OPEN ACCESS

Saudi Journal of Nursing and Health Care

Abbreviated Key Title: Saudi J Nurs Health Care
ISSN 2616-7921 (Print) |ISSN 2616-6186 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

The Effectiveness of Opioid Education in Reducing Opioid Misuse among Adult Patients in Acute Care: A Systematic Review

Adeyemo Kehinde Elizabeth[1]*, Ugwu Aloy Okechukwu[2], Pires Jorge[1]

[1]Department of Postgraduate Nursing, University of Essex.
[2]Atlantic Fertility, Halifax, Nova Scotia, Canada

DOI: https://doi.org/10.36348/sjnhc.2025.v08i09.004 | **Received:** 16.07.2025 | **Accepted:** 13.09.2025 | **Published:** 16.09.2025

***Corresponding author:** Adeyemo Kehinde Elizabeth
Department of Postgraduate Nursing, University of Essex

Abstract

Background: Pain is a complex phenomenon that has been effectively managed through various interventions, including opioid analgesics. However, rising opioid misuse, abuse, and addiction have become major public health concerns, with significant physiological, psychological, and social consequences for patients. This challenge also places a financial burden on the National Health Service (NHS) through repeated admissions, prolonged hospital stays, and increased pressure on healthcare workers. While awareness of the need for opioid education has grown in recent years, its application within acute care settings has received limited attention. ***Objective:*** This systematic review evaluated evidence on the effectiveness of opioid education in reducing opioid misuse. It aims to identify evidence-based strategies and key educational topics relevant to safe opioid use. ***Methods:*** The review followed PRISMA guidelines and conducted a comprehensive search of EBSCOHOST, Cochrane Library, PubMed, and Embase for studies published between 2012 and 2022. Study quality was assessed using the Critical Appraisal Skills Programme (CASP) checklist for randomised controlled trials (RCTs). Risk of bias was evaluated using the Cochrane RoB 2.0 tool for RCTs and ROBINS-I for non-randomised studies. ***Results:*** Six studies met the inclusion criteria (five RCTs and one proof-of-concept study), involving a total of 601 participants. Three key themes emerged from the findings. Across studies, patient-centered opioid education improved knowledge, attitudes, and perceptions, which in turn reduced opioid consumption and promoted safe storage and disposal practices. Essential educational content included information on side effects, risks of misuse, addiction and abuse, tapering strategies, non-opioid alternatives, and safe handling of opioids. Multimodal approaches were consistently emphasized. ***Conclusion:*** Evidence highlights the value of structured opioid education in promoting safer opioid use and reducing misuse across healthcare settings. Further research is warranted to evaluate its effectiveness in acute care contexts and within the UK.

Keywords: Opioid, education, misuse, abuse, acute care, patients, adults.

INTRODUCTION

Pain, recognised as the fifth vital sign, represents a complex physiological and systemic response that profoundly impacts human life. Effective pain management through multiple approaches (Jalali *et al.,* 2020) is considered a human right that enhances quality of life (Lohman, Schleifer & Amon, 2010). Since the extraction of morphine in 1803 (Rosenblum *et al.,* 2008), opioid analgesics have been the cornerstone of acute pain relief (Collier, 2018). Opioids remain essential in the management of moderate to severe pain, palliative and end-of-life care (Degenhardt *et al.,* 2019), musculoskeletal pain, myocardial infarction, and surgical pain (Shanahan, 2022), although their use in chronic non-malignant pain remains controversial (Rose, 2018). Despite their clinical utility, the chemical properties and euphoric effects of opioids predispose users to misuse, dependence, and addiction (CDC, 2022).

Opioid misuse is defined as deliberate use at higher doses, greater frequency, or longer duration than prescribed (CDC, 2021; Cheatle, 2015), or any use outside pain control (Daoust *et al.,* 2019). The International Classification of Diseases (ICD-11) recognises opioid misuse under “disorders due to use of opioids” (6C43.Z), encompassing abuse, dependence, and addiction (ICD, 2022). Although the prevalence of misuse varies across countries, the burden is greatest in the United States; however, the UK has also experienced rising concerns due to increased prescribing and illegal opioid use. Opioids are widely prescribed in emergency departments, surgical units, trauma care, inpatient wards,

and for cancer-related pain (Rech, Griggs, Lovett & Motov, 2022), leading to greater population exposure and heightened risks of misuse (Smith, 2021; Friebel & Maynou, 2022).

Rationale

In response, international and national bodies have introduced preventive strategies, including pain management and opioid education (CDC, 2022), acknowledging the risks of opioid misuse (Scottish Drugs Forum, 2019). Educational interventions have been incorporated into medical and nursing curricula, focusing on opioid prescribing, alternatives to analgesia, and guideline-based practice across surgical, palliative, and chronic pain contexts (Levy *et al.,* 2015). Evidence suggests that such interventions reduce prescribing volumes and improve adherence to guidelines (Stepan *et al.,* 2019). However, patient–provider collaboration remains limited, particularly in acute care settings (McCarthy, Engel & Cameron, 2016; Oyler *et al.,* 2018; IPFCC, 2022). If education improves prescribers' practice, then extending structured education to patients may reduce misuse by enhancing awareness and self-management.

Pain management combining pharmacological and non-pharmacological strategies has improved outcomes globally. Yet, overprescribing in developed countries (Ballantyne *et al.,* 2021; Korestein & Chimonas, 2021), including the UK (Hauser *et al.,* 2021), has contributed to a public health crisis. Easy accessibility to opioids through overprescription (HHS, 2021) has increased opioid-related admissions, placing strain on healthcare systems. In the UK, opioid-related hospital admissions rose from 10,805 to 16,091 (48.9%) within a decade, accounting for 21% of all emergency admissions and costing £137 million during a period of economic strain (Friebel & Maynou, 2022). Furthermore, 16.6% of patients face readmission within 30 days of hospital discharge following opioid exposure (Friebel & Maynou, 2022).

Although the UK's opioid epidemic has shown signs of decline, misuse remains at 6.51 per 10,000 population, with 82.9% of long-term users initially exposed via prescribed opioids (Butler *et al.,* 2016; Cooper *et al.,* 2017; Strand, Eukel & Burck, 2019; Rech, Griggs, Lovett & Motov, 2022). While pain education is common in surgical and palliative settings (Levy *et al.,* 2015), opioid-specific education in acute care contexts is lacking (McCarthy, Engel & Cameron, 2016; Oyler *et al.,* 2018; IPFCC, 2022). Notably, the risk of misuse is similar in cancer-related and non-cancer pain (Carmichael, Morgan & Del Fabbro, 2016; Ma *et al.,* 2014). Since any opioid exposure carries risk (Smith, 2021; Friebel & Maynou, 2022), early patient education and discussion of alternatives are critical (CDC, 2022; Scottish Drugs Forum, 2019).

Evidence also indicates that opioid education fosters collaborative opioid stewardship (Waszak *et al.,* 2018; Odom-Forren, Brady & Sloan, 2021), improves patient satisfaction (Elhage *et al.,* 2021), and reduces hospital readmissions, costs, and strain on staff resources (Martinez, 2021). However, engaging patients in opioid education is challenging due to stigma and sensitivity surrounding the issue (Daoust *et al.,* 2019). A systematic review is therefore warranted to examine the impact of opioid education on reducing misuse in acute settings, including emergency, medical, and surgical departments (Hirshon *et al.,* 2013).

Acute care environments are critical points for addressing opioid misuse, as they often represent patients' first contact with healthcare during acute pain episodes. With opioid misuse contributing to repeated admissions, prolonged hospital stays, and NHS strain during an economic crisis (Roberts & Richards, 2023), effective interventions are urgently needed. Opioid education offers a promising approach by improving knowledge, attitudes, and behaviours around pain management. Yet, limited evidence exists on its effectiveness in acute care settings (Rockett, Vanstone, Chand & Waeland, 2017). A systematic review of the literature is therefore essential to synthesise existing evidence, identify evidence-based strategies, and highlight gaps requiring further research. Such findings will help guide clinical practice and inform policy to address the ongoing opioid crisis.

MATERIALS AND METHODS

This was a Systematic review that involved an authentic source of evidence-based information (Minkow, 2014) that contributes to the robustness, assessment, and synthesis of the available evidence to answer research questions (Mallet, Hagen-Zanker, Slater & Duvendack, 2012; Owens, 2021) without compromising data protection, which is a limitation of primary studies. Hence, the adoption of a systematic review to elicit the effectiveness of opioid education in reducing opioid misuse.

In line with the Cochrane Handbook for Systematic Reviews (Higgins *et al.,* 2022), this chapter will narrate the search strategy for identifying relevant studies and how the studies are screened based on the inclusion and exclusion criteria. It will explain the selection and analysis process in alignment with the PICO and CASP tool and the risk of bias assessment.

Rationale

The author initially planned to conduct a primary study to elicit the effectiveness of education in reducing opioid misuse among patients in acute settings. However, constraints of ethical involvement with NHS patients' data, time limitations, and unattainable ethical approval from the involved NHS ethical committee led to the direction of a systematic review. Moreover, a systematic review is beneficial in decision-making,

avoiding duplication, identifying research gaps, identifying topics for future studies, and assisting current knowledge for policy formulation (Owens, 2021), which is a goal of this review.

Further, this research requires a systematic review as it provides informative, reliable, reliable, consistent and timely results that allow us to comprehensively understand a particular topic (Peričić & Tanveer, 2019).

Research Question and PICO

A precise, objective, unambiguous research question ensures credible and feasible research (Polanin, Piggot, Espelage & Grotpeter, 2019) and easily defined PICO. Salient to this review is the exigency to answer the question:

In adult patients in acute care, is opioid education effective in reducing opioid misuse? Figure 3.1 depicts the PICO elements.

PICO Elements	
Population	Adult patients in Acute care settings including Surgical units, Trauma centres, Emergency departments, inpatients
Intervention	Opioid Education
Comparison	No Education
Outcome	Reduced opioid misuse in terms of consumption, storage and disposal

Figure 3.1: PICO Elements

Inclusion and Exclusion Criteria

The criteria and boundaries were set based on the PICO and a scoping search of the literature. Due to the dearth of studies in the United Kingdom, studies from any country were eligible if they answered any part of the research question.

The study involved adults over 18 since they constitute the higher percentage of individuals who misuse or abuse opioids (National Survey on Drug Use and Health, (NSDUH), 2017).

The review excluded studies among palliative patients with cancer pains and or receiving end-of-life care and required prolonged opioid use for a comfortable life (Martinez, 2021; NICE, 2013).

Randomised control trials (RCTs) are the gold standard of evidence with a limited chance of biases and the ability to explore the impact of an intervention on the outcome measure; hence RCTs were first considered for inclusion (Tufanaru *et al.,* 2020; Rutgers University, 2023). However, non-RCTs that provide insight into answering the research question and meet the inclusion criteria were also considered. A summary of the inclusion and exclusion criteria is shown in Figure 3.2.

