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# REDEFINING DATA-DRIVEN APPROACHES TO IMPROVE HEALTHCARE DELIVERY AND PATIENT OUTCOMES: NURSING PERSPECTIVES

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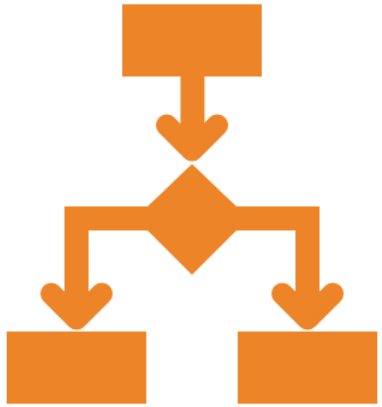
# INTRODUCTION

Objectives

- Understand the role of data in decision-making
- Explore the state of science on best practices for data-driven patient-centered EBP
- Describe  the gaps in current EBP





# HARNESSING THE POWER OF DATA TO TRANSFORM NURSING PRACTICE

- Leveraging data analytics to enhance patient care, improve operational efficiency, and advance the profession.
- Nurses are increasingly using data to make informed decisions, personalize care, streamline workflows, and optimize resource allocation

# THE ROLE OF DATA IN HEALTHCARE

Definition of data in healthcare

Types of healthcare data: clinical, operational, patient-generated

Examples of data sources: Electronic Health Records (EHRs), wearable devices, patient surveys

# Artificial intelligence in nursing: an integrative review of clinical and operational impacts

Salwa Hassanein[1,2], Rabie Adel El Arab[1,3*], Amany Abdrbo[1], Mohammad S. Abu-Mahfouz[1], Mastoura Khames Farag Gaballah[1], Mohamed Mahmoud Seweid[1,4], Mohammed Almari[1] and Husam Alzghoul[1]

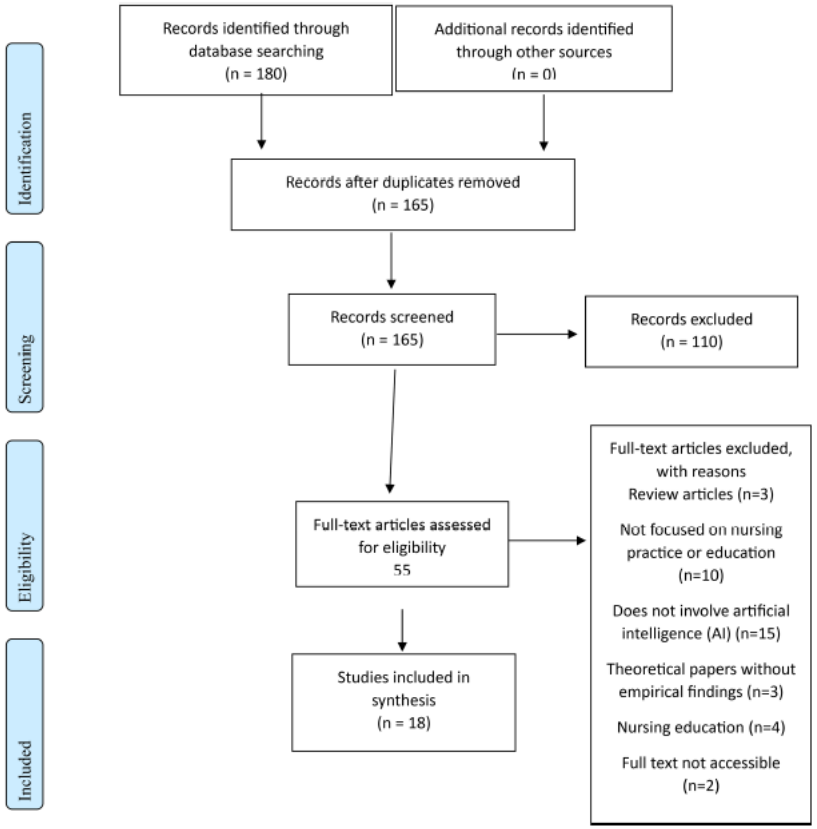



FIGURE 1
PRISMA flow diagram.

