressing stigma. Continuing professional development programs can provide an important

component of such focus by training practicing pharmacists in the relevant skills such as mental health first aid and crisis management.

Create the policy so that the roles of pharmacists within plans for disaster preparedness and response are included in official documents and procedures of government agencies and healthcare organizations. Examples of items to consider including in planning are the development of standards for pharmacy practice in mental health care and inclusion in disaster response teams, as well as reimbursement models to support such work. Public health initiatives to reduce stigma and increase awareness of the role of pharmacists in disaster settings would also increase community participation.

Interdisciplinary collaboration is also crucial. Druggists should work in total conjunction with the Physicians, Psychologists, Social Workers, and Emergency Responders if coordinated and holistic patient care was to be ensured. Telepharmacy and mobile mental health applications, among other technologies that are increasingly becoming digital, make such interdisciplinary collaboration much easier and broaden the scope within which pharmacist-led interventions can occur, especially in underdeveloped, remote, or underserved areas.

It reveals the unearth potential from these frontline health workers in mental health crises resulting from disasters or emergencies. Realizing that potential will require addressing structural and educational needs, forging multidisciplinary collaborations, and enacting policies that will support pharmacists as key actors in disaster mental health care: making it possible to benefit all affected communities regarding resilience and well-being. Future research can center around longitudinal studies to assess pharmacist-led mental health care interventions' sustained impact on individuals and communities and the longer-term benefits of integrating them into disaster response frameworks.

Refrences:

1. Neria Y, Nandi A, Galea S. Post-traumatic stress disorder following disasters: a systematic review. Psychol Med. 2008 Apr;38(4):467-80. doi: 10.1017/S0033291707001353. Epub 2007 Sep 6. PMID: 17803838; PMCID: PMC4877688.
2. Galea S, Nandi A, Vlahov D. The epidemiology of post-traumatic stress disorder after disasters. Epidemiol Rev. 2005;27:78-91. doi: 10.1093/epirev/mxi003. PMID: 15958429.
3. Goldmann E, Galea S. Mental health consequences of disasters. Annu Rev Public Health. 2014;35:169-83. doi: 10.1146/annurev-publhealth-032013-182435. Epub 2013 Oct 25. PMID: 24159920.
4. El-Den S, Collins JC, Chen TF, O'reilly CL. Pharmacists' roles in mental healthcare: Past, present and future. Pharm Pract (Granada). 2021 Jul-Sep;19(3):2545. doi: 10.18549/PharmPract.2021.3.2545. Epub 2021 Sep 11. PMID: 34621456; PMCID: PMC8456342.
5. Bond CA, Raehl CL. Clinical pharmacy services, pharmacy staffing, and hospital mortality rates. Pharmacotherapy. 2007 Apr;27(4):481-93. doi: 10.1592/phco.27.4.481. PMID: 17381374.
6. McCabe OL, Everly GS Jr, Brown LM, Wendelboe AM, Abd Hamid NH, Tallchief VL, Links JM. Psychological first aid: a consensus-derived, empirically supported, competency-based training model. Am J Public Health. 2014 Apr;104(4):621-8. doi: 10.2105/AJPH.2013.301219. Epub 2013 Jul 18. Erratum in: Am J Public Health. 2014 Jun;104(6):e4. PMID: 23865656; PMCID: PMC4025704.
7. Alghurair SA, Simpson SH, Guirguis LM. What elements of the patient-pharmacist relationship are associated with patient satisfaction? Patient Prefer Adherence. 2012;6:663-76. doi: 10.2147/PPA.S35688. Epub 2012 Sep 24. PMID: 23055699; PMCID: PMC3461603.

8. Bäuml J, Froböse T, Kraemer S, Rentrop M, Pitschel-Walz G. Psychoeducation: a basic psychotherapeutic intervention for patients with schizophrenia and their families. Schizophr Bull. 2006 Oct;32 Suppl 1(Suppl 1):S1-9. doi: 10.1093/schbul/sbl017. Epub 2006 Aug 18. PMID: 16920788; PMCID: PMC2683741.
9. El-Den S, Collins JC, Chen TF, O'reilly CL. Pharmacists' roles in mental healthcare: Past, present and future. Pharm Pract (Granada). 2021 Jul-Sep;19(3):2545. doi: 10.18549/PharmPract.2021.3.2545. Epub 2021 Sep 11. PMID: 34621456; PMCID: PMC8456342.
10. O'Reilly CL, Bell JS, Chen TF. Pharmacists' beliefs about treatments and outcomes of mental disorders: a mental health literacy survey. Aust N Z J Psychiatry. 2010 Dec;44(12):1089-96. doi: 10.3109/00048674.2010.512864. PMID: 21070104.
11. Crespo-Gonzalez C, Dineen-Griffin S, Rae J, Hill RA. Mental health training programs for community pharmacists, pharmacy staff and students: A systematic review. Res Social Adm Pharm. 2022 Nov;18(11):3895-3910. doi: 10.1016/j.sapharm.2022.06.006. Epub 2022 Jun 17. PMID: 35778317.
12. Watson, K.E., McCourt, E.M., Babigumira, P.A., Ashiru-Oredope, D. (2023). Pharmacy Practice and Emergency Preparedness, Resilience, and Response. In: Encyclopedia of Evidence in Pharmaceutical Public Health and Health Services Research in Pharmacy. Springer, Cham. https://doi.org/10.1007/978-3-030-50247-8_118-1
13. Intergovernmental Panel on Climate Change. (2022). Climate change 2022: Impacts, adaptation, and vulnerability.
14. World Health Organization. (2021). The WHO special initiative for mental health (2019-2023): Universal health coverage for mental health.
15. 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. doi: 10.1371/journal.pmed.1000097. Epub 2009 Jul 21. PMID: 19621072; PMCID: PMC2707599.
16. Creswell, J. W., Plano Clark, V. L. (2017). Designing and Conducting Mixed Methods Research. United States: SAGE Publications.
17. DerSimonian R, Laird N. Meta-analysis in clinical trials. Control Clin Trials. 1986 Sep;7(3):177-88. doi: 10.1016/0197-2456(86)90046-2. PMID: 3802833.
18. Egger M, Davey Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. BMJ. 1997 Sep 13;315(7109):629-34. doi: 10.1136/bmj.315.7109.629. PMID: 9310563; PMCID: PMC2127453.
19. Braun, Virginia & Clarke, Victoria. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology. 3. 77-101. 10.1191/1478088706qp063oa.
20. Patton MQ. Enhancing the quality and credibility of qualitative analysis. Health Serv Res. 1999 Dec;34(5 Pt 2):1189-208. PMID: 10591279; PMCID: PMC1089059.