International Journal of Public Health Science (IJPHS)
Vol. 15, No. 2, June 2026, pp. 573~582
ISSN: 2252-8806, DOI: 10.11591/ijphs.v15i2.27104

"Diabetic foot" in Oman: A systematic review and COM-B public health intervention framework

Saud Al Harthi[1], Thamra Al Ghafri[2], Nahal Afifi[3], Aisha Al Mehrazi[4]
[1]Al Nahdha Hospital, Directorate General of Khowla Hospital, Ministry of Health, Muscat, Oman
[2]Directorate General of Health Services, Ministry of Health, Muscat, Oman
[3]Hai Al Jamee Health Center, Directorate General of Health Services, Muscat, Oman
[4]Bousher Polyclinic, Directorate General of Health Services, Muscat, Oman

Article Info

Article history:

Received Apr 7, 2026
Revised Apr 25, 2026
Accepted May 22, 2026

Keywords:

Behaviour change
COM-B framework
Diabetic foot
Foot ulcer
Oman
Systematic review

ABSTRACT

Diabetic foot disease (DFD) is a preventable but rapidly growing complication of diabetes in Oman. The individual and societal consequences of DFD are catastrophic; however, best practices in its management remain underreported. This review aimed to identify, appraise, and synthesize the available evidence on DFD in Oman and to map findings onto the capability, opportunity, motivation, behaviour (COM-B) model to guide public health interventions. Five databases (PubMed, Scopus, Cochrane Library, WHO EMRO repository, Google Scholar) and two Omani journal archives were searched from inception to March 2026. Records were screened independently by two reviewers, and methodological quality was appraised using an adapted Newcastle-Ottawa scale. Findings were mapped deductively onto the six COM-B sub-domains and to the behaviour change wheel intervention functions. Ten publications met inclusion criteria. Diabetes related lower limb amputations account for 47% of all amputations nationally. Concurrent deficits were found across capability (55% lacked knowledge of DFD causes), opportunity (no multidisciplinary foot teams outside Muscat; 50 to 54% barefoot walking), and motivation (38% performed regular foot examination). Limitations include lack of interventional studies, urban concentration, and self-reported outcomes. Policy priorities are a national DFD registry, multidisciplinary foot care beyond Muscat, and integration of behaviour change techniques into primary care.

Corresponding Author:

Thamra Al Ghafri
Directorate General of Health Services, Ministry of Health
Muscat, Oman
Email: thamra74@yahoo.com

1. INTRODUCTION

Diabetic foot disease (DFD) is one of the most complex and economically burdensome complications of diabetes mellitus. It includes peripheral neuropathy, peripheral arterial disease, foot ulceration, soft tissue infection, osteomyelitis, and lower limb amputation (LLA) [1], [2]. Globally, a diabetic foot ulcer (DFU) develops in 15 to 25% of people with diabetes over their lifetime, and up to 85% of LLAs are preceded by a foot ulcer [3]-[6]. The five-year mortality after a major diabetic LLA is estimated at 40 to 70%, which exceeds that of several common cancers [7].

These outcomes are largely preventable through sustained patient self-care, timely clinical screening, and multidisciplinary management [8], [9]. Prevention therefore depends on the behaviour of both patients and health care providers, which makes DFD an appropriate target for behaviour change theory [10]. Oman faces

a rapidly expanding diabetes epidemic. National surveys report a type 2 diabetes mellitus (T2DM) prevalence of 10.4 to 21.1% in adults, and mathematical modelling projects a rise from about 190,489 Omanis with T2DM in 2020 to 570,227 by 2050, with diabetes related health expenditure rising by 36% over the same period [9], [11]. Within this context, Ministry of Health (MOH) data indicate that diabetes accounts for approximately 47% of all LLAs in Omani public hospitals [12], [13]. Earlier work by Al-Busaidi *et al.* [14], [15] and Ahmad [16] identified only two DFD-related publications from Oman in PubMed between 1991 and 2016, and a subsequent bibliometric analysis reported zero original DFD research from Oman in MEDLINE during 1990 to 2015. Primary research has since been conducted by Al-Sinani *et al.* [12] on tertiary diabetic complications, by Global Health Data Exchange (GBDE) [17], by Paton *et al.* [18], by Michie *et al.* [19]–[20] on the microbiology and antibiotic susceptibility of diabetic foot infection (DFI), and by Naguib *et al.* [21] and D'Souza *et al.* [22] on patient knowledge and foot care behaviour. Descriptive reviews by Al-Busaidi *et al.* [14], Al Wahaibi *et al.* [10], and a regional commentary by Al-Mahrizi and Nakhi [13] have summarised service gaps at the health system level [10], [13].

Despite this sporadic work, the Omani evidence base remains fragmented. Several gaps are unresolved, including the lack of a national DFD registry or population-level prevalence estimates. In addition, primary studies are geographically concentrated in Muscat and North Batinah, and no study reports rural or southern data. Moreover, no intervention study has been published so far, and the existing evidence has not been synthesised within a theoretical framework that links deficits to specific public health intervention functions at the patient, provider, and system levels.

The capability, opportunity, motivation, behaviour (COM-B) model developed by Michie *et al.* [19], [20] proposes that for any behaviour to occur, a person must possess capability (psychological and physical), opportunity (physical and social), and motivation (reflective and automatic). COM-B sits at the hub of the Behaviour Change Wheel, which maps specific intervention functions onto identified deficits [20]. The framework has been applied productively to diabetes self-management and foot self-management but has not been applied previously to the Omani DFD evidence base [13].

