Article Title: Identifying the Quantity and Assessing the Quality of Clinical Practice Guidelines for the Treatment and Management of Type 2 Diabetes: A Systematic Review

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Abstract

Aims: Type 2 diabetes (T2D) is a condition where the body becomes insulin resistant and cannot use insulin made by the pancreas or is relatively insulin deficient causing high blood glucose levels. Assessing the quality of clinical practice guidelines (CPGs) for T2D is important to identify knowledge gaps and where improvements can be made. The purpose of this review was to identify the quantity and assess the quality of CPGs for the treatment and/or management of T2D.

Methods: A systematic review was conducted to identify T2D CPGs. MEDLINE, EMBASE, CINAHL and GIN were searched from 2008 to 2018. Eligible guidelines published on the treatment and/or management of T2D were assessed with the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument.

Results: Seventeen CPGs were found to be eligible. Scaled domain percentages (highest to lowest) were: clarity of presentation (81.2%), scope and purpose (77.1%), stakeholder involvement (52.8%), applicability (42.9%), rigour of development (41.5%), and editorial independence (35.1%).

Conclusions: CPGs that achieved higher AGREE II scores and favourable overall recommendations could be used by healthcare providers to facilitate informed discussions surrounding T2D therapies. CPGs that received lower scaled domain percentages or overall recommendations could be improved by using the AGREE II instrument.

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Abbreviations

T2D: Type 2 diabetes

CPG: clinical practice guideline

AGREE II: Appraisal of Guidelines for Research & Evaluation II

PICO: Patients, Intervention, Comparison and Outcomes

1. Introduction

Diabetes is a condition whereby the body is not able to either produce or use the hormone insulin which helps regulate blood sugar [1]. The most common form is type 2, affecting 90% of those with diabetes [2]. This type is commonly developed in adulthood and occurs when the body is insulin resistant or insulin deficient resulting in high blood glucose levels; screening involves testing fasting plasma glucose [1], [2], [3]. Diabetes research is of great importance, given that as of 2019 approximately 463 million adults live with this condition worldwide, with the proportion of people with type 2 diabetes specifically increasing in most countries [4], [5]. The most common pharmaceutical treatments for type 2 diabetes include the oral drug metformin, which helps the body use its own insulin more effectively, and sulfonylureas, which stimulates the pancreas to produce more insulin [3]. The most promising methods of managing type 2 diabetes include lifestyle management such as monitoring diet, exercise, maintaining healthy body weight, and smoking cessation [3]. Over time, oral medications or insulin administration can also be beneficial if needed [3].

Diabetes can result in serious complications if poorly managed. A common short-term complication of type 2 diabetes is hypoglycaemia, which results from poor management of the condition or taking too much insulin [6]. Longer term complications include neuropathy or poor circulation in the feet, which can cause weakness, numbness, and tingling. These problems can result in amputation of the lower extremities due to peripheral arterial disease which can ultimately negatively affect a patient's quality of life and warrant the need for special accommodations [7], [8]. The risk of being diagnosed with other pancreatitis and pancreatic cancer, both approximately double in patients with type 2 diabetes [6]. Conditions

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connected to diabetes including, insulin resistance, inflammation, and high blood sugar all contribute to the development of pancreatic cancer [6]. Diabetes also alters kidney function from high blood sugar levels, resulting in kidney disease which can cause loss of sleep, poor appetite, upset stomach, weakness, difficulty concentrating, and eventually kidney failure if left untreated [8]. Other complications often associated with diabetes are high blood pressure, stroke, diabetic retinopathy, and depression [8], [9].

Given that diabetes is a complex condition associated with many possible comorbidities, it is important for clinicians to be well informed when making decisions surrounding the treatment and management of each patient. Clinical practice guidelines (CPGs) provide evidence-based recommendations to support informed decision making surrounding a disease or condition, with diabetes being no exception [10]. Only a few studies have assessed the quality of type 2 diabetes CPGs and have not been comprehensive, only assessing CPGs published over a short timeframe or searched unsystematically [11], [12], [13]. Thus, the purpose of this study is to systematically review the guidelines literature to identify the quantity and assess the quality of CPGs for the treatment and/or management of type 2 diabetes.