Search Strategy

The research question revealed the cogent keywords (Figure 3.3) and search terms used on the selected databases with Boolean operators and yielded relevant studies (Cronin, Coughlan & Smith, 2015; Wichor *et al.,* 2018). These selected databases encompass peer-reviewed, extensive, and all-inclusive studies on healthcare and healthcare management topics (Brandeis Library, 2022; Cook & Collins, 2015) and include Cochrane Library, Embase, PubMed, and EBSCO Host. The strategic and systematic search began early in January but concluded on the search terms between February 24th to March 2nd, 2023, as seen in Figure 3.4. The combination of the search terms with "OR" and "NOT" (Figure 3.3) retrieved extensive but irrelevant studies, hence the decision to input the keywords as the search terms on the databases with the Boolean operator "AND" which yielded the relevant studies.

The strategy involved adopting limiters and filters on the advanced search of all the databases. Furthermore, it involved the removal of all duplicates and studies already identified from other databases. The inclusion and exclusion criteria guided the selection of studies by reading the abstracts and pushing compatible studies to Endnote.

Also excluded were studies in surgical settings that lacked acuteness and prolonged follow-up.

In addition, the strategy reviewed the list of references of eligible articles to identify relevant handpicked studies. All eligible papers were saved in a named file in PDF format while reading the full text to determine their inclusion.

CATEGORY	INCLUSION CRITERIA	EXCLUSION CRITERIA
POPULATION	Patients 18 years and above receiving opioids for pain control	Children < 18 years, Patients receiving palliative care, end-of-life care or opioid rehabilitation, drug or opioid addicts, obstetric patients. Patients with scheduled surgeries and prolonged follow-up period
INTERVENTION	Opioid education or counselling or instructions, pain management education focusing on opioids.	Non-educative interventions, drug rehabilitation, treatment for opioid-use-disorder, non-opioid and non-pharmacological pain management interventions.
OUTCOME	Reduced opioid consumption, appropriate storage, and disposal.	Recovery from opioid addiction or opioid-use-disorder.
STUDY SETTING	Acute Care Settings, medical units, surgical units, emergency departments, trauma care, inpatient wards, and outpatient units.	Obstetric unit, Palliative unit, Oncology unit, and drug rehabilitation Centers.
DESIGN	RCTs, Experimental, Quasi-experimental, Observational, Retrospective, and Prospective studies. Primary research and peer-reviewed articles published between 2012 and 2023 and written in English.	Case controls, case series, case reports, systematic reviews, narrative reviews, secondary research and non-peer-reviewed articles. Manuscripts, incomplete studies and studies that predate 2012.

Figure 3.2: Inclusion and Exclusion Criteria

KEY CONCEPTS	SEARCH TERMS
Adult patient	"Adults" OR "Patients" OR "Above 18 years" NOT "Children"
Opioid Education	"Opioid education" OR "Patient education" OR "Teaching" OR "Counselling" OR "Instruction"
Opioid misuse	"Opioid misuse" OR "Opioid abuse"
Acute care	"Acute care" OR "Hospital" OR "Inpatient" OR "Trauma care" OR "Emergency department" OR "Medical wards" OR "Surgical ward" NOT "Cancer" OR "Obstetric"

Figure 3.3: Key concept

DATABASE/ SEARCH DATE	SEARCH TERMS	INTERVENTION	OUTCOME	LIMITERS, FILTERS AND RESULT
EBSCOHOST (CINAHL, Medline Ultimate, E-Journal) Between February 24th-27th	Education AND Opioid AND Misuse AND Patients"	Education OR Patient education OR Opioid education OR Pain management education OR Counselling OR Information	Opioid use OR Prescribed opioid use AND Opioid Misuse OR Abuse OR Overdose AND Opioid dose OR duration of Opioid use AND Opioid storage AND Disposal	• Academic Journal • English Language • 2012 – 2023 • Advanced search • Peer-reviewed • 554 results found.
PubMed Between February 27th-28th	"Opioid education" AND "opioid misuse" AND "patients"	Education OR Patient education OR Opioid education OR Pain management education OR Counselling OR Information	Opioid use OR Prescribed opioid use AND Opioid Misuse OR Abuse OR Overdose AND Opioid dose OR duration of Opioid use AND Opioid storage AND Disposal	• Academic Journal • English Language • 2012 – 2023 • Advanced search • Peer-reviewed • 118 results found.
Cochrane Library February 28th	"Education" AND "Opioid" AND "Misuse" AND "Patient"	Education OR Patient education OR Opioid education OR Pain management education OR Counselling OR Information	Opioid use OR Prescribed opioid use AND Opioid Misuse OR Abuse OR Overdose AND Opioid dose OR duration of Opioid use AND Opioid storage AND Disposal	• Academic Journal • English Language • 2012 – 2023 • Advanced search • Peer-reviewed • 78 Trials and 1 review found.
Embase March 2nd	Education AND Opioid AND Misuse AND Patient	Education OR Patient education OR Opioid education OR Pain management education OR Counselling OR Information	Opioid use OR Prescribed opioid use AND Opioid Misuse OR Abuse OR Overdose AND Opioid dose OR duration of Opioid use AND Opioid storage AND Disposal	• Academic Journal • English Language • 2012 – 2023 • Advanced search • Peer-reviewed • 503 results found.

Figure 3.4: Search Strategy

Selection Process

The eligibility criteria commenced with screening retrieved articles' titles to determine inclusion. The abstracts of potential papers were read and pushed to EndNotes. Although EndNotes is an efficient screening software tool necessary to evaluate titles and abstracts of studies for systematic review (Harrison, Griffin, Kuhn & Usher-Smith, 2020), some studies were incompatible with the EndNote application; hence such articles were saved in PDF format on a named file. Endnotes and manual de-duplication of articles were ensured across the databases, as depicted in Table 3.1.

While it is relevant for two independent reviewers to extract information to promote the reproducibility of effective intervention (Aromataris & Munn, 2020), this review is an MSc Dissertation. Therefore, the reviewer underwent the selection process independently as a lone researcher, which is a limitation of this review. Of the six included studies, 1 was a proof-of-concept study (Colloca *et al.,* 2022), 2 were prospective randomised studies (Alter & Ilyas, 2017; Syed *et al.,* 2018), 1 was a clustered RCT (Tseng *et al.,* 2021) while 2 were RCTs (Sugai *et al.,* 2013; Derefinko *et al.,* 2019).

The full text of the supposed eligible studies was read and appraised with the CASP Randomised Controlled Trial Standard Checklist tool as appropriate to exclude bias and ensure their quality, credibility, congruity, and results (CASP, 2022; Lobiondo & Haber, 2014). The Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA 2020 flow diagram) chart illustrated eligible studies' identification, screening, and selection (Figure 4.1) (PRISMA, 2023).

Total number of articles retrieved with filters and limiters	1528
Duplicates	351
Total number of retrieved articles after reading abstracts	55
Total number of articles that met inclusion criteria	4
Number of handpicked articles	2
Number of articles included in the systematic review	6

Data Extraction

Extracting and logically sorting essential information (Health Sciences Library, 2022) from eligible studies was ensured with a spreadsheet (Appendix E). The extracted data includes study characteristics (such as the author, year of publication, and study design), Participants characteristics (such as sample size, age, and gender), intervention characteristics (such as type of opioid education, method, duration, and frequency), outcome measures (such as opioid consumption, dose, frequency, duration, and refills) and study findings.

Methodological Appraisal of Studies

Critical appraisal methods aim to evaluate the reliability of the summarised evidence from a systematic review by assessing the quality of its conduct and the confidence level (Patel *et al.,* 2022). Analysing the quality and internal validity of included studies in a systematic review is vital to the credibility of the results (Gopalakrishnan & Ganeshkumar, 2013). The CASP tool is a widely used appraisal tool approved by Cochrane and recommended for Novice researchers to judge the methodological quality of considered studies for its easiness (Long, French, and Brooks, 2020). Although scoring the tool is familiar, categorising the quality of the studies is recommended (CASP, 2022). The CASP checklist for RCTs comprises 11 items organised in 3 sections (Appendix D). A study answering "NO" to the first three questions or scoring below Four (4) was considered a low-quality study and considered for exclusion. However, low-quality studies, either RCTs or non-RCTs, with insight into answering the research question were considered for inclusion.

Data Analysis

Analysing data in themes is often adopted for primary qualitative research but can be utilised in quantitative and mixed research depending on the research question (Thomas & Harden, 2008). More importantly, thematic analysis collates and integrates the result of several studies to answer research questions and is practical for a novice researcher like the reviewer (Pursell & Gould, 2021). Therefore, the thematic synthesis method was used to synthesise the findings of the included studies. The thematic synthesis method involves three stages: (1) coding of text, (2) developing descriptive themes, and (3) generating analytical themes (Thomas & Harden, 2008).

In detail, the thematic analysis consists of six stages, namely: becoming familiar with the data, producing initial codes, exploring themes, reviewing the identified themes defining and naming the themes and preparing the comprehensive report (Braun & Clarke, 2020). Furthermore, less experienced researchers can benefit significantly from thematic analysis due to its adaptable nature and accessibility (Kiger & Varpio, 2020).

Ethical Consideration

Ethics in a systematic review is often overlooked due to the non-collection of personal sensitive or confidential data typical in a primary study (Suri, 2020). However, a systematic review is considered the highest level of evidence that forms policies, hence appraising the ethical standard of included studies and eliminating other biases is crucial (Munn *et al.,* 2018).

The reviewer obtained ethical approval from the University of Essex's ethical committee through the reviewer's supervisor before proceeding with this review. Appendix (E and F) present a copy of the proposal and ethical approval. The reviewer ensured a transparent search strategy that can be replicated and a straightforward reporting of the findings.

Further, informed consent from each study's participants was appraised with the CASP tool, as seen in Table 4.2 for all included studies. There is no conflict of interest from the reviewer and all authors were duly referenced while avoiding plagiarism.

RESULTS

Despite the dearth of studies on Opioid misuse in the United Kingdom., studies in the United States abound, and those meeting the inclusion and exclusion criteria were selected. The included studies occurred in acute settings, including trauma centres and surgical, outpatient, and inpatient units. The six included studies were appraised with the CASP tool, while the risk of bias was determined with Rob 2.0 and ROBIN-1 tools (Table 4.2 & Figure 4.2a & 4.2b, respectively) to ascertain their quality. This chapter presents the results of each included study and generates themes to discuss the findings in answering the research questions.

Study Selection

Of the Four databases searched, 1177 articles identified underwent screening after removing duplicates from the same and other databases. Fifty-five (55) studies appeared eligible from the title; however, the review excluded 51 studies on reading the abstracts as they deviated from the inclusion criteria. 2 Studies were hand-picked from the references list of eligible studies.

A transparent summary of the search strategies and reporting findings is crucial to a credible systematic review, hence developing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) in 2009 (Page *et al.,* 2021). Figure 4.1 displays the PRISMA 2020 flowchart (PRISMA, 2023) that explains the identification, screening, eligibility, and included studies.