| Objective | Key findings | Themes |
|---|---|---|
| 1. Evaluate the effectiveness of AI-driven tools in enhancing clinical diagnostics, therapeutic interventions, and patient monitoring, and determine their influence on the quality and outcomes of patient care. | AI tools improved diagnostic accuracy, therapeutic interventions, and real-time patient monitoring, leading to better patient outcomes and personalized care. | Clinical and therapeutic advancements through AI integration |
| 2. Examine how AI integration optimizes operational workflows, manages nursing workloads, and mitigates staff burnout, thereby improving overall healthcare delivery and enhancing nursing job satisfaction. | AI technologies streamlined workflows, automated administrative tasks, optimized resource use, and reduced nurse workload and burnout while improving job satisfaction. | Operational optimization and staff support |
| 3. Assess the ethical implications of AI integration in nursing practice. | Identified concerns related to data privacy, algorithmic bias, and overreliance on AI, highlighting the need for ethical frameworks and training. | Ethical implications |

# DATA-DRIVEN APPROACHES IN NURSING

- What do you think of when you hear data?

# EXAMPLES OF DATA-DRIVEN TOOLS IN NURSING

**Predictive Analytics**:

Utilizes historical data to predict future health events, such as the likelihood of patient deterioration.

**Decision Support Systems**:

Provides evidence-based recommendations to assist nurses in clinical decision-making.

**Telehealth**:

Facilitates remote patient monitoring and consultations through digital platforms.

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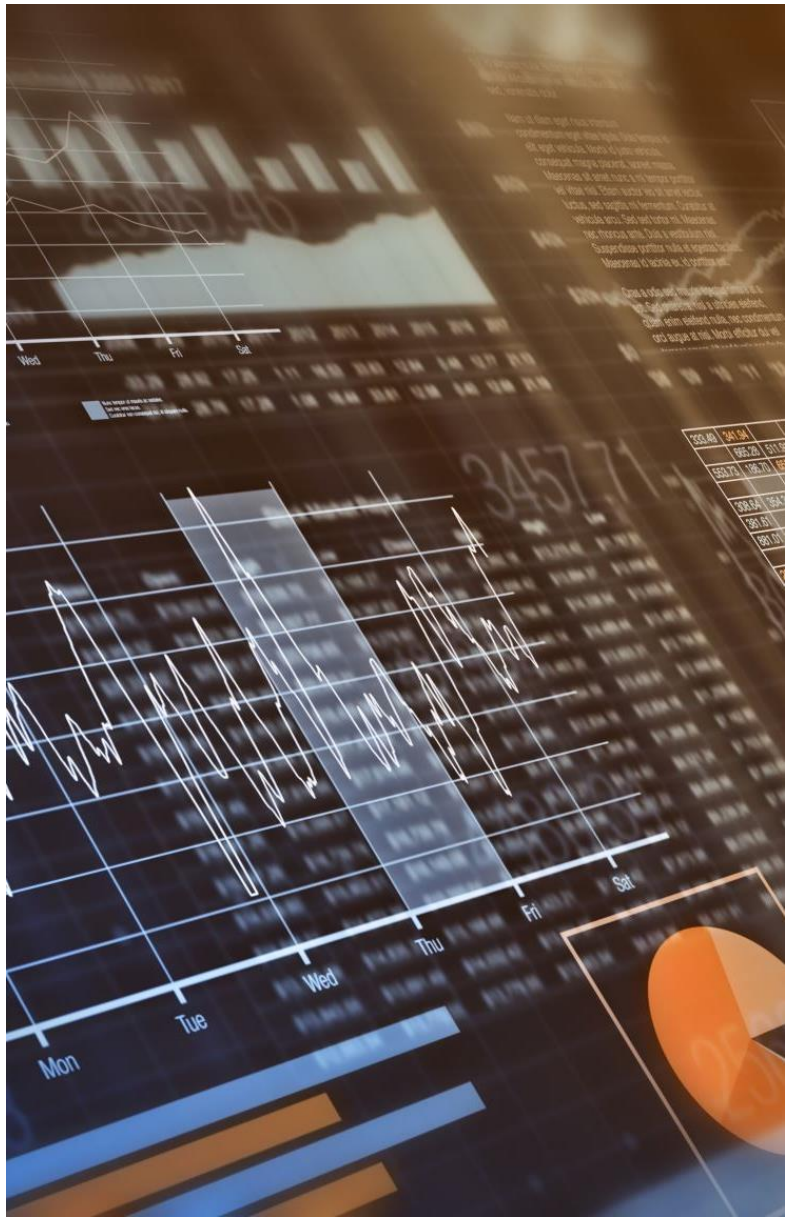