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2. Method and materials

2.1. Approach

A systematic review was conducted to identify CPGs for the treatment and/or management of type 2 diabetes using standard methods [14] and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria [15]. A protocol was registered with PROSPERO, registration number CRD42019132458. Eligible guidelines were assessed with the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument [16].

AGREE II is commonly used to appraise the quality of CPGs and has been validated; it consists of 23 items comprised of 6 domains, as follows: scope and purpose; stakeholder involvement; rigor of development; clarity and presentation; applicability; and editorial independence.

2.2. Eligibility criteria

Eligibility criteria for type 2 diabetes CPGs were based on the Population, Intervention, Comparison and Outcomes (PICO) framework. Eligible populations were adults aged 19 years and older and diagnosed with type 2 diabetes. Regarding interventions, we only included guidelines that provided recommendations for the treatment and/or management of type 2 diabetes in order to determine the types, quantity and quality of recommended therapies. Comparisons pertained to the assessed quality of type 2 diabetes guidelines. Outcomes were AGREE II scores which reflect guideline content and format. Additionally, the following criteria were applied to define eligible guidelines: developed by organizations including academic institutions, government agencies, disease-specific foundations, or professional associations or societies; published in 2008 or later, which provides a decade-long window into type 2 diabetes guidelines, and at least five years since the publication of the original AGREE instrument, providing developers with criteria for developing high-quality guidelines; published in the English language; and either publicly available or orderable through our library system. Publications in the form of consensus statements, protocols, abstracts, conference proceedings, letters or editorials; based on primary studies that evaluated type 2 diabetes management or treatment; or focused on type 2 diabetes curriculum, education, training, research, professional certification or performance were deemed ineligible.

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2.3. Searching and screening

MEDLINE and EMBASE were searched on January 12, 2019 and CINAHL was searched on January 16, 2019, all from 2008 to January 11, 2019 inclusive. The search strategy (Supplementary File 1) included indexed headings and keywords that reflect terms commonly used in the literature to refer to type 2 diabetes. We also searched the Guidelines International Network, a repository of guidelines [https://www.g-i-n.net/] using keyword searches restricted based on the eligibility criteria including "diabetes". KDV and another research assistant screened titles and abstracts from all other sources. KDV and the other research assistant screened full-text items to confirm eligibility. JYN reviewed the screened titles and abstracts and full-text items to standardize screening and helped to discuss and resolve any discrepancies between the two screeners.

2.4. Data extraction and analysis

The following data were extracted from each guideline and summarized: date of publication, country of the guideline, and type of organization that published the guideline (academic institutions, government agencies, disease-specific foundations, or professional associations or societies). Most data were available in the guideline. The website of each developer was accessed and searched for any associated knowledge-based resources in support of implementation, to assess items in the applicability domain.

2.5. Guideline quality assessment

The extraction and analysis of data from eligible guidelines followed standardized methods for applying the AGREE II instrument [15]. First, a pilot test of the AGREE II instrument was conducted with three separate guidelines during which JYN, KDV, and the other research assistant each independently assessed them with the AGREE II instrument. Discrepancies were discussed and resolved. KDV and the other research assistant then

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independently assessed all eligible guidelines for the 23 items across the 6 domains using a seven-point Likert scale (whereby a "1" represents strongly disagree, and "7" represents strongly agree that the item is met); rated the overall quality of each guideline (also from 1 to 7); and used the scores to recommend for or against the use of each guideline. JYN mediated any discrepancies and resolved any differences. Average appraisal scores were calculated by taking the average rating for all 23 items of a single appraiser of a single guideline, followed by taking the average of this value for both appraisers. Average overall assessments were calculated as the average of both appraisers' "overall guideline assessment" scores for each guideline. Scaled domain percentages were generated for inter-domain comparison and were calculated by adding both appraisers' ratings of items within each domain, and scaling by maximum and minimum possible domain scores, before converting this into a percentage. Average appraisal scores, average overall assessments and scaled domain percentages for each guideline were tabulated for comparison.