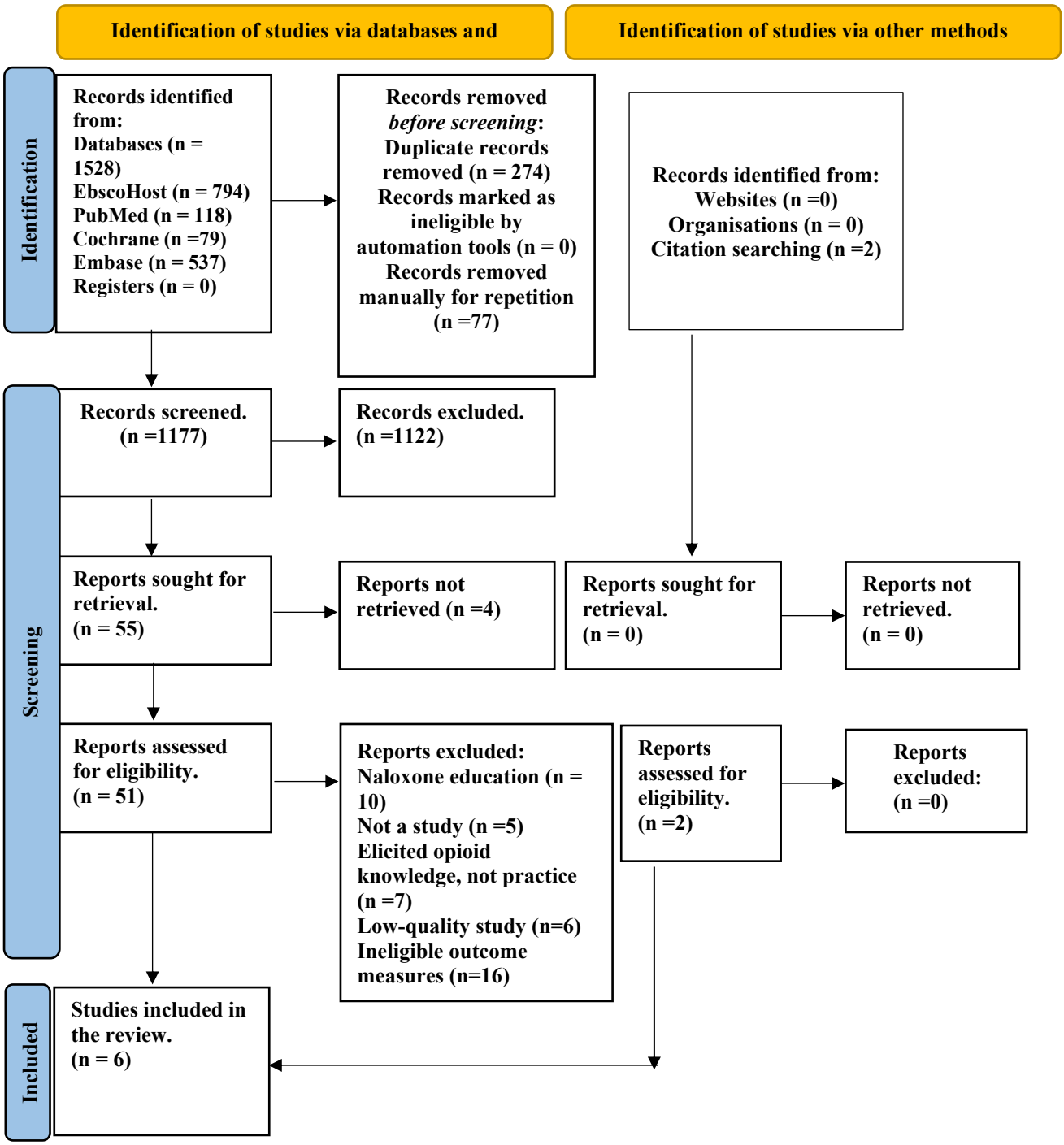

Figure 4.1: Prisma Flow Diagram 2020

Data Extraction

The studies include 2 prospective RCTs (Alter &Ilyas, 2017; Syed *et al.,* 2018), 2 RCTs (Derefinko *et al.,* 2019; Sugai *et al.,* 2013), 1 cluster RCT (Tseng *et al.,* 2021) and 1 Proof of concept study (Colloca *et al.,* 2022). All the included studies revealed the impact of education on Opioid consumption and the subsequent reduction of Opioid misuse among the participants. & Tables 4.1a & b present the characteristics of the included studies.

Table 4.1a: Characteristics of Included Studies

Authors	**Colloca *et al.*,**	**Tseng *et al.*,**	**Derefinko *et al.*,**	**Syed *et al.*,**	**Alter & Ilyas**	**Sugai *et al.*,**
Year	**2022**	**2021**	**2019**	**2018**	**2017**	**2013**
Title	Educational intervention for management of acute trauma pain: A Proof-of-Concept study in post-surgical trauma patients	Can educational videos reduce opioid consumption in Trauma inpatients? A cluster-randomised pilot study	A randomised pilot program to reduce opioid use following dental surgery and increase safe medication return.	Neer Award 2018: the effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomised clinical trial.	A prospective randomised study analysing preoperative Opioid Counselling in pain management after Carpel Tunnel Release Surgery	The importance of communication in the management of Postoperative pain.
Study Aims	To explore the impact of educational intervention in modifying opioid need perception in trauma inpatients and the MME used on intervention and discharge day.	To standardise patient education programs with video to decrease opioid use and MEDs during a hospital stay.	To examine the efficacy of an opioid misuse prevention programme	To determine whether pre-operative narcotics education reduces consumption	To evaluate the effect of pre-operative opioid counselling on patients' pain experience and opioid consumption.	To investigate the importance of communication and how patient education can minimise narcotic use and promote postoperative pain.

Quality Assessment

The Randomised Controlled Trials (RCT) CASP checklist assessed the quality of all included studies, and Table 4.2 presents the results. Although the proof-of-concept study (Colloca *et al.,* 2022) is non-randomised, it is experimental. Hence, the RCT CASP checklist was adopted in assessing the study since there is no specific checklist for such studies.

Table 4.2: Quality Assessment Summary Table (CASP, 2020)

Checklist questions	**Colloca *et al.*, (2022)**	**Alter & Ilyas, (2017)**	**Tseng *et al.*, (2021)**	**Syed *et al.*, (2018)**	**Sugai *et al.*, (2013)**	**Derefinko *et al.*, (2019)**
CASP Checklist Type	**RCT**	**RCT**	**RCT**	**RCT**	**RCT**	**RCT**
Focused Research question	Yes	Yes	Yes	Yes	Yes	Yes
Randomisation	No	Yes	Yes	Yes	Yes	Yes
Accounts for the participants at the conclusion	Yes	Yes	Yes	Yes	Yes	Yes
Blinding of participants Investigators Assessors	No No No	? ? ?	? NO ?	Yes No ?	? ? ?	? ? Yes
Equal participant characteristics	No	Yes	No	Yes	Yes	Yes
Equal treatment and follow-up interval	?	Yes	Yes	Yes	Yes	Yes

Report of effects of intervention	Yes	Yes	Yes	Yes	Yes	Yes
Power calculation	Yes	No	No	Yes	No	?
Specified outcomes.	Yes	Yes	Yes	Yes	Yes	Yes
Results expression	Yes	Yes	Yes	Yes	Yes	Yes
Missing or incomplete data	No	No	No	No	No	No
Differential drop-out between study groups	No	No	Yes	No	No	Yes
Potential sources of bias	No	Yes	Yes	No	Yes	Yes
Statistical tests	Yes	Yes	Yes	Yes	Yes	Yes
Reported *p* values	Yes	Yes	Yes	Yes	No	Yes
Estimate of intervention precision	No	No	Yes	Yes	No	Yes
Confidence interval	No	No	Yes	Yes	No	Yes
The benefit outweighs the harm and costs	Yes	Yes	Yes	Yes	Yes	Yes
Applicable to my local population	Yes	Yes	Yes	Yes	Yes	Yes
Greater Value?	Yes	Yes	Yes	Yes	Yes	Yes
Appraisal summary:						
Use results to change practice?	Yes	Yes	Yes	Yes	Yes	Yes
Recommend change?	Yes	Yes	Yes	Yes	Yes	Yes
Immediate implementation?	?	Yes	?	?	Yes	?
Total Score	**6**	**8**	**8**	**11**	**8**	**10**

Risk of Bias in Studies

The risk of bias for the five randomised studies included in the review was assessed with ROB 2.0 tool while the ROBIN-I tool assesses the proof-of-concept study. The risk of bias visualisation table is shown in Figures 4.2a and 4.2b (McGuinness & Higgins, 2020).