# PREDICTIVE ANALYTICS IN NURSING

Involves using historical and current data, along with statistical algorithms and machine learning techniques, to predict future outcomes

Applications in Nursing

Risk Assessment:

- Identify patients at high risk for various conditions,  for early intervention and prevention.
- Example: Utilizing patient data to predict the likelihood of developing pressure ulcers

Patient Monitoring:

- Continuous monitoring and analysis of patient data can detect subtle changes in health status.
- Example: Real-time monitoring of vital signs to predict potential cardiac events

Resource Allocation:

- Predictive analytics assists in optimizing the allocation of healthcare resources
- Example: Forecasting patient admission rates to determine the necessary number of nursing staff and resources required during peak times.

# DECISION SUPPORT SYSTEMS

Involves using data analytics and evidence-based insights to guide healthcare decisions.

Applications in Nursing

Clinical Decision Support Systems (CDSS):

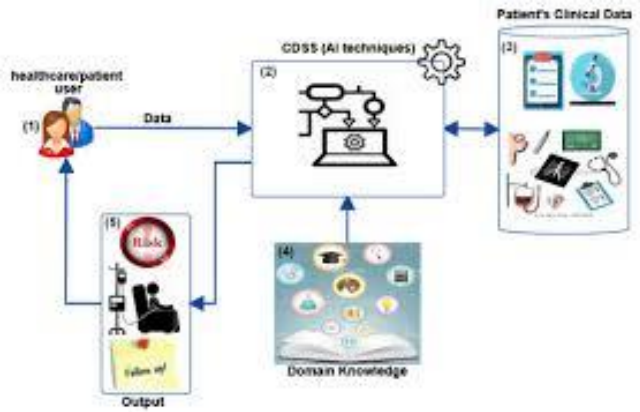
- Provide real-time, evidence-based information to healthcare providers.
- Example: Alert a nurse to a potential drug interaction when a new medication is prescribed. prescribed.

Electronic Health Records (EHR) with Integrated Decision Support:

- Include decision support tools that assist nurses with clinical documentation, care planning, and monitoring patient progress.
- Example: Flag abnormal lab results and prompt the nurse to follow up with the appropriate appropriate diagnostic tests or treatments.

Automated Medication Dispensing Systems:

- Ensure accurate medication administration by cross-checking prescriptions with patient data and providing real-time alerts to prevent errors.
- Example: Automated dispensing systems can alert nurses if a patient is about to receive a receive a dose of medication that exceeds the recommended limit, preventing overdose.



# TELEHEALTH AND REMOTE MONITORING

Provide remote healthcare services and monitoring, aiding in the management of chronic conditions, post-discharge care, and elderly patient monitoring.