This review has two aims. The first is to systematically identify, critically appraise, and synthesise all available evidence on DFD in Oman. The second, which, to the best of our knowledge, has not been attempted before, is to map findings onto the COM-B framework to derive a theoretically grounded public health intervention matrix. Results from this systematic review will be synthesized to inform policies, research, and public health intervention priorities in the management of DFD in Oman.

2. METHOD

2.1. Study design

This review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement [23]. A narrative synthesis approach was adopted because the identified literature was heterogeneous in design and outcomes and did not permit quantitative pooling. Findings were subsequently mapped deductively onto the COM-B framework [19] and to the behaviour change wheel public health intervention functions [20], [24].

2.2. Review framework (PCC)

A population, concept, context (PCC) framework was used, which is the recommended structure for reviews of heterogeneous evidence that do not compare interventions. Population: adults aged 18 years or older with diabetes mellitus in Oman. Concept: any aspect of DFD, including ulceration, peripheral neuropathy, peripheral arterial disease, infection, osteomyelitis, LLA, foot care knowledge, beliefs and practices, and health system provision. Context: studies conducted in Oman or reporting Omani-specific data across community, primary care, and hospital settings.

Outcomes were grouped into five domains aligned with the research aims: i) epidemiological burden, ii) patient-level factors (knowledge, beliefs, and self-care practices), iii) clinical and microbiological findings (infection profile, antibiotic resistance, amputation), iv) health system capacity (podiatry, multidisciplinary teams, and registry); and v) behavioural determinants mapped onto the COM-B domains.

2.3. Search strategy

A comprehensive electronic search was conducted from inception to March 2026 across five databases (PubMed/MEDLINE, Scopus, Cochrane Library, WHO EMRO institutional repository, Google Scholar) and two Omani journal archives (Sultan Qaboos University Medical Journal and Oman Medical Journal). Backward citation searching of included articles was also performed. The following Boolean string was applied (adapted for each database): ("diabetic foot" OR "diabetic foot ulcer" OR "diabetic foot disease" OR "diabetic foot infection" OR "lower limb amputation" OR "peripheral neuropathy" OR "foot care") AND ("Oman" OR

"Omani" OR "Sultan Qaboos" OR "Gulf" OR "Middle East"). No language restriction was applied at identification. Only English-language full texts were retained for inclusion.

2.4. Screening in Rayyan

All records were imported into Rayyan (rayyan.ai) for deduplication and blinded title and abstract screening by two reviewers [25]. Conflicts were resolved by discussion and, where needed, by a third reviewer. Full-text assessment was also conducted in duplicate. The PRISMA 2020 flow diagram is presented in Figure 1.

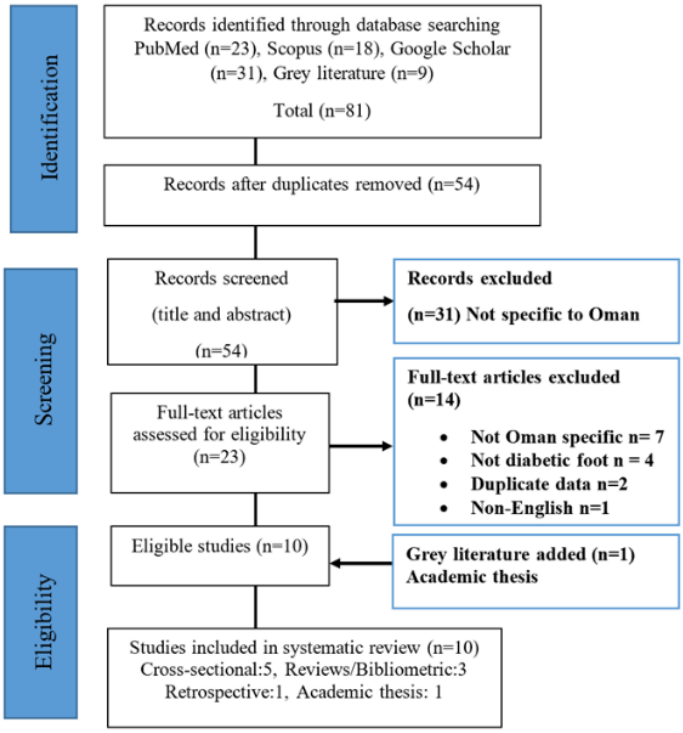

Figure 1. PRISMA 2020 flow diagram of the search and selection process

2.5. Eligibility criteria

Inclusion criteria were: i) Studies reporting primary data or systematic synthesis on any aspect of DFD in Oman; ii) Studies conducted in Oman or reporting Omani-specific data; iii) Any study design, including cross-sectional, cohort, case series, retrospective, systematic review, bibliometric analysis, narrative review, and academic thesis; and iv) Publications from inception to March 2026. Exclusion criteria were: studies not specific to Oman (for example, GCC pooled data without Omani strata), studies of diabetes complications other than DFD without foot-specific data, duplicate publications, non-English full texts, and conference abstracts without original data.