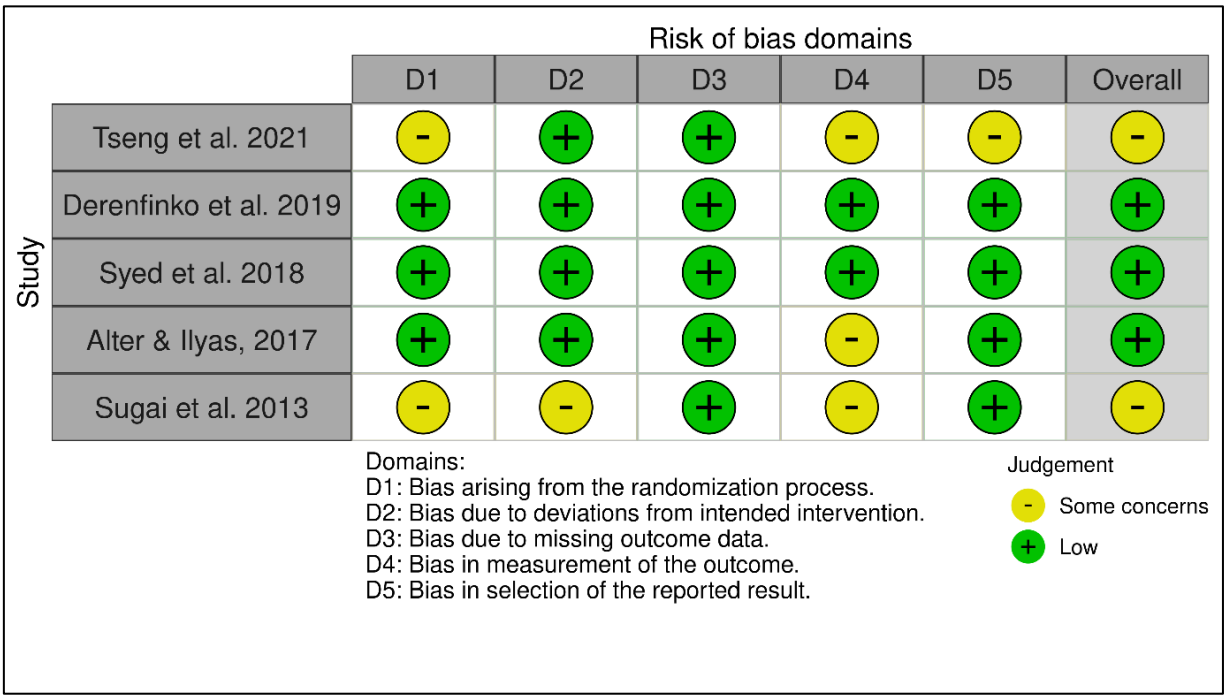

Figure 4.2a: Cochrane Risk of Bias tool-Authors Judgement ROB 2.0

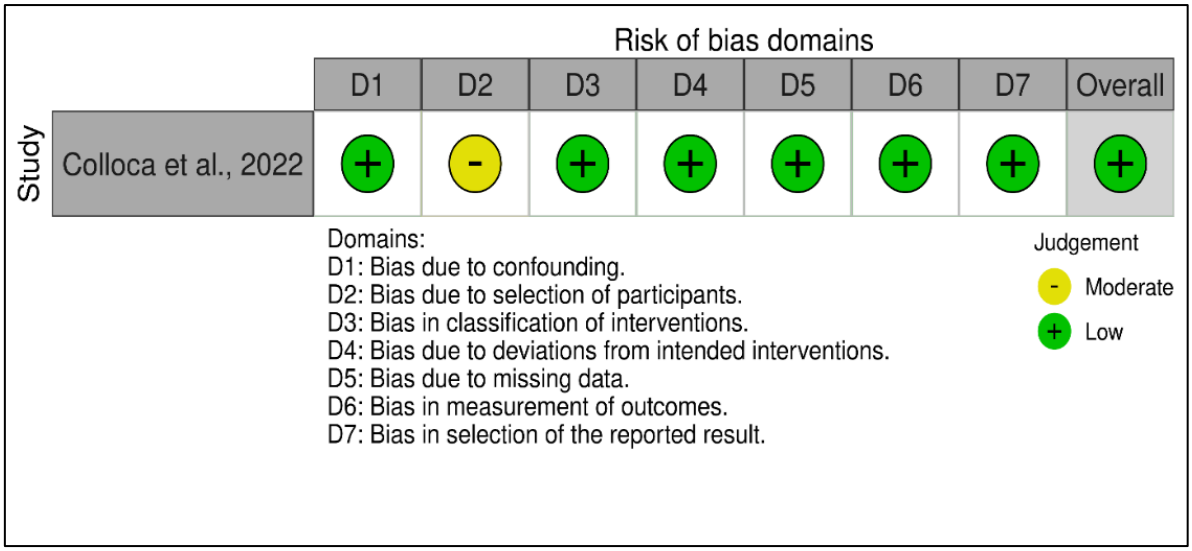

Figure 4.2b: Cochrane Risk of Bias tool-Authors Judgement ROBIN-I

Data Analysis

Familiarising with the contents of all included studies is crucial to data analysis in a thematic review (Nowell, Norris, White, & Moules, 2017).

In identifying, generating, and reviewing the codes, themes, ideas, topics, and repeated patterns, the reviewer read the included studies repeatedly while highlighting the relevant ideas with a pen. Further, it merged repeated or overlapping themes under a common theme. The major themes identified were Evidence-based educational approaches, Topics that should be included in opioid education and Patient outcomes. Chapter 5 discusses the themes in detail.

KEY RESULT FINDINGS

Opioid education intervention varies in approach, content, format and duration. However, the included studies focused on educating patients on the indications, side effects, risk of misuse, abuse and addiction, alternatives to opioids, and safe storage and disposal before intervention and at discharge. The studies reported a significant reduction in opioid consumption and duration of use as participants became more aware of alternative pain management strategies and the potential consequence of opioid misuse. Further, the studies identified improved patients' knowledge regarding safe use, storage and disposal. Consequently, opioid education improved patients' outcomes by reducing the length of hospital stay and opioid use.

Overall, the key result findings suggest that opioid education can effectively reduce opioid misuse in acute settings by improving patient knowledge and promoting safe medication practices, thereby leading to improved outcomes and cost-effectiveness.

Overview

The review included six studies with 601 participants who had opioid education with subsequent impact on opioid consumption, refill, storage, and disposal, which are aspects of opioid misuse. The findings are congruous with results from systematic reviews in surgical units and other non-acute locations (Dollar *et al.,* 2022; Rucinski & Cook, 2020; Ghaddaf *et al.,* 2022). The result is presented in themes to discuss the study's objectives and suggests recommendations to the NHS and healthcare stakeholders.

Evidence-Based Education Approaches

The included studies emphasise the need for proven and effective methods in reducing opioid misuse and abuse. The first theme highlighted the importance of evidence-based opioid education programmes. There is agreement that education should be interactive, visual and tailored to specific populations based on their peculiarities and risk factors. The CDC recommends that in managing pain, each patient should be treated based on their unique peculiarities while ensuring collaboration between the provider and receiver, risk assessment for opioid misuse, improving quality of life and reducing the risk associated with opioid use (Dowell *et al.,* 2022).

Education is a social and interactive process influencing human knowledge, attitudes and behaviour; hence, the promotion of education as a preventive measure against antisocial behaviours (Schrag, 2014; John Dewey in Bawa & Singh, 2023). Mitigating opioid misuse is a global propagation since opioid misuse leads to societal concerns of reduced workforce, repeated hospital admissions, and increased cost of living and health care (Dowdell *et al.,* 2022). However, the effectiveness of opioid education depends on the specific educational approach and the target population.

Interventions

Findings from this review suggest that prompt, specific and prior opioid education with varying educational approaches encourages participants' active involvement and leads to effectiveness. Identified

educational interventions included teaching, counselling, discussions, visual displays, videos and papers. Also, the review shows that patient-centred and personalised educational approaches promote active participation and motivation to accept a multimodal approach to pain control. Moreover, an engaging and interactive education will likely promote learning and ensure that participants internalise knowledge obtained from the education.

In a study, 69 participants engaged in 2 educational sessions on opioid use and pain control with the surgeon using written forms for 15-30 minutes 2 weeks before and on the day of surgery. 90% of the participants declined opioid prescriptions in favour of non-opioid analgesia, with an assertion to understand the concept of pain control (Sugai *et al.,* 2013). In a proof-of-concept study, participants had opioid education with a brochure while using a first-person pronoun (I) in the brochure to emphasise the centredness of opioid education and the responsibilities of the patients in opioid use. 19 out of the 28 participants assert that the information helped manage their traumatic pain with an agreement score of 9.71 +/- 0.46 (Colloca *et al.,* 2022).

The findings support that patients are the centre of healthcare services and learning; hence an inclusive education such as counselling with active participation and engagement can ultimately make educational intervention effective.

One significant finding of this review was the inclusion of counselling to engage participants in two studies leading to reduced opioid use, refill and safe disposal (Derefinko *et al.,* 2019; Alther & Ilyas, 2017). Counselling is a therapeutic interaction between a trained professional and the person or group needing assistance to solve a personal, psychological, behavioural, and emotional problem and improve coping strategies (Rajagopal, 2013). This approach proved highly effective in appropriately considering participants' opinions and perspectives and promoting open and transparent communication.

Moreso, the involvement of trained personnel in the 10-minute counselling session and psychoeducation improved the therapeutic conversation and outcome as opioid consumption reduced among the study group compared to the control group (29.74 vs 43.59, effect size d=0.56) (Derefinko *et al.,* 2019). Similarly, Alter & Ilyas (2017) identified reduced opioid consumption among participants who engaged in a counselling session with the surgeon in a dental unit, as 60% of the patients declined opioid use.

Further, therapeutic interaction with technology-enhanced learning through various platforms such as online teaching, videos, virtual reality experiences, and simulations can provide learners access to global resources and networks, personalised feedback and interactive learning (Haleem, Javaid, Quadri & Suman, 2022). Two of the included studies educated participants with videos to show compliance with the digital age (Syed *et al.,* 2018; Tseng *et al.,* 2021). However, for a better understanding, the surgeon narrated the 2-minutes video session and supported it with handouts to emphasise the information (Syed *et al.,* 2018). The findings showed that the study group consumed an average of 19% (p=0.1), 33% (p=0.02), and 42% (p=0.01) fewer opioids than the control group at two weeks, six weeks and three months follow-up, respectively (Syed *et al.,* 2018).

Further, Tseng *et al.,* (2021) adopted a 6-minute and 3-minute video from physicians and survivors of traumatic experiences who have effectively managed their pain and control opioid use. The results emphasise the vital role of healthcare providers in ensuring effective opioid education in pain management. Hence, John Dewey in Bawa & Singh (2023) identifies education as a continuous reconstructive experience facilitated by a teacher to guide learning. The video strengthens the importance of partnership between the healthcare provider, who should be knowledgeable, and the recipients' readiness to combat the opioid epidemic (Bawa & Singh, 2023).

Although there is a perception that healthcare providers' involvement in studies may coerce appropriate behaviour, a study showed that patients better understood safe opioid use when provided with educational materials by their healthcare provider (Hah *et al.,* 2018). However, the included studies eliminated administration bias by ensuring adherence to research protocols and the activities of research coordinators while maintaining a therapeutic relationship with guidance from the expert providers since effective opioid education is the responsibility of all healthcare providers in prescribing and administering opioids (Bolshakova, Bluthenthal & Sussman, 2019).

The approaches align with the Behaviour change framework that emphasises the concept of education, nursing and cognitive psychological elements as relevant to an impactful education. The framework emphasises the importance of partnering with the patient during education to promote knowledge, self-capacity, practical skills and behavioural change required for opioid safety (Thompson, 2017).

The findings suggest that varying opioid education intervention reduces opioid misuse in acute settings. However, further studies may compare the effectiveness of the varying intervention in developing effective educational materials and policies.

Multimodal Approaches

The review identifies the use of multiple approaches in understanding opioids use and preventing misuse among the participants, as the included studies combined two or more educational materials with or

without non-opioid analgesia. The result agrees with the CDC recommendation for a flexible and personalised opioid education, which may be multimodal (Dowell *et al.,* 2022) to promote effective pain control, improve compliance with prescribed opioids and reduce opioid misuse (Polomano *et al.,* 2017).

Four studies explicitly combined non-opioid analgesia (Tyenolol, Ibuprofen, Gabapentin and Celecoxib) with education (Sugai *et al.,* 2013; Alter & Ilyas, 2017; Syed *et al.,* 2018; Derefinko *et al.,* 2019) with a resultant reduction in opioid equivalents consumption. All included studies combined education approaches which is like other studies that revealed that combining three or more approaches considerably reduces opioid consumption in OME doses (116.3 mg, IQR 52.5 to 496.5 mg) in comparison to 2 or fewer agents (363 mg, IQR 115.5 to 743 mg, p = 0.024 (Hamrick *et al.,* 2019). Although Tseng et al. (2021) did not mention the ancillary medication, the study calculated the percentage of Morphine equivalent doses (MED) and adjuvant medications on discharge.

The findings of this review corroborate the globally accepted WHO analgesic ladder that emphasises using non-opioids with or without opioids, adjuvants and education for adequate pain control and to prevent opioid misuse (Anekar & Cascella, 2023).

Topics in Opioid Education

Early targeted opioid education with specific topics ensures effective and positive opioid behavioural change, which is the goal of opioid education (Lee & Wu, 2020) since patients identify that specific opioid education is helpful with pain perception, opioid use and refill (Rusinski & Cook, 2020).