Applications in Nursing

### Remote Consultations:

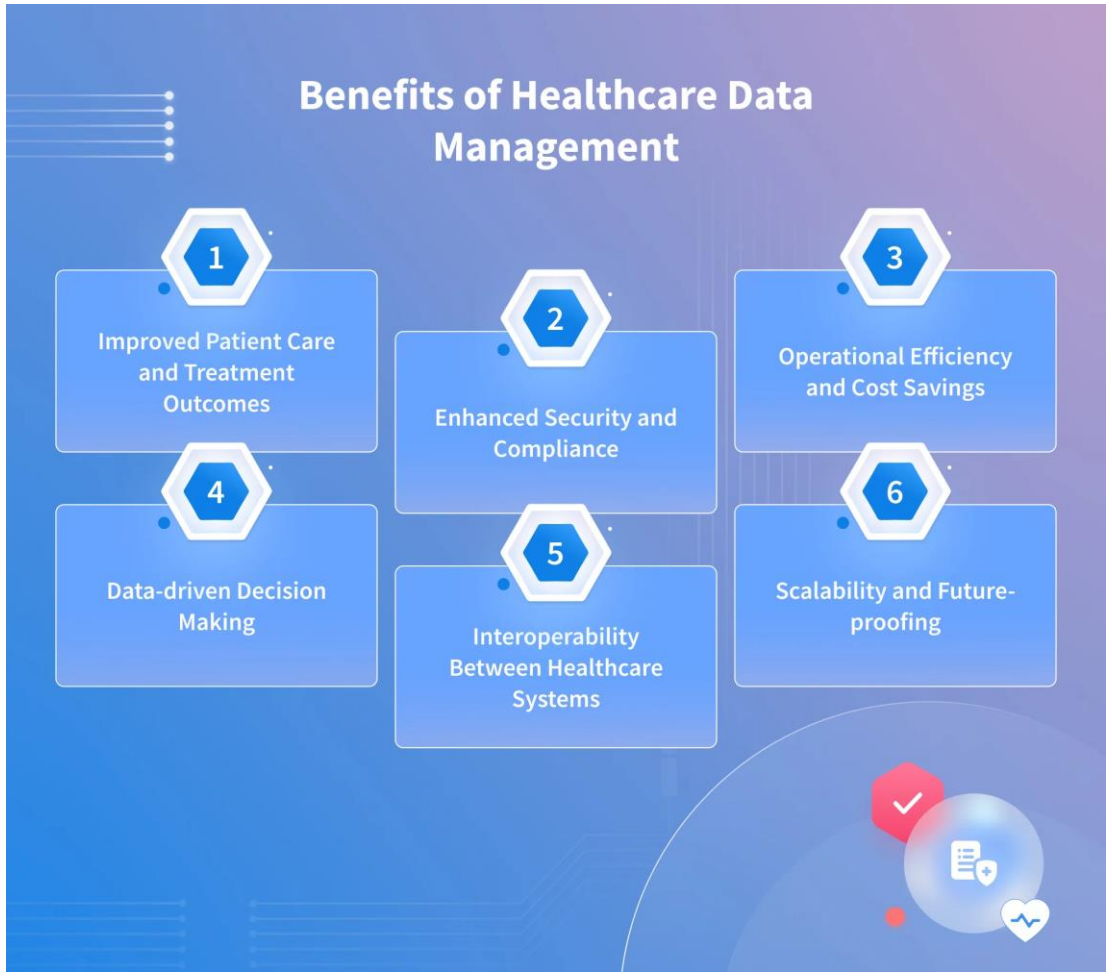
- Video consultations allow healthcare providers to evaluate, diagnose, and treat patients remotely, offering convenience and flexibility.

### Wearable Devices:

- Devices such as smartwatches, fitness trackers, and specialized medical wearables can monitor various health parameters continuously.

### Mobile Health Apps:

- Apps on smartphones and tablets provide a platform for patients to monitor their health, access health information, and communicate with healthcare providers.