2.6. Data extraction

A standardised data extraction form was piloted on two studies and then applied in duplicate. Extracted variables included authors, year, journal or source, design and setting, sample size and sampling method, population characteristics (age, sex, diabetes type and duration), study objective, key outcomes with measures of effect (proportions, odds ratios, confidence intervals, and p-values), study limitations, and the COM-B sub-domain to which each finding was assigned. Discrepancies were resolved by consensus.

2.7. Quality assessment

Methodological quality of primary cross-sectional and retrospective studies was appraised using the Newcastle-Ottawa Scale (NOS) adapted for cross-sectional studies [26], [27]. The adapted tool evaluates three domains: Selection (maximum 3 stars), Comparability (maximum 2 stars), and Outcome (maximum 2 stars). Studies scoring 7 were rated "Very Good", 5 to 6 "Good", 3 to 4 "Satisfactory", and 0 to 2 "Unsatisfactory"

[28]. Reviews and bibliometric analyses were appraised descriptively by two reviewers for reporting transparency rather than being scored numerically.

2.8. COM-B mapping

Each finding was assigned to one of six COM-B sub-domains using operational definitions drawn from Michie *et al.* [19] and applied consistently with Timlin *et al.* [24] and Paton *et al.* [18]: i) Capability-psychological (knowledge, cognitive skills, health literacy); ii) Capability-physical (physical ability to perform the behaviour, for example sensation or dexterity); iii) Opportunity-physical (availability of services, equipment, and access); iv) Opportunity-social (cultural norms, social influences, traditional practices); motivation-reflective (beliefs, attitudes, conscious intentions); and v) Motivation-automatic (habits, emotional responses, ingrained behaviours).

2.9. Intervention function mapping

Behaviour Change Wheel intervention functions (education, persuasion, training, enablement, environmental restructuring, modelling, coercion, incentivisation, restriction) were linked to the identified COM-B deficits following the matrix published by Michie *et al.* [19], [20]. Policy categories (guidelines, regulation, service provision, communication) were mapped onto the selected intervention functions (Figure 2).

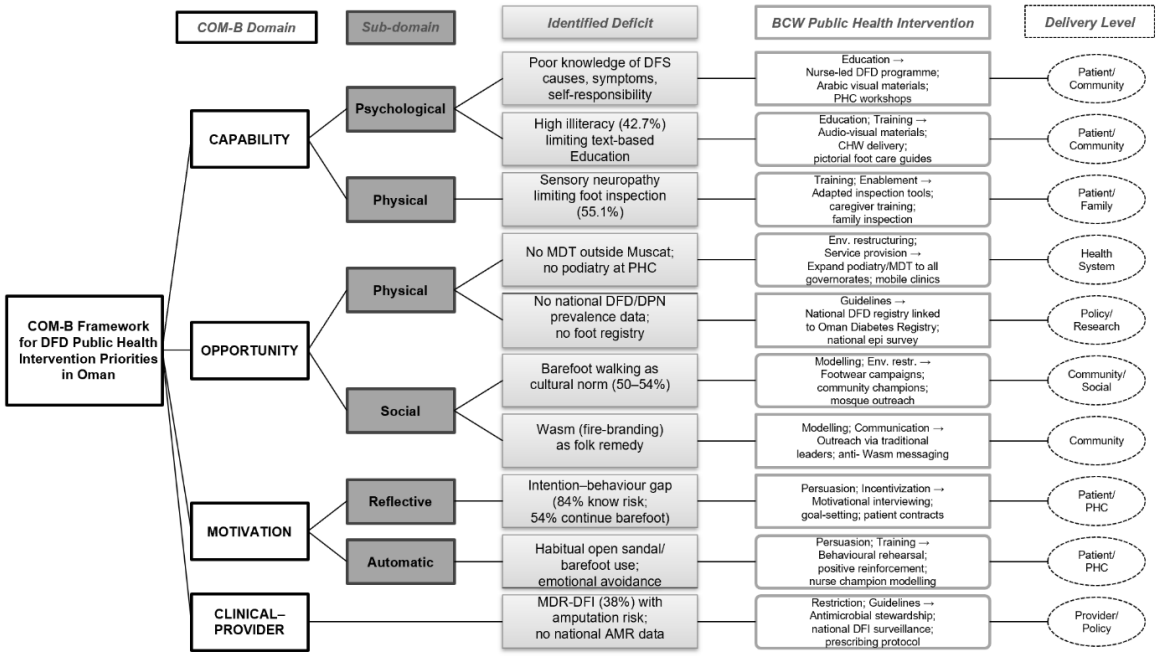

Figure 2. Mapping of Omani DFD evidence onto the COM-B public health intervention framework sub-domains and the behaviour change wheel intervention functions with delivery level

2.10. Data synthesis

Formal meta-analysis was not feasible given heterogeneity in study designs, populations, and outcomes. Findings are therefore reported as a narrative synthesis with percentages and, where available, odds ratios, 95% confidence intervals, and p-values reported verbatim from primary sources. A critical comparison with regional and global data is presented in section 3.5.

3. RESULTS AND DISCUSSION

3.1. Study selection and characteristics

The electronic search yielded 81 records: PubMed (n = 23), Scopus (n = 18), Google Scholar (n = 31), and grey literature (n = 9). After deduplication, 54 unique records remained. Title and abstract screening excluded 31 records that were not Omani-specific or did not address DFD. Full text review of 23 records excluded 13 articles (not Oman specific n = 7, not DFD n = 3, duplicate data n = 2, non-English n = 1). One additional record identified through grey literature was added, giving a final set of 10 publications (Figure 1).