3. Results

3.1. Search results (Fig. 1)

Searches retrieved 2467 items, 2218 were unique, and 2178 titles and abstracts were eliminated, leaving 40 full-text articles that were considered. Of those, 23 were not eligible, because they were not focused on treatment or management of type 2 diabetes (n = 6), they were guideline summaries (n = 5), they were not CPGs (n = 5), they were not full guidelines (n = 3), they could not be retrieved (n = 2), a newer guideline was available (n = 1), or the guideline was not in English (n = 1), leaving 17 guidelines eligible for review.

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3.2. Guideline characteristics (Table 1)

Eligible guidelines were published from 2009 to 2018 in the following countries: the United States (n = 3), the United Kingdom (n = 2), Canada (n = 2), Columbia (n = 1), East Africa (country unspecified, n = 1), Germany (n = 1), India (n = 1), Japan (n = 1), Malaysia (n = 1), the Netherlands (n = 1), Pakistan (n = 1), Poland (n = 1), and Qatar (n = 1) [17], [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29], [30], [31], [32], [33]. The guidelines were funded and/or developed by professional associations or societies (n = 16) and an international agency (n = 1). Recommendations made by these guidelines included: pharmaceutical therapies (n = 17), nutritional interventions (n = 13), physical activity (n = 13), psychological management (n = 7), surgeries (n = 5), and complementary and alternative medicine (n = 2).

3.3. Average appraisal scores, average overall assessments and recommendations regarding use of guidelines

Average appraisal scores and average overall assessments for each guideline are shown in Supplementary File 2. The average appraisal scores for each of the 17 guidelines ranged from 2.7 to 5.6 on the seven-point Likert scale; ten guidelines achieved or exceeded an average appraisal score of 4.0, and 4 guidelines achieved or exceeded an average appraisal score of 5.0. Average overall assessments for the 17 guidelines ranged from 3.0 to 6.5, including 15 guidelines equalling or exceeding a score of 4.0, and 9 guidelines equalling or exceeding a score of 5.0.

3.4. Overall recommendations

None of the 17 guidelines were recommended by both appraisers. Appraisers agreed in their overall recommendation for 1 of 17 guidelines including 1 “Yes with modifications” [33]. Of the remaining 16 guidelines, 3 were rated by the two appraisers as “No” and “Yes with

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modifications" [20], [25], [30], while 13 guidelines were rated as "Yes" and "Yes with modifications" [17], [18], [19], [21], [22], [23], [24], [26], [27], [28], [29], [31], [32] (See Table 2).

3.5. Scaled domain percentage quality assessment

With regards to scaled domain percentages, scope and purpose scores ranged from 36.1% to 100.0%, stakeholder involvement scores from 16.7% to 88.9%, rigor-of-development scores from 9.4% to 67.7%, clarity-of-presentation scores from 58.3% to 94.4%, applicability scores from 14.6% to 77.1%, and editorial independence scores from 0.0% to 100.0% (See Table 3).

3.6. Scope and purpose

The overall objectives and health questions were generally well-defined in most guidelines, however some guidelines did not have clear statements of the objectives [17], [18], [20], [29], and in the introduction, did not always identify the types of treatments that are discussed in the guideline. The health questions were not clearly presented in the introduction sections for some of the guidelines [18], [20], [29]. All guidelines referred to the population to whom the guideline was meant to apply to as people with diabetes. Some guidelines included the age of the population [18], [22], [23], [24], [26], [27], [31].

3.7. Stakeholder involvement

All guidelines included the names of the development group and included a few of the following: degrees held and institutional affiliation of each member, subject discipline, geographical location, and description of member's role in the group. One guideline provided some of this information, but it was not all clearly provided in English [20]. Some guidelines considered views and preferences of the target population in guideline development [17], [22], [26], [31], [32] while most did not [18], [19], [20], [21], [23], [24], [25], [27], [28], [29],

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[30], [33]. Target users of the guideline were typically defined using terms such as "physician" or "healthcare worker", but some guidelines had no clear statement defining the users and instead were vague or referred to possible users a few times throughout the guideline [17], [18], [20], [29], [30].