Moreover, studies report 88.2% improved understanding and satisfaction among preoperative patients who had prior and continuous opioid education with a focus on the use, weaning, storage and disposal (Waszak, Mitchell, Ren & Fennimore, 2018; Odom-Forren, Brady & Sloan, 2021; Elhage *et al.,* 2021)**.**

The included studies emphasised the importance of understanding the side effects, weaning, drug interaction, storage and disposal of opioids and risks of dependence, addiction, abuse and misuse like other systematic reviews (Ghaddaf *et al.,* 2022; Dollar *et al.,* 2022; Rucinski & Cook, 2020). Nevertheless, individual studies emphasised the importance of patient's understanding of the mode of action of opioids and the impact of the opioid epidemic to improve decision-making on opioid use. Hence, one of the included studies reveals a 90% rejection of opioids among participants who had focused education on the impact of opioid analgesia on their natural endorphins and pain perception (Sugai *et al.,* 2013). Further, Alter & Ilyas (2017) focused on the impact of the opioid epidemic, the relevance of non-opioid use as a first-line intervention, and the expected duration of opioid use leading to 60% of the participants rejecting opioid use instead consumed non-opioids.

Therefore, the topics in effective opioid education ought to improve patients' understanding, confidence and control of opioid use, as propagated by the Institute for Patient-and-Family-Centred Care (Dardess *et al.,* 2018).

Considering the various topics, further studies ought to compare the effectiveness of different topics to strengthen policymaking and develop educational materials on opioid use.

Patients' Outcome to Opioid Education

Varying factors influence the effectiveness of opioid education, such as risks of opioid misuse (depression, anxiety, previous exposure to opioids, previous opioid abuse), the acuteness of pain and its intensity, the timing of the education and its content (Jalali *et al.,* 2020). Moreover, pain alters systemic and local functions, including cognition, attention span, and understanding of information (Gunnarsson, Grahn & Agerström, 2016).

However, only one study assessed the risk factors before the educational intervention but failed to report the impact on the study's outcome (Syed *et al.,* 2018). Hence, further studies may explore factors that influence understanding the provided education.

Nevertheless, the included studies suggest that opioid education can significantly decrease opioid misuse by reducing opioid consumption and improving opioid knowledge, perception and use.

Opioid Consumption

Understanding safe opioid use and the risk of opioid misuse led to 12 out of 20 participants refusing opioid use despite the acuteness of pain postoperatively compared to only 4 of 20 participants who had no education (Alter & Ilyas, 2017). Further, 100% of the patients in a study asserted that non-opioid analgesia was adequate for pain control, and 90% refused opioids use with opioid education (Sugai *et al.,* 2013).

The review also identifies that patients with opioid education were 6.8 times better at stopping narcotics use (OR 6.80; 95% CI, 1.57-29.43; p=0.008) (Syed *et al.,* 2018). Average MME dropped from 42.26 per day to 16.98 (P=0.047) among patients with education (Colloca *et al.,* 2022) and a difference of 26 to 38 MEDs consumed between the study and control (Tseng *et al.,* 2022).

Therefore, the findings suggest that opioid education can effectively reduce opioid consumption and misuse.

Knowledge, Perception and Opioid Use

The review also revealed that educated patients had a better knowledge of opioid risks compared to patients in the TAU group who had no specific opioid education (MOMPP p=3.70 and MTAU=1.56, t (69) =7.65, p=<0.0001) leading to less reported opioid use (37.94 MMEs vs 47.79 MMEs, effect size d=0.42, 95% CI: −0.05 to 0.88). Moreso, improved knowledge led to appropriate opioid disposal, as 97% of the OMPP group appropriately disposed of opioids compared to 47% in the TAU group (Derefinko *et al.,* 2019).

While the participants' perception and belief of adequate pain control remained unchanged with opioid education, they emphasised the importance of active involvement in pain management (F_1-0.23 = 0.002, p=0.964). They asserted that opioid use for less than five days is beneficial, and the opioids consumed in MME on education day and at discharge significantly reduced as they expressed satisfaction and usefulness of the education (Colloca *et al.,* 2022).

The findings align with the change model that emphasises the role of knowledge, perception and beliefs in behaviour formation (Thompson, 2017).

The review showed that patients with either pain management or specific opioid education consumed fewer opioids as inpatients, on discharge and after discharge. Moreso, safe storage and disposal is higher among patients who received opioid education before opioid exposure.

In conclusion, the findings of this review support the effectiveness of opioid education programmes in reducing opioid misuse. Promoting and developing comprehensive and multimodal educational initiatives is vital to address the opioid crisis in partnership with opioid consumers.

Limitations

The review identified a dearth of studies on opioid misuse in the UK and in acute settings but available in the US, hence all included studies occurred in the US. Moreover, the total population of the six included studies were 601 which is not an accurate representation of a larger population; hence the result may not be generalisable.

Further, the student is a novice to systematic review and the selection process of included was done alone. Another experienced researcher may identify more relevant RCTs. Nowell, Norris, White & Moules (2017) pointed out that utilising thematic analysis in systematic reviews is challenging, even for experienced reviewers. Hence, they recommend undergoing comprehensive training to improve overall dependability. Determining the most significant aspect to code and evaluating the study critically to extract relevant data posed difficulties. Nevertheless, the included studies originated from prestigious scholarly journals despite these drawbacks. It is important to remember that presenting the results of the systematic review inaccurately due to inexperience may result in a distorted outcome.

However, the result of this review identifies a deficient opioid discussion in acute settings with a focus often on surgical and palliative units. Hence further research in acute settings regarding opioid use is suggested.

Recommendations

The findings from the review recommend implementing comprehensive education programmes that address the risks associated with opioid use, safe prescribing, alternative pain management and multimodal approaches tailored to different populations.

Secondly, the review recommends combining two or more educational interventions with non-opioid analgesia can enhance knowledge retention and motivation to change opioid misuse behaviours.

Thirdly, educational interventions that work should be monitored and evaluated to gauge their effectiveness and to provide opportunities for revisions and improvements.

Finally, future research should assess and compare different educational approaches and their impact on opioid behaviour, especially in high-risk groups attending acute settings.

Implication for Practice

The findings of this review imply the importance of pain management protocols that emphasise opioid education before prescribing and administering opioids to patients irrespective of the unit of care. Moreover, adopting the biopsychosocial model of healthcare is crucial in enforcing the active participation of the patients in fighting the opioid crisis in addition to healthcare providers' continued training. Hence, while training healthcare providers, opioid consumers must be educated on opioid use.

REFERENCES

- Alam, A., *et al.,* (2012) Long-term Analgesic Use After Low-Risk Surgery. *Archives of Internal Medicine* 172 (5): 425–430. DOI:10.1001/archinternmed.2011.1827.
- Alter, T.H., Ilyas, A.M. (2017) A Prospective Randomized Study Analysing Preoperative Opioid Counselling in Pain Management After Carpal Tunnel Release Surgery. *The Journal of Hand Surgery* 42 (10): 810–815. DOI: https://doi.org/10.1016/j.jhsa.2017.07.003
- American Association of Colleges of Pharmacy (AACP), (2023) Opioid-related activities: Category and tag definitions. Available from:

https://www.aacp.org/article/opioid-related-activities-category-and-tag-definitions [Accessed 24 January 2023].

- Anderson, D. & Shaheed, C.A. (2022) Medications for treating low back pain in adults. Evidence for the use of paracetamol, opioids, non-steroidal anti-inflammatories, muscle relaxants, antibiotics and antidepressants: an overview for musculoskeletal clinicians. *Journal of Orthopaedic & sports physical therapy* 1(1): 1–20. DOI: https://www.jospt.org/doi/10.2519/jospt.2022.10788.
- Andrews-Cooper, I. N. & Kozachik, S.L. (2020) How Patient Education Influences Utilization of Nonpharmacological Modalities for Persistent Pain Management: An Integrative Review. *Pain Management Nursing* 21(2): 157–164. DOI: https://doi.org/10.1016/j.pmn.2019.06.016.
- Anekar, A.A. & Cascella, M. (2023) WHO Analgesic Ladder. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554435/#_NBK554435_pubdet_. [Accessed 28 April 2023].
- Anon (2021) O84: Opioid Prescription at Operative Discharge (Opioid Study. British) *Journal of Surgery* 108 (1):1-10. DOI: 10.1093/bjs/znab117.084
- Aromataris, E. & Munn, Z. (2020) *JBI Manual for Evidence Synthesis.* JBI. Available from: https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-01. [Accessed 13 November 2022].
- Ballantyne, J.C. *et al.,* (2021) Rapid Response: Letter from Physicians for Responsible Opioid Prescribing (PROP) to the American Medical Association (AMA) -- RE: AMA's Opposition to Dose & Duration Guidance for Opioid Prescribing. Available from: https://www.bmj.com/content/372/bmj.m4901/rr-1 [Accessed 12 September 2022].
- Bawa, S.K. & Singh, S.K. (2023) Educational thoughts and practices: critical reflection on the educational thoughts and practices of John Dewey with respect to the relevance in the present education system. Available From: https://cup.edu.in/school_education/data/E-content__module/CIEPDF/CIE014.pdf. [Accessed 14 April 2023].
- Berube, M. *et al.,* (2022) Strategies to prevent long-term opioid use following trauma: a Canadian practice survey. *Canadian Journal of Anaesthesia* 70 (1): 87–99. DOI: https://doi.org/10.1007/s12630-022-02328-8.
- Birnbaum, H.G. *et al.,* (2011) Societal costs of prescription opioid abuse, dependence, and misuse in the United States. *Pain Medicine* 12(4):657–667. DOI: 10.1111/j.1526-4637.2011.01075. x.
- Bolshakova, M., Bluethenthal, R. & Sussman, S. (2019) Opioid use and misuse: health impact, prevalence, correlates and interventions. *Psychol Health* 34(9): 1105–1139. DOI: 10.1080/08870446.2019.1622013.
- Brandeis Library (2022) Global Health Policy and Management. Available from: https://guides.library.brandeis.edu/ghpm/databases [Accessed 17 November 2022].
- Braun, V. & Clarke, V. (2020) One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology* 18(3): 328-352. DOI: https://doi.org/10.1080/14780887.2020.1769238
- British National Formulary (BNF) (2022) Analgesics. Available from: https://bnf.nice.org.uk/treatment-summaries/analgesics/ [Accessed 09 June 2022].
- Butler, M.M., *et al.,* (2016) Emergency Department Prescription Opioids as an Initial Exposure Preceding Addiction. *Annals of Emergency Medicine* 68 (2): 202–208. DOI: 10.1016/j.annemergmed.2015.11.033.
- Carlson, C., Wise, M. L. & Gilson, A.M. (2020) State Boards of Nursing Guidance to Mitigate Prescription Opioid Misuse and Diversion. *Pain management nursing* 21 (1): 81–89. DOI: 10.1016/j.pmn.2019.07.001
- Carmichael, A.N., Morgan, L., & Del Fabbro, E. (2016) Identifying and assessing the risk of opioid abuse in patients with cancer: An integrative review. *Substance Abuse and Rehabilitation* 7(1): 71–79.DOI: https://doi.org/10.2147/SAR.S85409.
- Case, A. & Deaton, A. (2020) The Epidemic of Despair: Will America's Mortality Crisis Spread to the Rest of the World? *Foreign affairs* 99 (2): 92–97. Available from: https://web-p-ebscohost-com.uniessexlib.idm.oclc.org/ehost/detail/detail?vid=0&sid=f6f950e8-d9ac-45c4-8546-b478f4938b0c%40redis&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=bsu&AN=141800744 [Accessed 12 February 2023].
- CASP (2022) Interactive and practical training. Available from: https://casp-uk.net/ [Accessed 20 November 2022].
- CDC (2022) Opioids. Available from: https://www.cdc.gov/opioids/patients/faq.html [Accessed 17 September 2022].
- Centres for Disease Control and Prevention (CDC) (2021) Commonly used terms. Available from: https://www.cdc.gov/opioids/basics/terms.html [Accessed 09 November 2022].
- Chang, Y.P. (2018) Factors associated with prescription opioid misuse in adults aged 50 or older. *Nursing Outlook* 66 (2): 112–120. DOI: 10.1016/j.outlook.2017.10.007.
- Cheatle, M.D. (2015) Prescription Opioid Misuse, Abuse, Morbidity, and Mortality: Balancing Effective pain management and safety. *Pain Medicine* 16 (1): S3-S8. Available from: https://web-p-ebscohost-com.uniessexlib.idm.oclc.org/ehost/pdfviewer/pdfv

