

# INPLASY

## Advanced Wound Dressings for Diabetic Foot Ulcers: A Scoping Review of Global Evidence and Nursing Implications

INPLASY202630117

doi: 10.37766/inplasy2026.3.0117

Received: 31 March 2026

Published: 31 March 2026

### Corresponding author:

Asep Badrujamaludin

dru.stikesr@gmail.com

### Author Affiliation:

Department of Nursing, College of Medicine, National Cheng Kung University, Tainan, Taiwan.

Badrujamaludin, A; Lin, MF; Mudiyansele, SDK; Nurhadijah, S; Prasertsang, A.

### ADMINISTRATIVE INFORMATION

**Support** - NA.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202630117

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 March 2026 and was last updated on 31 March 2026.

### INTRODUCTION

**Review question / Objective** PCC Framework Population: Patient Type 2 Diabetes Mellitus Concept: Advance Wound Dressings Context: Diabetic Foot Ulcer (DFU).

The Objectives:

1. To explore existing on the types Advance Wound Dressings (AWDs)
2. To summarize the mechanisms of Advance Wound Dressings.

**Background** Diabetic foot ulcers (DFUs) are among the most serious complications of type 2 diabetes mellitus (T2DM), contributing significantly to morbidity, mortality, and healthcare costs worldwide. They are associated with impaired wound healing, recurrent infections, and a high risk

of lower-limb amputation, making DFUs a major public health concern (Zhang et al., 2018; Edmonds et al., 2018). Conventional wound care strategies, including saline irrigation and standard gauze dressings, often fail to address the complex pathophysiology of DFUs, which involves impaired angiogenesis, neuropathy, biofilm formation, and chronic inflammation (Ling et al., 2020).

In response, advanced wound dressings (AWDs) have been developed to provide targeted mechanisms such as moisture balance, antimicrobial activity, extracellular matrix (ECM) support, and bioactive growth factor delivery. Evidence suggests that hydrogels, amniotic-derived products, collagen-based dressings, and bioactive scaffolds can accelerate wound closure, reduce infection, and improve patient-centered outcomes compared to standard care (Hosseini et al., 2025; Tetelbach et al., 2019; Muhammed et al., 2022). Natural agents such as honey and neem

irrigation have also demonstrated antimicrobial and anti-inflammatory properties, offering cost-effective alternatives in resource-limited settings (Jayalakshmi et al., 2021; Kefani et al., 2018). Emerging innovations, including nano-functionalized scaffolds and acellular fish skin grafts, reflect a paradigm shift toward multifunctional and regenerative wound care technologies (Koolabadi et al., 2024; Zhao et al., 2023).

**Rationale** Despite these advances, the evidence base remains fragmented, with variability in study designs, outcome measures, and reporting standards. A scoping review is therefore warranted to systematically map the breadth of the available evidence, identify knowledge gaps, and inform nursing practice and policy development in DFU management.

## METHODS

**Strategy of data synthesis** A scoping review was conducted following Arksey and O'Malley's (2005) five-stage framework, refined by Levac et al. (2010). Searches were performed in October 2025 across Embase, MEDLINE, Cochrane Library, Web of Science, and CINAHL, limited to English-language studies published from January 2015 onward. Eligible studies included adults ( $\geq 18$  years) with type 2 diabetes and DFUs treated with AWDs. Data extraction was performed independently by three reviewers using a customized charting form. Thematic analysis was guided by Braun and Clarke (2022).

Searching Strategy:

Controlled Vocabulary used Emtree, MeSH and CINAHL

Population : Diabetes Mellitus Type 2, NIDDM, Non Insulin Dependent Diabetes Mellitus, Diabetes Mellitus, Type 2

Concept: Advance Wound Dressings (AWD)

Context: Foot Ulcer, Diabetic Ulcer.

**Eligibility criteria** Eligibility Criteria

Inclusion:

1. Adults aged  $> 18$  Years old, Type 2 DM
2. Advance Wound Dressings
3. Diabetic Foot Ulcers (DFU)
4. Type of Studies ; Quantitative, qualitative, mixed method study, Systematic Review
5. Language : English

Exclusion Criteria:

1. Type 1 DM
2. Preclinical/ Animal studies

3. Standard dressing

4. letter of editorials, commentaries, conference, abstracts.

## Source of evidence screening and selection

Searching Strategy:

Database

1. Embase : 1590

2. Medline: 1132

3. Cochrane: 379

4. WOS: 736

5. CINAHL: 1302

Total citations found: 5139

Study selection:

Two independent reviewers (AB & SN) screen all records based on the eligibility criteria.

Stage 1: Title and abstract screening [?] each reviewer has independently assessed the articles.

Any disagreement has discussed until a consensus is reached.

Stage 2: Full-text screening [?] review the full texts to determine final eligibility.

All references managed using EndNote software.

The selection process and number of included studies presented using a PRISMA flow diagram.

**Data management** Prisma Flow:

Identification :

1. Total articles from databases : 5139

2. Removed due to duplicate : 1599

Screening:

1. Record Screened : 3540

2. Excluded based on tittle and abstract : 3436

3. Report Sought for retrieval: 104

4. no full text : 4

5. Report assessments for eligibility: 100

6. Report excluded: In Vivo: 35; In Vitro: 20; study protocol: 10 and Not appropriate with outcome: 13

Included:

1. studies included in the review: 22.

**Reporting results / Analysis of the evidence** The data was charted on a table that outlines the author, year, country, study design, types, intervention, frequency, duration and outcomes. (Arksey & O'Malley, 2025).

**Presentation of the results** Twenty-two studies were included, spanning randomized controlled trials, clinical trials, quasi-experimental studies, case series, systematic reviews, and mechanistic analyses. Four dominant themes emerged: (1) Hydrogels and amniotic-derived products demonstrated the strongest evidence, consistently accelerating closure and sustaining healing. (2) Collagen and natural bioactive agents such as

---

honey, neem, and nitric oxide showed short-term efficacy, particularly in resource-limited settings. (3) Synthetic scaffolds and nanotechnology offered innovative solutions for chronic wounds, enhancing angiogenesis and antibacterial activity. (4) Adjunctive therapies including hyperbaric oxygen therapy and LeucoPatch reinforced multimodal approaches.

**Language restriction** only in English.

**Country(ies) involved** Indonesia, Taiwan, Sri Lanka, Thailand.

**Keywords** Diabetic foot ulcer; Advanced wound dressing; Hydrogels; Amniotic membrane; Collagen; Nanotechnology; Nursing practice; Scoping review.

**Dissemination plans** Planning to publish in International Journal and presentation in International conference and sharing with health care providers or clinicians.

#### **Contributions of each author**

Author 1 - Asep Badrujamaludin - Conceptualized the study, designed the scoping review protocol, coordinated the research team, and drafted the initial manuscript – original draft.

Email: [dru.stikesr@gmail.com](mailto:dru.stikesr@gmail.com)

Author 2 - Mei-Feng Lin - Provided methodological oversight, supervision, critical revisions, and Supervision – review & editing.

Author 3 - Sriyani Padmalatha Konara Mudiyansele - Performed full-text screening, validated eligibility decisions, and contributed to thematic coding, synthesis of findings and supervision – review & editing.

Author 4 - Sitti Nurhadijah - Led the systematic search strategy in collaboration with the librarian, conducted title/abstract screening, and contributed to data charting and extractions.

Author 5 - Areeya Prasertsang - Supported data extraction, developed figures and tables, and contributed to drafting the Results and Discussion sections.