3.8. Rigor of development

Systematic methods were almost always used to search for evidence, however only 7 guidelines provided detailed search methods [19], [21], [22], [23], [27], [31], [32], while the other guidelines did not. The criteria for selecting the evidence was provided for some guidelines [17], [19], [21], [22], [23], [24], [27], [31], though a few guidelines provided little or no information [18], [20], [25], [26], [28], [29], [30], [32], [33]. The strengths and limitations of the body of evidence were described in most guidelines [17], [20], [21], [22], [23], [24], [26], [27], [28], [31], [32]. The other guidelines did not state how the evidence was evaluated. Only one guideline provided some details on formulating the recommendations [19], while other guidelines provided minimal or no information [17], [18], [20], [21], [22], [23], [24], [25], [26], [27], [28], [29], [30], [31], [32], [33]. All authors considered some health benefits, side effects, and/or risks to some extent when formulating their recommendations. Nearly all guidelines provided an explicit link between the recommendations and supporting evidence, either with links to the references or with evidence in the accompanying paragraphs, apart from two guidelines in which this was inconsistent [25], [30]. While approximately half of all guidelines explicitly stated that they were externally reviewed by experts prior to publication [21], [22], [23], [24], [26], [28], [29], [31], [32], the others did not [17], [18], [19], [20], [25], [27], [30], [33]. Some guidelines failed to mention the purpose and intent for the review, the methods employed for the external review, or the outcomes of the review. Some guidelines did not declare their

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reviewers [23], [26], [29]. Some guidelines had stated plans for updates and provided a time frame or date for the update [19], [20], [21], [24], [27], [28], [31], [32] but only three guidelines proposed a method to conduct their update [21], [29], [32].

3.9. Clarity of presentation

All guidelines offered specific and unambiguous recommendations, however, many typically lacked one or more of the following details: identification of the intent/purpose, relevant population, or caveats. All 17 guidelines scored highly in presenting different options for the management of type 2 diabetes. Key recommendations were also very easily identifiable. A few guidelines had a specific section for key recommendations in the guideline [21], [22], [23], [24], [25], [26], [27], [32].

3.10. Applicability

Facilitators and barriers were discussed in a few of the guidelines [25], [28], [31]. The rest had little to no discussion on the topic. Seven guidelines included advice and/or tools to support the implementation of the recommendations [19], [25], [26], [28], [29], [31], [32]. Some guidelines addressed the resource implications [17], [19], [20], [21], [22], [26], [30], [33], while most had little or no mention [18], [23], [24], [25], [27], [28], [29], [31], [32]. Three guidelines provided monitoring and auditing criteria [28], [31], [32], 4 guidelines provided some monitoring criteria for some recommendations [19], [26], [27], [29], and the remaining 10 guidelines contained little to no information.

3.11. Editorial independence

Most guidelines did not report the source of funding or whether it influenced the content of the guideline [17], [18], [20], [22], [24], [25], [27], [30], [32], [33]. One guideline declared their funding body and provided a statement that it did not influence guideline content [19]

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and two guidelines had an explicit statement of no funding [21], [23]. The remaining guidelines declared a funding source but did not state whether the funding source influenced the guideline content [26], [28], [29], [31]. Guidelines also varied in reporting of competing interests. Several guidelines did not address competing interests [20], [25], [30], [33]. While remaining guidelines did, only four stated that competing interests were sought but did not provide details [17], [24], [28], [29].

4. Discussion

The purpose of this review was to identify the quantity and assess the quality of CPGs for the treatment and/or management of type 2 diabetes; this study identified 17 eligible CPGs published between 2009 and 2018. Quality as assessed by the 23-item AGREE II instrument varied widely across guidelines overall and by domain; four guidelines scored 5.0 or higher in both average appraisal score and average overall assessment [22], [23], [31], [32], and 5 guidelines scored 4.0 or lower in both of these metrics [20], [25], [29], [30], [33]. The remaining 8 guidelines largely scored between 4.0 and 5.0 in one or both of these metrics [18], [19], [21], [24], [26], [27].