Benefits of Healthcare Data Management
1
Improved Patient Care and Treatment Outcomes
2
Enhanced Security and Compliance
3
Operational Efficiency and Cost Savings
4
Data-driven Decision Making
5
Interoperability Between Healthcare Systems
6
Scalability and Future-proofing

# HOW ARE YOU UTILIZING THE POTENTIAL OF DATA AND TECHNOLOGY IN YOUR UNIT?

# RESEARCH ON DATA-DRIVEN PRACTICES IN NURSING


Step 0: Cultivating Curiosity
Step 1: Asking Answerable Questions
Step 2: Searching the Evidence
Step 3: Appraising the Evidence
Step 4: Integrating Evidence into Practice
Step 5: Evaluating Practice Change
Step 6: Disseminating Results of Evaluation
0
1
2
3
4
5
6


CLINICAL EXPERIENCE
EVIDENCE BASED PRACTICE
RESEARCH EVIDENCE
PATIENT PREFERENCE

# IMPORTANCE OF EBP

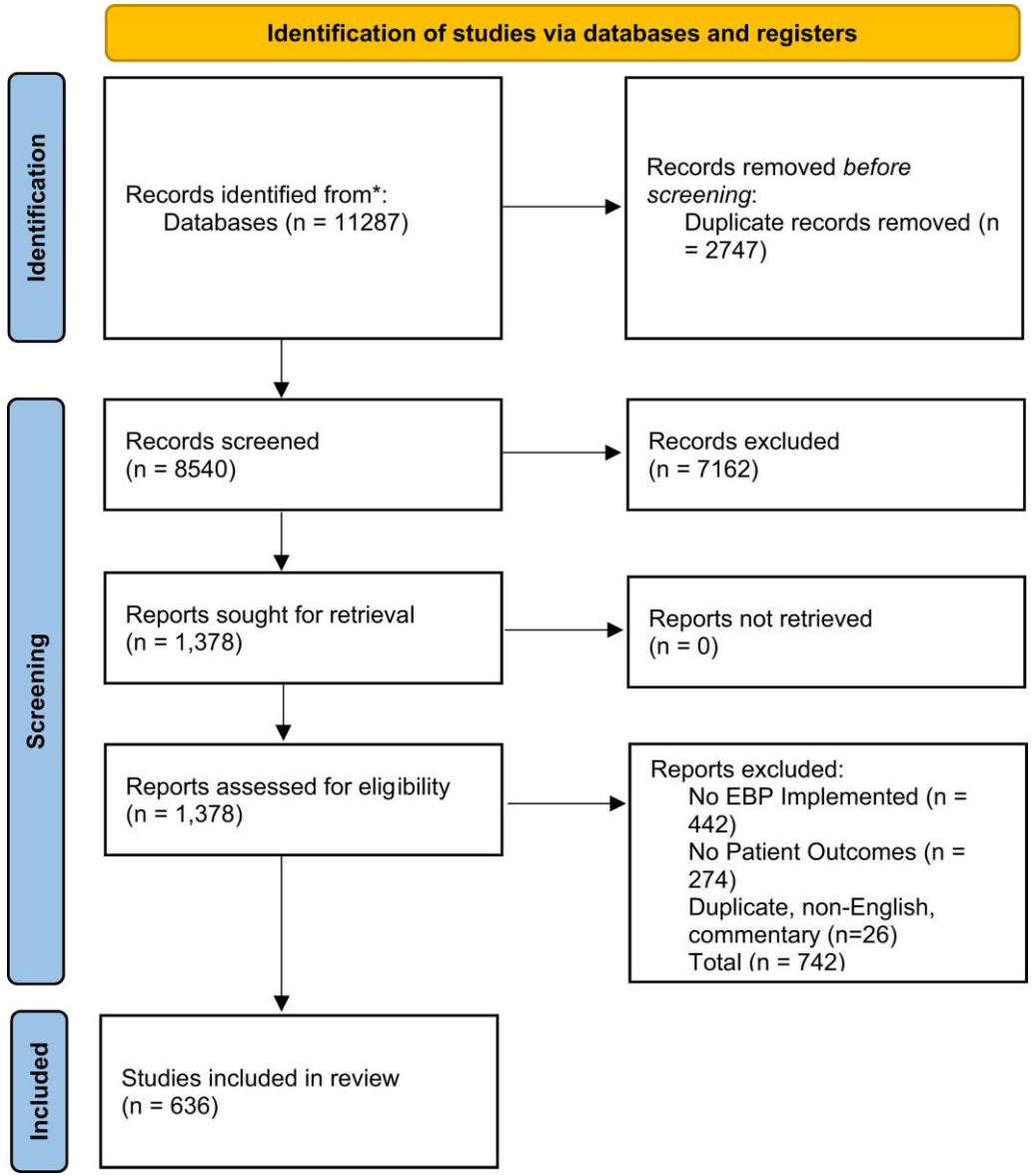
**Ensures High-Quality Care**: EBP provides a framework for nurses to deliver care that is scientifically validated and tailored to individual patient needs, ensuring the highest standards of practice.