iewer?vid=0&sid=52f1bd57-1e2b-4f62-ad20-6e15127eb2cc%40redis [Accessed 12 November 2022].

- Collier, R. (2018) A short history of pain management. *CMAJ* 190 (1): E26-27. DOI: 10.1503/cmaj.109-5523.
- Colloca, L. *et al.,* (2022) Educational Intervention for Management of Acute Trauma Pain: A Proof-of-Concept Study in Post-surgical Trauma Patients. *Frontiers in Psychiatry* 13 (853745): 1–11. DOI: 10.3389/fpsyt.2022.853745.
- Cook, J.A. & Collins, G. D. (2015) The rise of big clinical databases. *Br J Surg* 102(2): e93-e101. DOI: 10.1002/bjs.9723.
- Cooper, A.J.M., *et al.,* (2017) Prevalence and Incidence Trends for diagnosed prescription opioid use disorders in the United Kingdom. *Pain Ther* 6(1): 73–84. DOI: 10.1007/s40122-017-0070-9.
- Costello, M. & Thompson, S. (2015) Preventing Opioid misuse and potential abuse: The Nurse's Role in patient education. *Pain Management Nursing* 16(4):515–519. DOI: https://doi.org/10.1016/j.pmn.2014.09.008.
- Costello, M. (2015) Prescription opioid analgesics: Promoting patient safety with better patient education. *The American Journal of Nursing* 115(11): 50–56. DOI: https://www.jstor.org/stable/26619800.
- Cronin, P., Coughlan, M. & Smith, V. (2015) *Understanding Nursing and Health Care Research.* London: SAGE.
- Daoust, R., *et al.,* (2019) Opioid Use and Misuse Three Months After Emergency Department Visit for Acute Pain. *Academic Emergency Medicine* 26 (8): 847–855. DOI:10.1111/acem.13628.
- Dardess, P., *et al.,* (2018) Partnering with patients and Families to strengthen approaches to the opioid epidemic. Bethesda, MD: Institute for Patient- and Family-Centred Care. Available from: https://www.ipfcc.org/bestpractices/opioid-epidemic/IPFCC_Opioid_White_Paper.pdf [Accessed 28 January 2023].
- Das, J.K. *et al.,* (2016) Interventions for Adolescent Substance Abuse: An Overview of Systematic Reviews. *Journal of Adolescent Health* 59 (1): S61–S75. DOI: https://doi.org/10.1016/j.jadohealth.2016.06.021
- Degen, R.M., *et al.,* (2021). Persistent postoperative opioid use following hip arthroscopy is common and is associated with pre-operative opioid use and age. *Knee Surgery, Sports Traumatology, Arthroscopy* 29 (1): 2437–2445. DOI:10.1007/s00167-021-06511-0.
- Degenhardt, L.*et al.,* (2019) Global patterns of opioid use and dependence: Population harms, interventions and future action. *Lancet* 394(10208):1560–1579. DOI: 10.1016/S0140-6736(19)32229–9.
- Derefinko, K.J. (2019) A randomised pilot program to reduce opioid use following dental surgery and increase safe medication return. *Addictive Behaviours* 102 (106190): 1–9. DOI: https://doi.org/10.1016/j.addbeh.2019.106190
- Dowdell, A. E. *et al.,* (2022) Expressions of Compassion Fatigue by Emergency Department Nurses Caring for Patients with Opioid and Substance Use Disorders. *J Emerg Nurs* 48(6): 688–697. DOI: https://doi.org/10.1016/j.jen.2022.07.006
- Dowell D. *et al.,* (2022) CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States. *MMWR Recomm Rep* 71(3):1–95. DOI: http://dx.doi.org/10.15585/mmwr.rr7103a1
- Drucker, A.M., Fleming, P. & Chan, A.W. (2016) Research Techniques Made Simple: Assessing Risk of Bias in Systematic Reviews. *Journal of Investigative Dermatology* 136(1): e109–e114. DOI: https://doi.org/10.1016/j.jid.2016.08.021.
- Elhage, S.A. *et al.,* (2021) pre-operative patient opioid education, standardisation of prescriptions, and their impact on overall patient satisfaction. *Surgery* 169(3):655–659. DOI: 10.1016/j.surg.2020.09.013.
- Fayaz, A. *et al.,* (2016) Prevalence of chronic pain in the UK: a systematic review and meta-analysis of population studies. *BMJ Open* 6, e010364. DOI:10.1136/bmjopen-2015-010364.
- Friebel, R., Maynou, L., 2022. Trends and characteristics of hospitalisations from the harmful use of opioids in England between 2008 and 2018: Population-based retrospective cohort study. *Journal of the Royal Society of Medicine* 115, 173–185. DOI:10.1177/01410768221077360.
- Ghaddaf, A.A. *et al.,* (2022) Influence of perioperative opioid-related patient education: A systematic review and meta-analysis. Patient Education and Counselling 105(9): 2824-2840. DOI: https://doi.org/10.1016/j.pec.2022.04.016.
- Gopalakrishnan, S. & Ganeshkumar, P. (2013) Systematic Reviews and Meta-analysis: Understanding the best Evidence in Primary Healthcare. *J Family Med Prim Care* 2(1): 9-14. DOI: 10.4103/2249-4863.109934.
- Gregory, J. & McGowan, L. (2016) An examination of the prevalence of acute pain for hospitalised adult patients: a systematic review. *Journal of Clinical Nursing* 25 (5-6): 583–598, DOI: 10.1111/jocn.13094.
- Gunnarsson, H., Grahn, B. & Agerström, J. (2016) Impaired psychomotor ability and attention in patients with persistent pain: a cross-sectional comparative study. *Journal of Pain Research* 9 (1): 825–835. DOI: https://doi.org/10.2147/jpr.s114915.
- Hah, M.J. (2020) Efficacy of motivational-interviewing and guided opioid tapering support for patients undergoing orthopaedic surgery (MI-

Opioid Taper): A prospective, assessor-blind, randomised controlled pilot trial. *E-clinical Medicine* 28(100596):1-10. DOI: https://doi.org/10.1016/j.eclinm.2020.100596.

- Haleem, A., Javaid, M., Quadri, M.A. & Suman, R. (2022) Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers* 3 (1): 275-285. DOI: https://doi.org/10.1016/j.susoc.2ha022.05.004.
- Hamrick, K.L. *et al.,* (2019) Multimodal Analgesia and opioid use in critically ill trauma patients. *Journal of the American College of Surgeons* 228(5): 769-775. DOI: https://doi.org/10.1016/j.jamcollsurg.2019.01.020.
- Harrison, H., Griffin, S.J., Kuhn, I. & Usher-Smith, J.A. (2020) Software tools to support title and abstract screening for systematic reviews in healthcare: an evaluation. *BMC Med Res Methodol* 20(7): 1-12. DOI: https://doi.org/10.1186/s12874-020-0897-3.
- Hauser, W. *et al.,* (2021) Is Europe also facing an opioid crisis? A survey of European pain Federation chapters. *European Journal of Pain EJP* 25 (8): 1760-1769. DOI: https://doi-org.uniessexlib.idm.oclc.org/10.1002/ejp.1786.
- Häuser, W., Schug, S., & Furlan, A. D. (2017). The opioid epidemic and national guidelines for opioid therapy for chronic noncancer pain: A perspective from different continents. *Pain Reports*, *2*(3): e599. DOI: https://doi.org/10.1097/PR9.0000000000000599.
- Health and Human Services, (HHS), (2021) What is the US Opioid Epidemic? Available from: https://www.hhs.gov/opioids/about-the-epidemic/index.html [Accessed 12 November 2021].
- Health Sciences Library, (2022) Systematic Review Toolbox. Available from: https://hslib.jabsom.hawaii.edu/systematicreview/dataextraction [Accessed 21 November 2022].
- Higgins J.P.T., Savovic, J., Page, M.J. & Sterne, J.A.C. (2019) Current version of RoB 2. Available from: https://www.riskofbias.info/welcome/rob-2-0-tool/current-version-of-rob-2 [Accessed 18 March 2023].
- Higgins, J. *et al.,* (2022) Cochrane Handbook for Systematic Reviews of Interventions. Available from: https://training.cochrane.org/handbook/current. [Accessed 07 March 2023].
- Higgins, J. P. T. *et al.,* (2011) The Cochrane Collaboration's tool for assessing the risk of bias in randomised trials. *BMJ* 343 (d5928): 1-9. DOI:10.1136/bmj.d5928.
- Hirshon, J.M. *et al.,* (2013) Health systems and services: the role of acute care. *Bull World Health Organ* 91(5): 386–388. DOI: 10.2471/BLT.12.112664.
- ICD-11 (2022) ICD-11 Coding Tool: Mortality and Morbidity Statistics (MMS). Available from: https://icd.who.int/ct11/icd11_mms/en/release [Accessed 14 January 2023].
- Institute of Patient and Family-Centred Care (IPFCC) (2022) Partnerships to address the Opioid Epidemic. Available from: https://www.ipfcc.org/bestpractices/opioid-epidemic/index.html#:~:text=The%20%22opioid%20epidemic%22%20refers%20to,strategies%20to%20address%20the%20epidemic. [Accessed January 17, 2023].
- Jalali, M.S., *et al.,* (2020) The Opioid crisis: a contextual, social-ecological framework. *Health Res Policy Sys* 18 (87): 1-9. DOI: https://doi.org/10.1186/s12961-020-00596-8.
- Jamison, R.N. & Edwards, R.R. (2013) Risk factor assessment for problematic use of opioids for chronic pain. *The Clinical Neuropsychologist* 27(1):60–80. DOI: 10.1080/13854046.2012.715204.
- Jani, M. *et al.,* (2020) Time trends and prescribing patterns of opioid drugs in UK primary care patients with non-cancer pain: A retrospective cohort study. *PLoS Medicine*, *17*(10): 1-16. DOI: https://doi.org/10.1371/journal.pmed.1003270.
- Jones, C.L. *et al.,,* (2015) The Health Belief Model as an Explanatory Framework in Communication Research: Exploring Parallel, Serial, and Moderated Mediation. *Health Commun* 30(6): 566–576. DOI: 10.1080/10410236.2013.873363.
- Kiger, M.E. & Varpio, L. (2020) Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher* 42(1): 1-9. DOI: 10.1080/0142159X.2020.1755030.
- Korestein, D. & Chimonas, S. (2021) Physicians, the Medical Profession, and the Opioid Epidemic. *American Journal of Medical Quality* 36(3):197-199 DOI: 10.1097/01.JMQ.0000735464.30763.fc.
- Lee, B.H. & Wu, C.L. (2020) Educating patients regarding Pain Management and Safe Opioid Use After Surgery: A Narrative Review. *Anaesthesia & Analgesia* 130(3): 57–-581. DOI: 10.1213/ANE.0000000000004436.
- Levy, B. *et al.,* (2015) Trends in opioid analgesic prescribing rates by speciality, US, 2007e2012. *Am J Prev Med* 49(3): 409e413. DOI: https://doi.org/10.1016/j.amepre.2015.02.020.
- Lobiondo, W.G. & Haber, J. (2014) *Nursing Research: Methods and Critical appraisal for evidence-based practice*. 8thed. Missouri: Elsevier.
- Lohman, D., Schleifer, R. & Amon, J.J. (2010) Access to pain treatment as a human right. *BMC Medicine* 8(8): 1-9. DOI: https://doi.org/10.1186/1741-7015-8-8.
- Long, H.A., French, D.P., Brooks, J.M. (2020). Optimising the value of the critical appraisal skills programme (CASP) tool for quality appraisal in qualitative evidence synthesis. *Research Methods in*