To our knowledge, there are only a limited number of previous studies that have assessed the quality of type 2 diabetes CPGs. Out of the previous studies, one only assessed guidelines over a period of 3 years [13], another only evaluated glycaemic control [12], and yet another did not use a systematic review methodology [11]. In contrast, this review comprehensively and systematically reviewed a larger subset of CPGs for the treatment and/or management of type 2 diabetes. Scaled domain percentages, from highest to lowest, were as follows: clarity of presentation (81.2%), scope and purpose (77.1%), stakeholder involvement (52.8%), applicability (42.9%), rigour of development (41.5%), and editorial independence (35.1%). A

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previous study conducted in 2019 that assessed the quality of diabetes guidelines developed by national and international organizations found a similar order of scaled domain percentages from highest (clarity of presentation 70.97%) to lowest (applicability 44.65%) [11]. Another study which evaluated the quality of CPGs providing recommendations on glycaemic control of type 2 diabetes patients published after 2007, also found similar order and variability in scaled domain percentages [12]. Therefore, the variable and sub-optimal quality of guidelines is not a unique phenomenon.

By describing the quantity and quality of CPGs for the treatment and/or management of type 2 diabetes, this study found that multiple guidelines are available to support informed and shared decision-making among patients and clinicians. This study also revealed that the quality of this subset of CPGs varied across domains within individual guidelines, and across different guidelines. This finding is relevant to clinicians who attend to patients with type 2 diabetes, as well as guideline developers who produce or update such guidelines. Apart from the AGREE II instrument, numerous tools exist to assist guideline developers in generating the highest-quality CPGs [34], [35], [36].

4.1. Strengths and limitations

Notable strengths of this study included the use of a comprehensive systematic review to identify CPGs for the treatment and/or management of type 2 diabetes, as well as the use of the validated AGREE II instrument [16]. Limitations may include the fact that guidelines were independently assessed by two appraisers instead of four as recommended by the AGREE II instrument to optimize reliability. However, to mitigate this and standardize scoring, JYN, KDV, and an additional research assistant conducted an initial pilot-test during which they each independently appraised three independent guidelines, then discussed the

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results and achieved consensus on how to apply the AGREE II instrument. Following appraisal of the 17 guidelines, JYN met with KDV and the additional research assistant to discuss and resolve any uncertainties without unduly modifying legitimate discrepancies.

5. Conclusions

This study identified 17 CPGs for the treatment and/or management of type 2 diabetes published between 2009 and 2018. Therapies included pharmaceutical medications, nutritional interventions, physical activity, psychological management, surgeries, and complementary and alternative medicine. Appraisal of these guidelines with the AGREE II instrument revealed that the quality varied within and across CPGs. Guidelines that achieved higher AGREE II scores and favourable overall recommendations could be used by clinicians to initiate evidence-informed discussions with patients regarding optimal treatment options. Guidelines that received lower scaled domain percentages or overall recommendations could be improved in future updates if informed by the AGREE II instrument, among other tools that are available to support guideline development and implementation. Future research should aim to identify type 2 diabetes therapies other than those reviewed here, along with new therapies, which are supported by a sufficient evidence-base to serve as the basis for guideline development.

6. Ethics approval and consent to participate

This study involved a systematic review of peer-reviewed literature only; it did not require ethics approval or consent to participate.

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7. Consent for publication

All authors consent to this manuscript's publication.

8. Availability of data and materials

All relevant data are included in this manuscript.

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Authors contribution

JYN: conceptualized and designed the study, collected and analysed data, drafted the manuscript, and gave final approval of the version to be published.

KDV: assisted with the collection and analysis of data, drafted the manuscript, and gave final approval of the version to be published.

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Supplementary material

Supplementary File 1: MEDLINE Search Strategy for Type 2 Diabetes Treatment and/or Management Guidelines Executed January 12, 2019

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Supplementary File 2: Average Appraisal Scores and Average Overall Assessments of Each Guideline