**Improves Patient Outcomes**: By employing interventions that are proven to be effective through rigorous research, EBP helps in achieving better health outcomes for patients.

**Enhances Healthcare Efficiency**: EBP promotes the use of interventions that are cost-effective and resource-efficient, optimizing healthcare delivery.

# RESEARCH EVIDENCE SUPPORTING DATA-DRIVEN PRACTICES

- Improving Patient Outcomes
- Enhancing Operational Efficiency
- Strengthening Nursing Informatics
- Addressing Health Disparities

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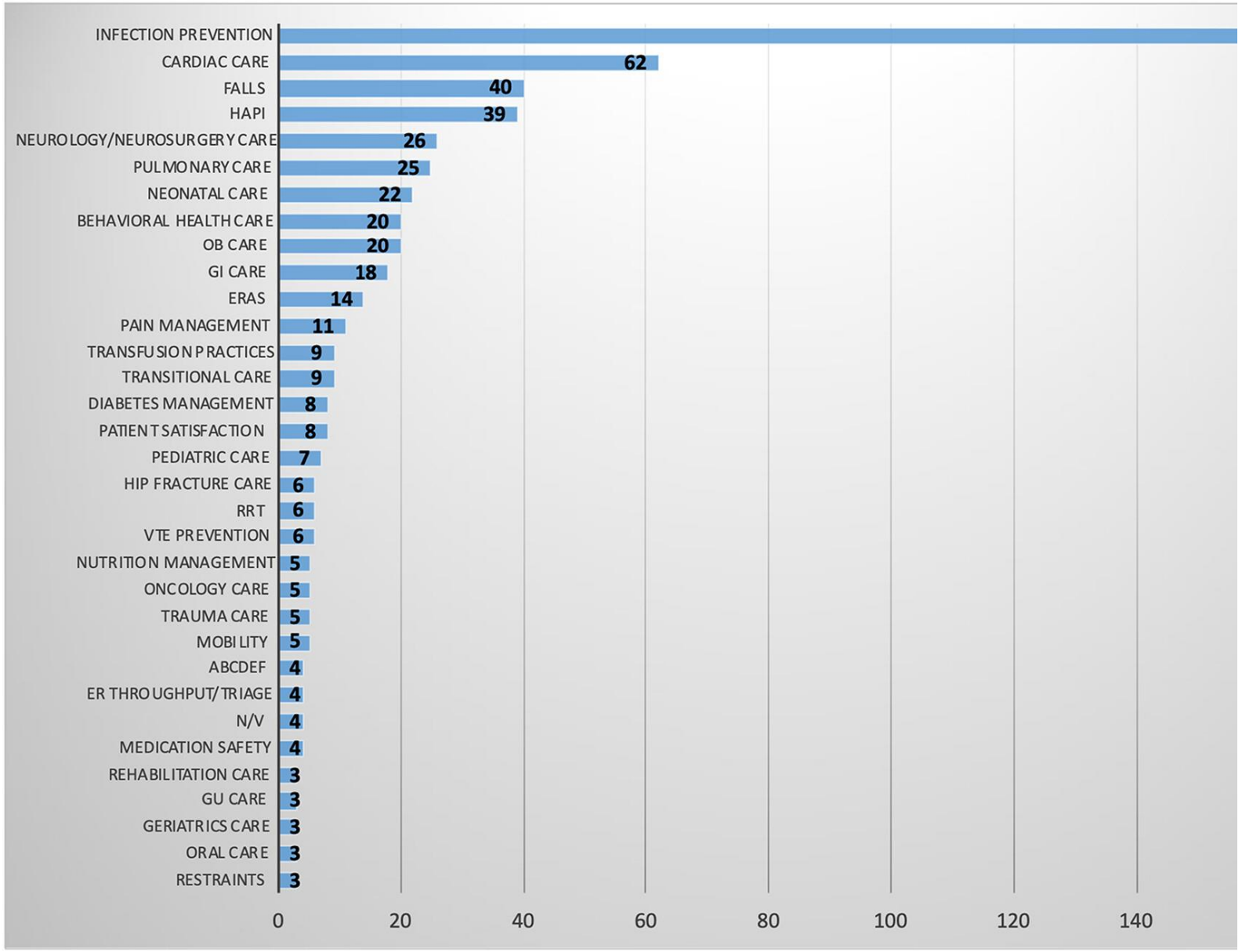
REVIEW ARTICLE