Medicine & Health Sciences 1(1): 31–42. DOI: https://doi.org/10.1177/2632084320947559.

- Luo, F., Li, M. & Florence, C. (2021) State-Level Economic Costs of Opioid Use Disorder and Fatal Opioid Overdose- United States, 2017. *Centre for Disease Morbidity and Mortality weekly Report* 70 (15): 1-6. Available from: https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7015a1-H.pdf [Accessed 16 February 2023].
- Ma, J.D., *et al.,* (2014) A single-centre, retrospective analysis evaluating the utilization of the Opioid Risk Tool in opioid-treated cancer patients. *Journal of Pain and Palliative Care Pharmacotherapy* 28 (1): 4–9. DOI: https://doi.org/10.3109/15360288.2013.869647.
- Mallett, R., Hagen-Zanker, J., Slater, R. & Duvendack, M. (2012). The benefits and challenges of using systematic reviews in international development research. *Journal of Development Effectiveness* 4(3): 445–455. DOI: https://doi.org/10.1080/19439342.2012.711342.
- Martinez, R. (2021) Challenges in the management of pain in hospital patients with opioid use disorder. *Nursing Standard* 36(4): 44–60. DOI: 10.7748/ns.2021.e11521
- McCarthy, D.M., Engel, K.G. & Cameron, K.A. (2016) Conversations about analgesics in the emergency department: A qualitative study. *Patient Education and Counselling* 99(7): 1130–1137. DOI: https://doi.org/10.1016/j.pec.2016.01.011.
- McElyea, J. *et al.,* (2022) The Effect of Patient Opioid Education on Opioid Use, Storage, and Disposal Patterns. *Journal of Pain & Palliative Care Pharmacotherapy* 36(1): 11–17. DOI: 10.1080/15360288.2022.2049423.
- McGuinness, L.A. & Higgins, J.P.T. (2020) Risk-of-bias Visualization (Robvis): An R package and Shiny web app for visualising risk-of-bias assessments. *Res Syn Meth* 1(1): 1–7. DOI: https://doi.org/10.1002/jrsm.1411
- Minkow, D. (2014) The Systematic Review. Available from: https://s4be.cochrane.org/blog/2014/09/08/systematic-review/. [Accessed 14 November 2022].
- Munn, Z. *et al.,,* (2018) What kind of systematic review should I conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. *BMC Medical Research Methodology* 18 (5): 1–9. DOI: https://doi.org/10.1186/s12874-017-0468-4
- National Institute for Health and Care Excellence (NICE) (2013) Opioids in palliative care- A Patient Manual and Diary. Available from: https://www.nice.org.uk/sharedlearning/opioids-in-palliative-care-a-patient-manual-and-diary [Accessed 24 October 2022].
- National Survey on Drug Use and Health, (NSDUH) (2017) Opioid Misuse Increases among Older Adults. Available from: https://www.samhsa.gov/data/sites/default/files/report_3186/Spotlight-3186.html [Accessed 17 November 2022].
- NHS England, (2022) Opioid prescribing for Chronic pain. Available from: https://www.england.nhs.uk/south/info-professional/safe-use-of-controlled-drugs/opioids/ [Accessed 12 January 2023].
- NICE, (2022) Opioid dependence. Available from: https://cks.nice.org.uk/topics/opioid-dependence/ [Accessed 25 January 2023].
- Novak, S., Glasheen, C. & Roland, C. (2016) Prescription pain reliever misuse and levels of pain impairment: 3-year course in a nationally representative outpatient sample of US adults. *Substance Abuse and Rehabilitation* 7(1): 87–98. DOI:10.2147/sar.s102251.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017) Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods* 16(1): 1-13 DOI: https://doi.org/10.1177/1609406917733847.
- Odom-Forren, J., Brady, J. & Sloan, P.A. (2021) Perianesthesia Patient Education for the Promotion of Opioid Stewardship. *Journal of Perianesthesia Nursing* 36(2): 108-115. DOI: https://doi.org/10.1016/j.jopan.2020.06.012.
- Office for National Statistics (2021) Deaths related to drug poisoning in England and Wales:2021 registrations. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsrelatedtodrugpoisoninginenglandandwales/2021registrations [Accessed 12 January 2023].
- Owens, J.K. (2021). Systematic reviews: Brief overview of methods, limitations, and resources. *Nurse Author & Editor* 31(3-4): 69–72. DOI: https://doi.org/10.1111/nae2.28.
- Oyler, D., *et al.,* 2018) Minimizing opioid use after major acute trauma. *American Journal of health-system Pharmacy* 75 (3): 105–111. DOI 10.2146/ajhp161021.
- Page, M.J. et al (2021) The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 372(71). DOI: 10.1136/bmj.n71.
- Page, M.J. *et al.,* (2021) The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Systematic Reviews 10. Available from: https://doi.org/10.1186/s13643-021-01626-4. [Accessed 30 January 2023].
- Patel, B., Embabi, B. & Garitty, S. (2020) in Noe, C.E (2020) Pain Management for Clinicians: A guide to Assessment and treatment: Chapter 6: Inpatient pain management pg 86-185 Edition 1. Available from: https://link-springer-com.uniessexlib.idm.oclc.org/book/10.1007/978-3-030-39982-5 [Accessed 09 January 2023].
- Patel, J.J. *et al.,* (2022) Critical Appraisal of a Systematic Review: A Concise Review. *Crit Care*

Med 50(9): 1371–1379. DOI: DOI: 10.1097/CCM.0000000000005602.

- Peričić, T.P. & Tanveer, S. (2019) Why Systematic Review Matters. Available from: https://www.elsevier.com/connect/authors-update/why-systematic-reviews-matter. [Accessed 21 May 2023].
- Polanin, J.R., Piggot, T.D., Espelage, D.L. & Grotpeter, J.K. (2019) Best practice guidelines for abstract screening large-evidence systematic reviews and meta-analyses. *Res Synx Meth* 10 (3): 331–342. DOI: 10.1002/jrsm.1354.
- Polomano, R.C. *et al.,* (2017) Multimodal Analgesia for Acute Postoperative and Trauma-Related Pain. *AJN, American Journal of Nursing* 117(3): S12-S26. DOI:10.1097/01.NAJ.0000513527.71934.73.
- PRISMA (2023) PRISMA: Transparent Reporting of Systematic Reviews and Meta-Analyses Available from: http://prisma-statement.org/PRISMAStatement/FlowDiagram.aspx [Accessed 28 March 2023].
- Pursell, E. & Gould, D. (2021) Undertaking qualitative reviews in nursing and education - A method of thematic analysis for students and clinicians. *International Journal of Nursing Studies Advances* 3(100036): 1–8. DOI: https://doi.org/10.1016/j.ijnsa.2021.100036.
- Rajagopal, M. (2013) Counselling: A Misunderstood profession. *Journal of Humanities and Social Science* 11(3): 30–37. DOI: https://www.iosrjournals.org/iosr-jhss/papers/Vol11-issue3/F01133037.pdf.
- Rech, M.A., Griggs, C., Lovett, S. & Motov, S. (2022) Acute pain management in the Emergency Department: Use of multimodal and non-opioid analgesic treatment strategies. *American Journal of Emergency Medicine* 58(1): 57–65. DOI: https://doi.org/10.1016/j.ajem.2022.05.022.
- Roberts, A.O. & Richards, G.C. (2023) Is England facing an opioid epidemic? *British Journal of Pain 0*(0): 1–5. DOI:10.1177/20494637231160684
- Rockett, M., Vanstone, R., Chand, J. & Waeland, D. (2017) A survey of acute pain services in the UK. *Anaesthesia* 72 (10): 1237–1242. DOI:10.1111/anae.14007.
- Ronco, M. *et al.,* (2012) Patient education outcomes in surgery: a systematic review from 2004 to 2010. *International Journal of Evidence-Based Healthcare* 10 (1): 309–323. DOI:10.1111/j.1744-1609.2012.00286.x.
- Rose, A.E. (2018) Are prescription Opioids driving the Opioid crisis/ Assumptions VS Facts. *Pain Med* 19(4): 793–807. DOI: 10.1093/pm/pnx048.
- Rosenblum, A., Marsch, L.A., Joseph, H. & Portenoy, R.K. (2008) Opioids and the treatment of chronic pain: controversies, current status, and future directions. *Exp Clin Psychopharmacol* 16(5):405–416. DOI: 10.1037/a0013628.
- Rucinski, K. & Cook, J.L. (2020) Effects of preoperative opioid education on postoperative opioid use and pain management in orthopaedics: A systematic review. *Journal of Orthopaedics* 20(1): 154–159. DOI: https://doi.org/10.1016/j.jor.2020.01.020.
- Rutgers University, (2023) Systematic Reviews in the Health Sciences. Available from: https://libguides.rutgers.edu/c.php?g=337288&p=2273207 [Accessed 26 March 2023].
- Schrag, F. (2014). What Is Education? *Educational Theory* 64 (1): 533–538. DOI: https://doi.org/10.1111/edth.12079.
- Scottish Drug Forum, (2019) All opioid medicines in the UK to carry prominent warnings. Available from: https://www.sdf.org.uk/all-opioid-medicines-in-uk-to-carry-prominent-warnings/ [Accessed 12 September 2022].
- Shanahan, W. (2022) Opioids: understanding the current state in the UK. Available from: https://www.priorygroup.com/blog/opioids-understanding-the-current-state-in-the-uk [Accessed 22 September 2022].
- Smith, C. (2021) The Opioid Epidemic. Available from: https://www.addictioncentre.com/opiates/opioid-epidemic [Accessed 30 September 2022].
- Stepan J.G., *et al.,* (2019) Development of an Institutional Opioid Prescriber Education Program and Opioid-Prescribing Guidelines: Impact on Prescribing Practices. *J Bone Joint Surg Am* 101(1):5-13. DOI: 10.2106/JBJS.17.01645. PMID: 30601411.
- Sterne, J.A.C., *et al.,* (2022) Chapter 25: Assessing risk of bias in a non-randomized study. In: Higgins, J.P.T., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M.J. & Welch, V.A. (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.3. Available from: www.training.cochrane.org/handbook. [Accessed 21 March 2023].
- Strand, M.A. & Eukel, H. (2019) A primary prevention approach to the Opioid Epidemic. *American Journal of Public Health* 109(6): 861–863. DOI: 10.2105/AJPH.2019.305060.
- Strand, M.A., Eukel, H. & Burck, S. (2019) Moving opioid misuse prevention upstream: A pilot study of community pharmacists screening for opioid misuse risk. *Research I social administrative Pharmacy* 15(8): 1032–1036. DOI: https://doi.org/10.1016/j.sapharm.2018.07.011.
- Substance Abuse and Mental Health Services Administration (SAMHSA) (2020) 20 Key Substance Use and Mental Health Indicators in the United States: Results from the 2019 National Survey on Drug Use and Health. Available from: https://www.samhsa.gov/data/sites/default/files/reports/rpt29393/2019NSDUHFFRPDFWHTML/2019