The 10 included publications comprised five cross-sectional studies [12], [14], [21], [22], [29], and one academic thesis [30], one bibliometric analysis [15], one narrative review [10], one clinical commentary [31], and one descriptive review using MOH secondary data [32]. Primary studies were conducted in Muscat (n = 4) or in the North Batinah region (n = 1). No study reported data from other governorates. Sample sizes in primary studies ranged from 74 to 986 participants. The characteristics of the included studies are summarised in Table 1.

3.2. Methodological quality

No study achieved a "Very Good" rating. The most common deficits were convenience sampling without justification, absence of validated outcome instruments, and limited control for confounders (Table 1). The bibliometric analysis, the narrative review, and the clinical commentary were judged to be transparently reported but not graded numerically.

Table 1. Characteristics of included studies (n = 10)

Study [ref]	Design	Setting	n	Key outcomes	NOS
Al-Busaidi *et al.* [30]	Cross-sectional survey (thesis)	9 centres, Alseeb, Muscat	350	>55% sensory neuropathy; 54.7% did not inspect foot bottoms daily; 52.9% illiterate; foot care score linked with education level ($p < 0.05$).	2/7 Unsatisfactory
Al-Sinani *et al.* [12]	Retrospective cross-sectional	SQUH, Muscat	986	9% neuropathy, 2% PVD, 20% CAD; 9/20 PVD with DFD underwent amputation; HbA1c median 8.2%.	4/7 Satisfactory
Al-Busaidi *et al.* [14]	Narrative review using MOH data	National (2002-2013)	MOH aggregates	47.3% of all LLAs DM related (1,739/3,675); LLA 20-36/10,000 DM patients/year; 25 nurse-led clinics, 16 podiatrists nationally.	Descriptive
D'Souza *et al.* [22]	Cross-sectional	Public hospital, Muscat	140	15.7% DFU history; 53.6% barefoot walking; 82% "good" foot care behaviour; education predicted good behaviour ($p < 0.05$).	5/7 Good
Al-Busaidi *et al.* (2017) [31]	Commentary	National	N/A	Only 2 DFD articles from Oman in PubMed 1991-2016; no registry; Oman absent from international guidelines.	Descriptive
Al-Busaidi *et al.* [15]	Bibliometric analysis	MEDLINE 1990-2015	96 GCC articles	Zero Oman publications; 3 RCTs across GCC; Saudi Arabia dominant contributor.	Descriptive
Al-Busaidi *et al.* [32]	Cross-sectional survey	9 centres, Alseeb, Muscat	350	55.1% neuropathy; 49.1% PVD; 12.5% DFU; 54.7% did not examine foot bottoms daily; 72% did not wear socks.	4/7 Satisfactory
Naguib *et al.* [21]	Cross-sectional KBP	Muscat polyclinics	150	55.3% unaware of DFS causes; 50% unaware of symptoms; 38% regular foot check; 84% agreed barefoot walking is high risk yet 50-54% continued practice.	3/7 Unsatisfactory
Sannathimmappa *et al.* [29]	Retrospective microbiology	Sohar, N. Batinah	74 (233 isolates)	46% amputation; 38% MDR; MRSA 59%; ESBL 62%; MDR associated with amputation (OR 4.61, 95% CI 1.51-15.62, $p = 0.003$).	4/7 Satisfactory
Al Wahaibi *et al.* [10]	Narrative review	National	N/A	Cultural barefoot walking and Wasm are documented as risk factors; no national DFD registry.	Descriptive

DFD = diabetic foot disease; DFS = diabetic foot syndrome; DFI = diabetic foot infection; DFU = diabetic foot ulcer; LLA = lower limb amputation; MDR = multidrug resistant; MRSA = methicillin resistant Staphylococcus aureus; ESBL = extended-spectrum beta-lactamase; PVD = peripheral vascular disease; SQUH = Sultan Qaboos University Hospital; T2DM = type 2 diabetes mellitus; PHC = primary health centre; NOS = Newcastle-Ottawa Appraisal Scale.

3.3. Key findings by COM-B domain

The most consistent finding across primary studies was poor patient knowledge of diabetic foot care. In the study by Naguib *et al.* [21] 55.3% of patients did not know the causes of diabetic foot syndrome, 50% did not know its symptoms, and only 32.7% felt responsible for their own foot examination. Al-Busaidi *et al.* [14], [32], reported that fewer than half of surveyed patients had received foot care education, indicating capability-psychological deficits.

A capability-physical deficit was also evident within the study by Al-Busaidi *et al.* [32], where 55.1% of surveyed patients reported sensory peripheral neuropathy symptoms, which directly impair detection of foot injuries. Illiteracy was high (42.7% in Naguib *et al.*, 52.9% in Al-Busaidi), and higher education level was an independent predictor of good foot care behaviour in D'Souza *et al.* ($p < 0.05$) [21], [22], [30].

Opportunity-physical deficits were structural. As of 2013, only 25 nurse-led DFD clinics existed nationally, mostly in Muscat; there were 16 podiatrists in the public system (13 in Muscat) and no multidisciplinary DFD team outside Muscat [10], [14]. Opportunity-Social deficits included cultural barefoot walking (reported in 50 to 54% of patients across two independent studies) and the traditional practice of Wasm (fire branding) as a remedy for skin lesions [12], [21], [22], [29].