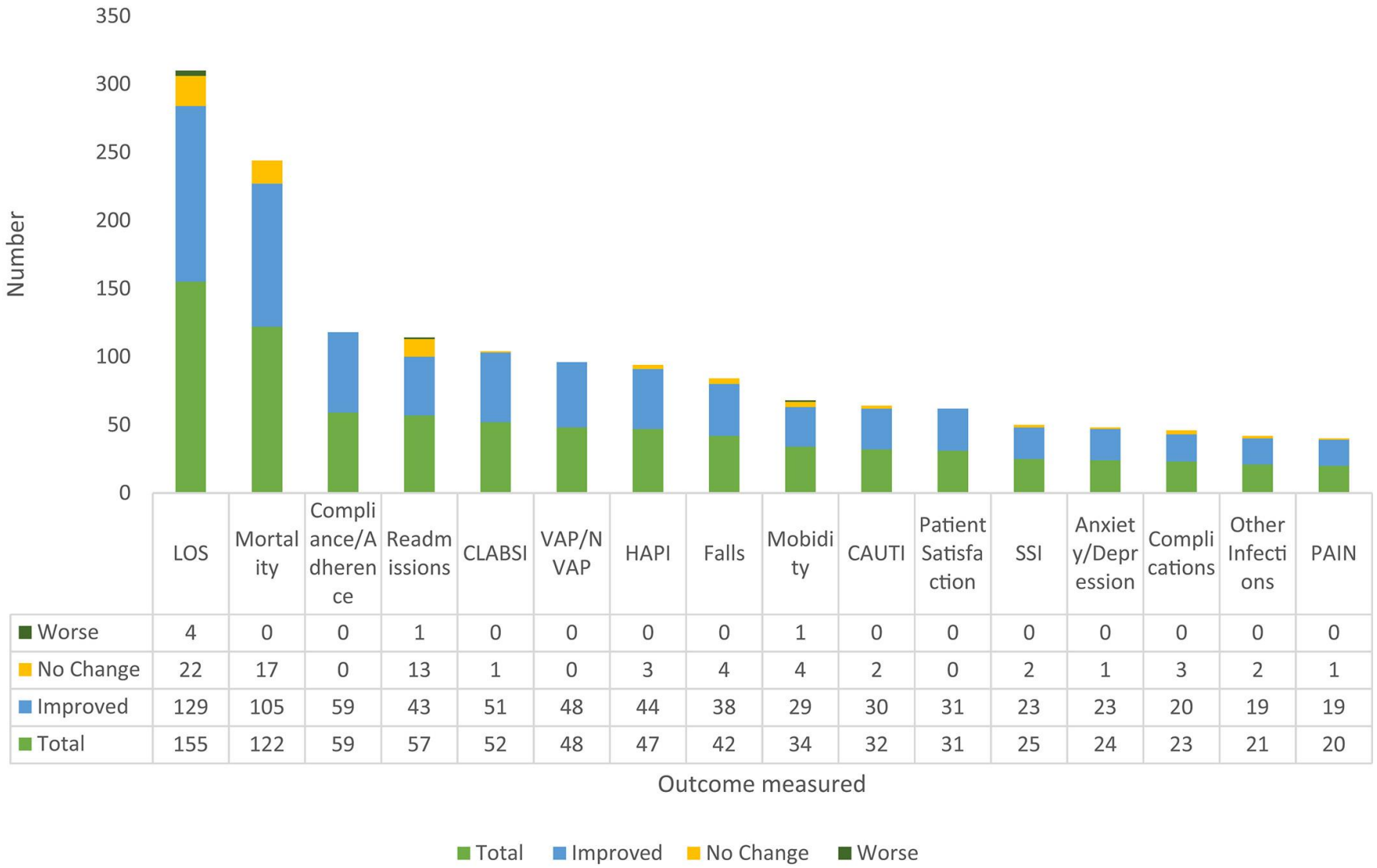
WORLDVIEWS ON EVIDENCE-BASED NURSING

# Evidence-based practice improves patient outcomes and healthcare system return on investment: Findings from a scoping review

Connor L, et al.. Evidence-based practice improves patient outcomes and healthcare system return on investment: Findings from a scoping review. Worldviews Evid Based Nurs. 2023 Feb;20(1):6-15. doi: 10.1111/wvn.12621. Epub 2023 Feb 8. PMID: 36751881.

# TYPES OF EBPS IMPLEMENTED: EBP DOMAINS






| | LOS | Mortality | Compliance/Adherence | Readmissions | CLABSI | VAP/NVAP | HAPI | Falls | Mobidity | CAUTI | Patient Satisfaction | SSI | Anxiety/Depression | Complications | Other Infections | PAIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worse | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No Change | 22 | 17 | 0 | 13 | 1 | 0 | 3 | 4 | 4 | 2 | 0 | 2 | 1 | 3 | 2 | 1 |
| Improved | 129 | 105 | 59 | 43 | 51 | 48 | 44 | 38 | 29 | 30 | 31 | 23 | 23 | 20 | 19 | 19 |
| Total | 155 | 122 | 59 | 57 | 52 | 48 | 47 | 42 | 34 | 32 | 31 | 25 | 24 | 23 | 21 | 20 |

# GAPS

No consistency in EBP approach/methodology

Lack of EBP work addressing important healthcare issues, such as obesity, oncology/cancer care, neonatal and child health, mental health, maternal health, and geriatric populations


# PICOT IS NOT EBP

- **P** – Patient, problem, or population
- **I** – Intervention (ALL possible interventions)
- **C** – Comparison, control, or comparator
- **O** – Outcome(s)

Identify the best available evidence for all possible solutions in the initial search –let the data tell you all the potential solutions

Intergrade best solution(s) with patient preference and clinician's expertise to clinical practice change

Schiavenato et al (2021). PICO: What it is and what it is not, Nurse Education in Practice, 56, 103194, https://doi.org/10.1016/j.nepr.2021.103194.

# HOW CAN WE FILL THE GAPS?

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# THANK YOU