NSDUHFFR090120.htm#illi13 [Accessed 12 February 2023].
- Sugai, D.Y., Deptula, P.L., Parsa, A.A. & Don Parsa, F. (2013) The importance of communication in the management of postoperative pain. *Hawaii J Med Public Health* 72(1):180–184. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3689499/#__ffn_sectitle [Accessed 07 February 2023].
- Suri, H. (2020) *Ethical Considerations of Conducting Systematic Reviews in Educational Research*. In: Zawacki-Richter, O., Kerres, M., Bedenlier, S., Bond, M., Buntins, K. (eds) Systematic Reviews in Educational Research. Springer VS, Wiesbaden. Available from: https://doi.org/10.1007/978-3-658-27602-7_3 [Accessed 26 March 2023].
- Syed, U.A.E. *et al.,* (2018) Neer Award 2018: the effect of preoperative education on opioid consumption in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial. *Journal of Shoulder and Elbow Surgery* 27(6): 962–967. DOI: https://doi.org/10.1016/j.jse.2018.02.039.
- Teulings, L. & Broglio, K. (2020) Opioid Misuse Risk. *Clinical journal of oncology nursing* 24 (1): 11–14. Available from: https://web-s-ebscohost-com.uniessexlib.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=0&sid=a17a348e-a02b-4ec3-acdd-7f8892d0875b%40redis [Accessed 09 January 2023].
- Thomas, J. & Harden, A. (2008) Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology* 8 (45):1-10. DOI: https://doi.org/10.1186/1471-2288-8-45.
- Thompson, D.L. (2017) Behaviour change: A framework to guide effective patient education. *Primary Health Care* 27 (2): 35-42. DOI: 10.7748/phc.2017.e1206.
- Titan, A. *et al.,* (2021) Impact of policy-based and institutional interventions on post-operative opioid prescribing practices. *American Journal of Surgery* 222(4): 766-772. DOI: https://doi.org/10.1016/j.amjsurg.2021.02.004.
- Tseng, E.S. *et al.,* (2021) Can educational videos reduce opioid consumption in Trauma inpatients? A cluster-randomised pilot study. *J Trauma Acute Care Surg* 91(1): 212–218. DOI:10.1097/TA.0000000000003174.
- Tufanaru, C. *et al.,* (2020) "Chapter 3: Systematic reviews of effectiveness", In: Aromataris, E. & Munn, Z. (eds). *JBI Manual for Evidence Synthesis.* Available from: https://s ynthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-04 [Accessed 15 November 2022].
- United Kingdom Government, (2021) United Kingdom drug situation 2019: Focal point annual report. Available from: https://www.gov.uk/government/publications/united-kingdom-drug-situation-focal-point-annual-report/united-kingdom-drug-situation-focal-point-annual-report-2019 [Accessed 12 January 2023].
- Van Cleave, J. H., *et al.,* (2021). A Scoping Review of Nursing's Contribution to the Management of Patients with Pain and Opioid Misuse. *Pain management nursing: Official journal of the American Society of Pain Management Nurses*, *22*(1): 58–68. DOI: https://doi.org/10.1016/j.pmn.2020.11.007.
- Wallace, L.S. *et al.,* (2013) Development and validation of the patient Opioid Education Measure. *Journal of Pain Research* 6(1):663–681. DOI: https://doi.org/10.2147/JPR.S50715.
- Waszak, D.L., Mitchell, A.M., Ren, D. & Fennimore, L.A. (2018) A Quality Improvement Project to Improve Education Provided by Nurses to ED Patients Prescribed Opioid Analgesics at Discharge. *Journal of Emergency Nursing* 44 (4): 336–344. DOI: https://doi.org/10.1016/j.jen.2017.09.010.
- Wichor, *et al.,* (2018) A systematic approach to searching: an efficient and complete method to develop literature searches. *J Med Libr Assoc* 106 (4): 531–541. DOI: 10.5195/jmla.2018.283.

BIBLIOGRAPHY

- Andelman, S.M. *et al.,* (2020) Preoperative Patient Education May Decrease Postoperative Opioid use after Meniscectomy. *Arthrosc Sports Med Rehabil* 2(1): e33-e38. DOI: 10.1016/j.asmr.2019.10.006.
- Harrison, H., Griffin, S.J., Kuhn, I. & Usher-Smith, J.A. (2020) Software tools to support title and abstract screening for systematic reviews in healthcare: an evaluation. *BMC Med Res Methodol* 20(7): 1–12. DOI: https://doi.org/10.1186/s12874-020-0897-3.
- Henry, S.G., Bell, R.A., Fenton, J.J. & Kravitz, R.L. (2018) Communication about chronic and opioids in primary care: impact on patient and physician visit experience. *PAIN* 159(2): 371-379. DOI: 10.1097/j.pain.0000000000001098.
- Jatau, A.I. *et al.,* (2021) The burden of drug abuse in Nigeria: A scoping review of epidemiological studies and drug laws. *Public health rev* 42(1603960): 1–11. DOI: https://doi.org/10.3389/phrs.2021.1603960.
- Klein, D. *et al.,* (2020) Preoperative opioid education has no effect on opioid use in patients undergoing arthroscopic rotator cuff repair: a prospective, randomized clinical trial. *The Orthopaedic Journal of Sports Medicine* 8(7): Suppl6. DOI: 10.1177/2325967120S00414.
- Kwan, S.Y. *et al.,* (2020) Reducing Opioid Use in Endocrine surgery through patient education and provider prescribing patterns. *J Surg Res* 256(1): 303-310. DOI: 10.1016/j.jss.2020.06.025.
- Lohman, D., Schleifer, R. & Amon, J.J. (2010) Access to pain treatment as a human right. *BMC*

Medicine 8(8): 1-9. DOI: https://doi.org/10.1186/1741-7015-8-8.

- Medicines and Healthcare Regulatory Agency (MHRA), (2020) UK regulator strengthens opioid warnings. Available from: https://www.gov.uk/government/news/uk-regulator-strengthens-opioid-warnings [Accessed 12 September 2022].
- Medicines and Healthcare Regulatory Agency (MHRA), (2020) UK regulator strengthens opioid warnings. Available from: https://www.gov.uk/government/news/uk-regulator-strengthens-opioid-warnings [Accessed 12 September 2022].
- NHS Health Research Authority, (2022) Is my study a Research and does it require NHS REC review? Available from: http://www.hra-decisiontools.org.uk/research/result3.html [Accessed 13 September 2022].
- Osborne, V. (2021) Opioids in the United Kingdom: safety and Surveillance during COVID-19. *Curr Opin Psychiatry* 34(4): 357-362. DOI:10.1097/YCO.0000000000000719.
- Popenoe, R., Langius-Eklöf, A., Stenwall, E. & Jervaeus, A. (2021) A practical guide to data analysis in general literature reviews. *Nordic Journal of Nursing Research* 41(4):175–186. DOI:10.1177/2057158521991949.
- Richards, G.C., Anwar, S. & Quinlan, J. (2022) Averting a UK opioid crisis: getting the public health messages 'right.' *Journal of the Royal Society of Medicine* 115(5):161–164. DOI:10.1177/01410768221089015.
- Surrey and Sussex Healthcare NHS Trust (SASH), (2022) About Us. Available from: https://www.surreyandsussex.nhs.uk/about-us [Accessed 22 October 2022].
- Timmers, T., Janssen, L., Kool, R. & Kremer, J. (2020) Educating Patients by Providing Timely Information Using Smartphone and Tablet Apps: Systematic Review. *J Med Internet Res* 22(4): e17342. DOI: 10.2196/17342.
- Vargas-Schaffer, G. (2010) Is the WHO analgesic ladder still valid? Twenty-four years of experience. *Can Fam Physician* 56(6):514–517. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2902929/#:~:text=The%201986%20version%20of%20the,nonopioid%20medication%20(Figure%201).&text=If%20the%20pain%20is%20not,begin%20a%20more%20powerful%20opioid [Accessed 01 July 2022].
- Vasilenko, S.A., Evans-Pole, R.J. & Lanza, S.T. (2017) Age trends in rates of substance use disorders across ages 18-90: Differences by gender and race/ethnicity. *Drug and Alcohol Dependence* 180 (1): 260–264. DOI: https://doi.org/10.1016/j.drugalcdep.2017.08.027.
- Vergnes, J., Marchal-Sixou, C., Nabet, C., Maret, D. & Hamel, O. (2010) Ethics in systematic reviews. *Journal of Medical Ethics* 36(12):771-774. DOI: http://dx.doi.org/10.1136/jme.2010.039941.
- World Health Organisation, (WHO), (2021) Opioid Overdose. Available from: https://www.who.int/news-room/fact-sheets/detail/opioid-overdose [Accessed 22 September 2022].
- Yajnik, M. *et al.,* (2019) Postoperative education and engagement in post-operative pain management decreases opioid use following knee replacement surgery. *Patient education and counselling* 102(2): 383-387. DOI: https://doi.org/10.1016/j.pec.2018.09.001.