Motivational findings were paradoxical. In Naguib *et al*. [21], 84% of patients agreed that barefoot walking is a high-risk behaviour, yet 50 to 54% continued the practice, only 38% performed regular foot self-examination, and only 33.3% checked their blood glucose regularly. This pattern represents an intention-behaviour gap consistent with a motivation-automatic deficit [21], [22]. Habitual barefoot use and normalisation of inadequate foot care within family and community contexts are additional automatic motivational drivers.

At the clinical and provider level, Sannathimmappa *et al*. reported that 38% of diabetic foot infection isolates were multidrug resistant (MDR), with MRSA 59% of *S. aureus* isolates and ESBL-producing organisms 62% of MDR Gram negatives. MDR status was significantly associated with amputation (OR 4.611, 95% CI 1.511 to 15.62, p = 0.0025), and poor glycaemic control was associated with MDR (OR 4.625, p = 0.042) [29]. Key statistical findings across all included studies are summarised in Table 2.

Table 2. Key findings across included studies

Indicator	Finding	Source
Proportion of all LLAs attributable to diabetes	47.3% (2002-2013)	[14]
Annual DM related LLA incidence	20-36 per 10,000 DM patients	[14]
History of foot ulcer	12.5-15.7%	[22], [32]
Sensory neuropathy symptoms	55.1%	[32]
Did not know the causes of DFS	55.3%	[21]
Did not examine foot bottoms daily	54.7%	[32]
Barefoot walking	50-54%	[10], [22]
Regular foot examination	38%	[21]
MDR in DFI isolates	38%	[29]
MRSA among *S. aureus*	59%	[29]
MDR association with amputation	OR 4.61 (95% CI 1.51-15.62, p = 0.003)	[29]
Omani publications in MEDLINE 1990-2015	0	[15]

LLA = lower limb amputation; DM = Diabetes Miletus; DFS = diabetic foot syndrome; DFI = diabetic foot infection; MRSA = methicillin resistant, MDR = multidrug resistant

3.4. COM-B mapping of the evidence

Figure 2 displays the deductive mapping of all reported findings to the six COM-B sub-domains. It also presents the Behaviour Change Wheel public health intervention functions linked to each identified deficit. The mapping shows that the Omani DFD evidence converges on concurrent deficits across capability, opportunity, and motivation rather than on a single dominant driver.

3.5. Comparison with regional and global evidence

The Omani findings were benchmarked against published Saudi Arabian, UAE, broader GCC, and global estimates (Table 3). The proportion of LLAs attributable to diabetes in Oman (47%) is consistent with Saudi Arabia (45 to 52%) and the broader GCC region (40 to 55%) and within the global range of 40 to 70% [33], [34] Patient knowledge deficits in Oman (50 to 55%) are comparable to Saudi Arabia (about 62%) and GCC averages (about 60%), placing all three within the 60 to 80% range reported for lower and middle income countries [6]. Barefoot walking is notably higher in Oman (50 to 54%) than in Saudi Arabia (about 35%) or the UAE and GCC (about 40%), a difference attributable to Oman-specific footwear norms [10]. The MDR rate in DFI in Oman (38%) exceeds the Saudi Arabian range (28 to 35%), and the GCC average (about 30%), and the MRSA rate (59%) approaches the upper bound of regional estimates [35].

Table 3. Comparison of Oman-specific DFD indicators with regional and global estimates

Indicator	Oman	Saudi Arabia	UAE/GCC average	Global
DM-attributable LLA	47% [14]	45-52% [33]	40-55% [33]	40-70% [7]
Patient knowledge deficit	50-55% [21]	~62% [34]	~60% [33]	60-80% [6]
Barefoot walking	50-54% [10], [22]	~35% [34]	~40% [33]	Context specific
MDR in DFI	38% [29]	28-35% [35]	~30% [35]	Variable
MRSA in DFI	59% [29]	30-55% [35]	35-50% [35]	20-45% [2]

3.6. Synthesised intervention matrix

The simultaneous presence of deficits across all three COM-B domains indicates that single-component interventions are unlikely to be sufficient. Evidence based and theoretically grounded public health intervention components are: i) For capability-psychological, structured diabetes foot education delivered in primary care, literacy adapted visual and audio materials, and community health educator training; ii) For capability-physical, adapted inspection tools (mirrors, family assisted inspection protocols) for patients with neuropathy; iii) For opportunity-physical, expansion of multidisciplinary foot teams beyond Muscat, podiatry posts in primary health centres, and a national DFD registry; iv) For opportunity-social, culturally sensitive footwear campaigns co-designed with community leaders and explicit messaging against wasm; v) For motivation-reflective, motivational interviewing and goal setting integrated into routine diabetes visits; and vi) For motivation-automatic, peer champions, modelling, and behavioural rehearsal.