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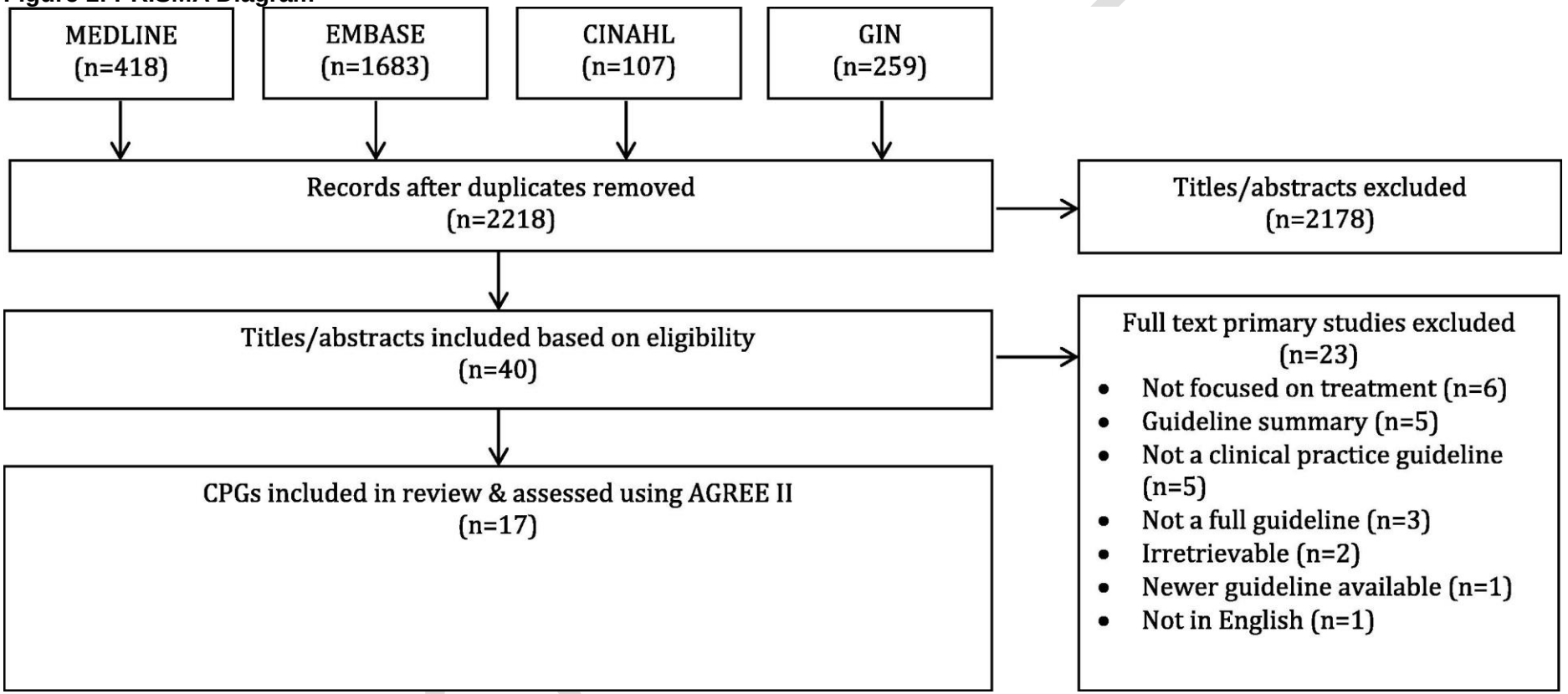
Figures

Figure 1: PRISMA Diagram



Tables

Table 1: Characteristics of Eligible Guidelines

Guideline	Country (First Author)	Developer	Guideline topic
Haneda 2018 [17]	Japan	Japan Diabetes Society (JDS), Asian Association for the Study of Diabetes (AASD), John Wiley & Sons Australia	Diabetes
Meneilly 2018 [18]	Canada	Diabetes Canada	Diabetes in older people
Bajaj 2018 [19]	India	Research Society for Study of Diabetes in India (RSSDI)	Management of type 2 diabetes
Diabetes Poland 2018 [20]	Poland	Diabetes Poland (Polish Diabetes Association)	Management of diabetic patients
Silver 2018 [21]	East Africa	East African Diabetes Study Group (EADSG)	Insulin therapy in diabetes
VA/DoD 2017 [22]	United States	Department of Defense, Department of Veterans Affairs, Veterans Health Administration.	Management of type 2 diabetes
Qaseem 2017 [23]	United States	American College of Physicians	Oral Pharmacologic Treatment of Type 2 Diabetes
MOPH Qatar 2017 [24]	Qatar	Ministry of Public Health	Type 2 diabetes in adults and elderly
Shera 2017 [25]	Pakistan	National Association of Diabetes Educators of Pakistan	Management of diabetes
Aschner 2016 [26]	Columbia	Columbia Medica	prevention, early detection, diagnosis, management and follow up of type 2 diabetes in adults
NICE 2015 [27]	United Kingdom	National Institute for Health and Care Excellence (NICE)	Management of diabetes in adults
MOH Malaysia 2015 [28]	Malaysia	Malaysian Endocrine and Metabolic Society, Ministry of Health Malaysia, Academy of Medicine Malaysia, Diabetes Malaysia, Family Medicine Specialists Association of Malaysia	Management of type 2 diabetes
Aschner 2014 [29]	Netherlands	International Diabetes Federation	Type 2 diabetes
Harper 2013 [30]	Canada	Canadian Diabetes Association	Pharmacological management of type 2 diabetes
Redmon 2012 [31]	United States	Institute for Clinical Systems Improvement (ICSI)	Diagnosis and management of type 2 diabetes mellitus in adults