3.7. Implications for public health policy and practice

Six policy directions were derived from this synthesis. First, a national DFD registry is needed to permit population-level surveillance and to inform resource allocation. Second, multidisciplinary foot teams should be established in every governorate, not only in Muscat. Third, a culturally adapted health literacy package (visual and audio materials in Arabic, co-designed with patients) should be integrated into primary care. Fourth, behaviour change techniques, including motivational interviewing and goal setting, should be embedded in the training of primary care diabetes educators. Fifth, a national antimicrobial stewardship programme for diabetic foot infection, with protocols calibrated to local resistance patterns, should be developed, given the high MDR and MRSA rates documented in Oman. Sixth, the 25 existing nurse-led DFD clinics should be formally evaluated, and the model expanded where shown to be effective.

3.8. Implications for future clinical and public health research

Priority research questions are listed in Table 4. These include a nationally representative prevalence survey of DFU and diabetic peripheral neuropathy, a multi-centre prospective cohort of DFU outcomes, a randomised trial of a COM-B-designed foot care education package, a multi-centre antimicrobial surveillance study, a qualitative study of patient and provider barriers, a mixed-methods evaluation of the 25 nurse-led clinics, and a cost of illness analysis to quantify the economic burden.

Table 4. Recommended research and policy priorities for DFD in Oman, mapped to COM-B domains

Priority	Recommended study design	COM-B domain	Rationale
National DFU and DPN prevalence	Multi-governorate cross-sectional	Opportunity-physical	No national prevalence estimate exists; a foundation for planning.
Multicentre DFU outcomes cohort	Prospective cohort	All domains	No outcome data beyond a single retrospective series.
Structured COM-B foot-care education	RCT with active control	Capability (psychological and physical)	No behaviour-change informed intervention trial from Oman.
National DFI antimicrobial surveillance	Multicentre retrospective and prospective	Clinical/provider capability	Single-centre Sohar data are not nationally generalisable.
Patient and provider barrier qualitative study	Phenomenological or grounded theory	All COM-B domains	Cultural and structural barriers incompletely understood.
Nurse-led DFD clinic evaluation	Mixed methods programme evaluation	Opportunity-physical	25 clinics since 2013 with no published outcomes.
Cost-of-illness analysis	Health economics modelling	Policy level	No Omani economic burden data.

3.9. Strengths and limitations of this review

Strengths include the first to use deductive application of the COM-B framework to the Omani DFD evidence base to inform public health interventions that can be utilized as a road map for diabetic foot care in Oman. Additionally, this review integrated explicit methodological quality assessment and highlighted future research priorities. Limitations include: i) The small size and limited methodological quality of the primary evidence; ii) Geographic concentration of studies in Muscat and North Batinah; iii) Cross-sectional designs that preclude causal inference; iv) Predominantly self-reported outcomes without clinical validation; and v) Restriction to English-language publications, which may have excluded Arabic-language grey literature.

4. CONCLUSION

This systematic review is the first to apply the COM-B framework to the Omani DFD evidence base to guide public health interventions at the national and regional levels. The ten eligible studies, although limited in methodological quality and geographic coverage, converge on a coherent pattern of concurrent

deficits across capability, opportunity, and motivation. Diabetes related lower limb amputations account for approximately 47% of all amputations in Oman; multidrug-resistant organisms are significantly associated with amputation, and cultural practices such as barefoot walking persist despite patient awareness of the risk. Effective prevention of DFD in Oman will require a multi-component, theoretically grounded strategy that simultaneously addresses patient knowledge and self-care ability, health system capacity outside Muscat, and the social and habitual drivers of foot behaviour. Four concrete public health priorities are proposed: establish a national DFD registry, expand multidisciplinary foot teams to every governorate, integrate culturally adapted health literacy and behaviour change techniques into primary care, and evaluate and scale up nurse-led DFD clinics.

ACKNOWLEDGMENTS

The authors would like to thank all the diabetic foot nurses for their constant care for patients with diabetes in primary health care.

FUNDING INFORMATION

No funding was received for this review.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Saud Al Harthi	✓	✓			✓	✓		✓	✓	✓		✓	✓	
Thamra Al Ghafri	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		
Nahal Afifi	✓		✓	✓			✓			✓	✓		✓	
Aisha Al Mehrazi		✓					✓			✓			✓	

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

INFORMED CONSENT

Informed consent was not required because no primary patient data were collected.

ETHICAL APPROVAL

Ethical approval was not required because no primary patient data were collected.

DATA AVAILABILITY

The data that support the findings of this study are available on request from the corresponding author, [TA].

REFERENCES

[1] A. J. Boulton, L. Vileikyte, G. Ragnarson-Tennvall, and J. Apelqvist, "The global burden of diabetic foot disease," *Lancet*, vol. 366, no. 9498, pp. 1719–1724, Nov. 2005, doi: 10.1016/S0140-6736(05)67698-2.

[2] B. A. Lipsky *et al.*, "Guidelines on the diagnosis and treatment of foot infection in persons with diabetes (IWGDF 2019 update)," *Diabetes/Metabolism Research and Reviews*, vol. 36, no. S1, p. e3280, Mar. 2020, doi: 10.1002/dmrr.3280.

[3] N. Jakosz, "Book review – IWGDF Guidelines on the Prevention and Management of Diabetic Foot Disease," *Wound Practice and Research*, vol. 27, no. 3. p. 144, 2019. doi: 10.33235/wpr.27.3.144.

[4] T. C. Bodibe, N. M. Masemola, and J. C. Meyer, "Diabetic foot care," in *SA Pharmaceutical Journal*, vol. 86, no. 6, Treasure Island (FL): StatPearls Publishing, 2019, pp. 17–24,. doi: 10.1097/00000446-196912000-00052.
[5] I. D. Federation, "IDF Diabetes Atlas 2021 _ IDF Diabetes Atlas," *IDF official website*. p. undefined-undefined, 2021. [Online]. Available: https://www.mendeley.com/catalogue/030bcf49-6689-32b7-b83d-d9f3b1f8898f/?utm_source=desktop&utm_medium=1.19.8&utm_campaign=open_catalog&userDocumentId=%7B7cd9d1e5-1fc8-4381-b280-1c3093c13125%7D%0Ahttp://files/1761/030bcf49-6689-32b7-b83d-d9f3b1f8898f.html
[6] D. G. Armstrong, A. J. M. Boulton, and S. A. Bus, "Diabetic Foot ulcers and their recurrence," *New England Journal of Medicine*, vol. 376, no. 24, pp. 2367–2375, Jun. 2017, doi: 10.1056/nejmra1615439.
[7] P. K. Moulik, R. Mtonga, and G. V. Gill, "Amputation and mortality in new-onset diabetic foot ulcers stratified by etiology," *Diabetes Care*, vol. 26, no. 2, pp. 491–494, Feb. 2003, doi: 10.2337/diacare.26.2.491.
[8] S. A. Bus *et al.*, "Guidelines on the prevention of foot ulcers in persons with diabetes (IWGDF 2019 update)," *Diabetes/Metabolism Research and Reviews*, vol. 36, no. S1, p. e3269, Mar. 2020, doi: 10.1002/dmrr.3269.
[9] I. D. Federation, "Diabetes country report 2000 - 2050," *IDF Diabetes Atlas*. 2025.
[10] K. Al Wahaibi, E. Stephen, and D. H. Hazra, "Challenges in diabetic foot management: A glimpse at the pathology its burden, innovations, and the way forward," *Oman Medical Journal*, 2026, doi: 10.5001/omj.2028.38.
[11] S. F. Awad, A. Al-Mawali, J. A. Al-Lawati, M. Morsi, J. A. Critchley, and L. J. Abu-Raddad, "Forecasting the type 2 diabetes mellitus epidemic and the role of key risk factors in Oman up to 2050: Mathematical modeling analyses," *Journal of Diabetes Investigation*, vol. 12, no. 7, pp. 1162–1174, Jul. 2021, doi: 10.1111/jdi.13452.
[12] S. Al-Sinani *et al.*, "Complications and associated conditions among Omani type 2 diabetes patients at Sultan Qaboos University Hospital, Muscat, Oman," *Journal of Family Medicine*, vol. 1, no. 3, pp. 6–12, 2014.
[13] M. Al-Mahrizi and M. Nakhi, "Unmet needs in managing diabetic foot and it's complications: recommendations for the gulf region," *Woundsinternational.Com*2024 .. [Online]. Available: https://woundsinternational.com/uncategorised/unmet-needs-in-managing-diabetic-foot-and-its-complications-recommendations-for-the-gulf-region/
[14] I. S. Al-Busaidi, N. N. Abdulhadi, and K. J. Coppell, "Care of patients with diabetic foot disease in Oman," *Sultan Qaboos University Medical Journal*, vol. 16, no. 3, pp. e270–e276, Aug. 2016, doi: 10.18295/squmj.2016.16.03.002.
[15] I. S. Al-Busaidi, N. N. Abdulhadi, and K. J. Coppell, "Diabetic foot disease research in gulf cooperation council countries: A bibliometric analysis," *Sultan Qaboos University Medical Journal*, vol. 18, no. 3, pp. e338–e343, Dec. 2018, doi: 10.18295/squmj.2018.18.03.012.
[16] J. Ahmad, "The diabetic foot," in *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, vol. 10, no. 1, R. W. Whitehouse, Ed., South Dartmouth (MA): MDText.com, Inc, 2016, pp. 48–60, doi: 10.1016/j.dsx.2015.04.002.
[17] Global Health Data Exchange (GBDE), "Global burden of disease study 2017 (GBDE 2017)," *Lancet*, vol. 392, no. 10159. pp. 1–27, 2020, doi:10.1016/S0140-6736(18)32335-3
[18] J. Paton, S. Abey, P. Hendy, J. Williams, R. Collings, and L. Callaghan, "Behaviour change approaches for individuals with diabetes to improve foot self-management: a scoping review," *Journal of Foot and Ankle Research*, vol. 14, no. 1, p. 1, Jan. 2021, doi: 10.1186/s13047-020-00440-w.
[19] S. Michie, M. M. van Stralen, and R. West, "The Behaviour Change Wheel: A new method for characterising and designing behaviour change interventions," *Implementation Science*, vol. 6, no. 1, p. 42, Dec. 2011, doi: 10.1186/1748-5908-6-42.
[20] S. Michie, L. Atkins, and R. West, *The Behaviour Change Wheel: A Guide to Designing Interventions*. 2014.
[21] H. Naguib, S. Raman, A. Pinto, A. Al Mehrezi, and A. Al Hinaii, "Knowledge, beliefs, and practices of people with Type 2 diabetes toward self-management and diabetic foot," *Journal of Diabetes and Endocrine Practice*, vol. 04, no. 03, pp. 120–124, Sep. 2021, doi: 10.4103/jdep.jdep_26_21.
[22] M. S. D'Souza *et al.*, "Foot care behaviors among adults with type 2 diabetes," *Primary Care Diabetes*, vol. 10, no. 6, pp. 442–451, Dec. 2016, doi: 10.1016/j.pcd.2016.04.002.
[23] M. J. Page *et al.*, "The PRISMA 2020 statement: An updated guideline for reporting systematic reviews," *Bmj*, vol. 372, p. n71, Mar. 2021, doi: 10.1136/bmj.n71.
[24] D. Timlin, J. M. McCormack, and E. E. A. Simpson, "Using the COM-B model to identify barriers and facilitators towards adoption of a diet associated with cognitive function (MIND diet)," *Public Health Nutrition*, vol. 24, no. 7, pp. 1657–1670, May 2021, doi: 10.1017/S1368980020001445.
[25] M. Ouzzani, H. Hammady, Z. Fedorowicz, and A. Elmagarmid, "Rayyan-a web and mobile app for systematic reviews," *Systematic Reviews*, vol. 5, no. 1, p. 210, Dec. 2016, doi: 10.1186/s13643-016-0384-4.
[26] P. A. Modesti *et al.*, "Panethnic differences in blood pressure in Europe: A systematic review and meta-analysis," *Plos One*, vol. 11, no. 1, p. e0147601, Jan. 2016, doi: 10.1371/journal.pone.0147601.
[27] E. Gualdi-Russo and L. Zaccagni, "The Newcastle–Ottawa Scale for Assessing the Quality of Studies in Systematic Reviews," *Publications*, vol. 14, no. 1, p. 4, Jan. 2026, doi: 10.3390/publications14010004.
[28] T. Nyawo, "Newcastle-Ottawa Scale adapted for cross-sectional studies Selection." 2022.
[29] M. B. Sannathimmappa *et al.*, "Diabetic foot infections: Profile and antibiotic susceptibility patterns of bacterial isolates in a tertiary care hospital of Oman," *Journal of Education and Health Promotion*, vol. 10, no. 7, Jul. 2021, doi: 10.4103/jehp.jehp_1552_20.
[30] I. S. Al-Busaidi, "Quality of diabetic foot care in Oman," University of Otago,New Zealand, 2014. doi: 2013.
[31] I. S. Al-Busaidi, "Diabetic foot disease in Oman: A call for more research," *Oman Medical Journal*, vol. 32, no. 4, pp. 354–355, Jul. 2017, doi: 10.5001/omj.2017.68.
[32] I. S. Al-Busaidi, N. N. Abdulhadi, and K. J. Coppell, "Development and pilot testing of a diabetes foot care and complications questionnaire for adults with diabetes in Oman: The diabetic foot diseasand foot care questionnaire," *Oman Medical Journal*, vol. 35, no. 4, pp. 1–8, Jul. 2020, doi: 10.5001/omj.2020.65.
[33] F. Bandarian, M. Qorbani, E. Nasli-Esfahani, M. Sanjari, C. Rambod, and B. Larijani, "Epidemiology of diabetes foot amputation and its risk factors in the middle east region: a systematic review and meta-analysis," *International Journal of Lower Extremity Wounds*, vol. 24, no. 1, pp. 31–40, Mar. 2025, doi: 10.1177/15347346221109057.
[34] F. K. Alanazi, J. S. Alotaibi, P. Paliadelis, N. Alqarawi, A. Alsharari, and B. Albagawi, "Knowledge and awareness of diabetes mellitus and its risk factors in Saudi Arabia," *Saudi Medical Journal*, vol. 39, no. 10, pp. 981–989, Oct. 2018, doi: 10.15537/smj.2018.10.22938.
[35] K. B. Hobizal and D. K. Wukich, "Diabetic foot infections: Current concept review," *Diabetic Foot and Ankle*, vol. 3, no. 1, pp. 1–8, Jan. 2012, doi: 10.3402/dfa.v3i0.18409.