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Guideline	Country (First Author)	Developer	Guideline topic
SIGN 2010 [32]	Scotland	Healthcare Improvement Scotland, Scottish Intercollegiate Guidelines Network (SIGN)	Management of diabetes
Matthaei 2009 [33]	Germany	German Diabetes Association	Medical antihyperglycaemic treatment of type 2 diabetes

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Table 2: Overall Recommendations for Use of Appraised Guidelines

Guideline	Appraiser 1	Appraiser 2
Haneda 2018 [17]	Yes with modifications	Yes
Meneilly 2018 [18]	Yes with modifications	Yes
Bajaj 2018 [19]	Yes with modifications	Yes
Diabetes Poland 2018 [20]	No	Yes with modifications
Silver 2018 [21]	Yes with modifications	Yes
VA/DoD 2017 [22]	Yes with modifications	Yes
Qaseem 2017 [23]	Yes with modifications	Yes
MOPH Qatar 2017 [24]	Yes with modifications	Yes
Shera 2017 [25]	Yes with modifications	No
Aschner 2016 [26]	Yes with modifications	Yes
NICE 2015 [27]	Yes with modifications	Yes
MOH Malaysia 2015 [28]	Yes with modifications	Yes
Aschner 2014 [29]	Yes with modifications	Yes
Harper 2013 [30]	Yes with modifications	No
Redmon 2012 [31]	Yes with modifications	Yes
SIGN 2010 [32]	Yes with modifications	Yes
Matthaei 2009 [33]	Yes with modifications	Yes with modifications

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Table 3: Scaled Domain Percentages for Appraisers of Each Guideline

Guideline	Domain score (%)					
	Scope and purpose	**Stakeholder involvement**	**Rigour of development**	**Clarity of presentation**	**Applicability**	**Editorial Independence**
Haneda 2018 [17]	72.2	36.1	30.2	69.4	41.7	4.2
Meneilly 2018 [18]	69.4	25.0	27.1	86.1	35.4	41.7
Bajaj 2018 [19]	80.6	52.8	38.5	58.3	62.5	79.2
Diabetes Poland 2018 [20]	36.1	16.7	26.0	75.0	14.6	0.0
Silver 2018 [21]	58.3	44.4	37.5	80.6	37.5	100.0
VA/DoD 2017 [22]	100.0	72.2	67.7	88.9	50.0	41.7
Qaseem 2017 [23]	100.0	61.1	66.7	88.9	29.2	91.7
MOPH Qatar 2017 [24]	86.1	55.6	42.7	91.7	37.5	12.5
Shera 2017 [25]	75.0	47.2	9.4	88.9	18.8	0.0
Aschner 2016 [26]	91.7	55.6	44.8	75.0	54.2	41.7
NICE 2015 [27]	100.0	69.4	53.1	88.9	37.5	16.7
MOH Malaysia 2015 [28]	83.3	69.4	53.1	75.0	62.5	12.5
Aschner 2014 [29]	38.9	38.9	39.6	72.2	58.3	41.7
Harper 2013 [30]	75.0	30.6	17.7	94.4	25.0	0.0
Redmon 2012 [31]	80.6	80.6	57.3	80.6	62.5	79.2
SIGN 2010 [32]	94.4	88.9	66.7	94.4	77.1	33.3
Matthaei 2009 [33]	69.4	52.8	28.1	72.2	25.0	0.0

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