BIOGRAPHIES OF AUTHORS

Saud Al Harthi is a Senior Consultant in Endocrinology. He has served in several leading clinical endocrine projects and has a great interest in the management of diabetic foot disease in Oman. He is a board member in the Gulf Diabetic Foot Working Group, where his role extends to research and innovation. He can be contacted at email: smsbar07@gmail.com.

Thamra Al Ghafri is a public health researcher and clinical educator at the Ministry of Health, Muscat, Oman. Her research interests include epidemiology of non-communicable diseases, diabetes and its complications, behaviour change interventions, and systematic review methodology. She has published extensively on diabetes care, breast cancer screening, and public health national priorities. She can be contacted at email: thamra74@yahoo.com.

Dr. Nahal Afifi is a highly accomplished Senior Specialist Family Physician with international qualifications and over a decade of leadership in elderly care, community health, and professional training. She combines clinical excellence with a strong passion for education as a Master Trainer, AHA Instructor, and ACLS faculty member in DGHS Muscat Governorate, while leading impactful programs, organizing workshops and community events, reflecting a career defined by leadership, education, and patient-centered care. She can be contacted at email: nohamajd06@gmail.com.

Aisha Al Mehrazi is a senior diabetic foot nurse in Oman and a certified national trainer. She has been very active in capacity building activities and awareness campaigns related to the prevention and control of diabetic foot disease in Oman. She can be contacted at email: umraid75@yahoo.com.