


# Assessing the Quality of Clinical Practice Guidelines in the Middle East and North Africa (MENA) Region: A Systematic Review

This article was published in the following Dove Press journal:  
*Journal of Multidisciplinary Healthcare*

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**Aim:** Clinical practice guidelines (CPGs) have progressively become a popular tool for making optimal clinical decisions. The literature shows that the poor quality of CPGs can form a barrier against adhering to them, resulting in a suboptimal level of healthcare. The objective of this systematic review is to evaluate the quality of CPGs in the Middle East and North Africa (MENA) region using the Appraisal of Guidelines for Research & Evaluation II (AGREE II) Instrument.

**Methods:** The authors searched in the MEDLINE and EMBASE databases through the Ovid interface on May 25, 2019. Keywords relating to CPGs and MENA countries were combined using Boolean search operators. The search was not limited to specific diseases. The quality of guidelines was appraised by two reviewers independently using the AGREE II Instrument. Discrepancies within a group were resolved through the involvement of a principle investigator.

**Results:** A total of 61 CPGs were appraised. These guidelines were mainly from Saudi Arabia, and the most covered disease topic was cancer. Among the six domains of the AGREE II Instrument, CPGs scored the highest on clarity of presentation (mean 82%), while the lowest score was granted to the rigor of development domain (mean 28%). This indicates substantial deficiencies in reporting the developmental processes of CPGs and the resources used for the synthesis of evidence.

**Conclusion:** From this review, it was found that the number of retrieved guidelines published in the MENA region is limited considering the large geographical area of the MENA region. The main domains that have higher quality scores were clarity of presentation and scope and purpose, whereas domains with the lowest scores were rigor of development and applicability. The authors' findings will help policymakers identify areas for improvement in CPGs, which can lead them to implement strategies such as the training of individuals and recruitment of international experts to ultimately develop high-quality CPGs.

**Keywords:** AGREE II Instrument, clinical practice guideline, MENA, Middle East, quality

## Background

Clinical practice guidelines (CPGs) are defined by the Institute of Medicine (IOM) as statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.<sup>1</sup> CPGs can provide several benefits to clinicians, institutions, and patients. The use of recommendations from CPGs assists clinicians in making decisions about individual patient management.<sup>2</sup> On

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an institutional level, the use of CPGs allows the provision of standardized care to patients with the aim of decreasing variations in clinical practice.<sup>3</sup> They also improve the quality of care and reduce preventable errors in medication.<sup>3</sup> These possible benefits can eventually promote cost-effective care.<sup>4</sup> Also, patients can benefit from some CPGs that are accompanied by “consumer” versions, which include a simple summary of the benefits and harms of available options.<sup>5</sup> Thus, it empowers patients to make more informed healthcare choices and to consider their personal needs and preferences in selecting the best option.<sup>5</sup> Nowadays, the number of published CPGs is progressively expanding.<sup>6</sup> However, the quality of those guidelines is still inconclusive.<sup>7–9</sup>

The AGREE II Instrument (Appraisal of Guidelines for Research & Evaluation II) is one of the widely used, validated tools for evaluating CPGs. The instrument includes specific assessment questions that cover many aspects of the quality of guidelines with a focus on methodological rigor.<sup>10</sup> It has been widely used to assess guidelines in various clinical conditions.<sup>11–16</sup> High-quality clinical practice guidelines could have substantial positive impact on patients and healthcare providers. Evidence suggests that high quality could improve patients’ clinical outcomes, provide an equitable clinical recommendation that are effective, safe and appropriate to the target population.<sup>17,18</sup>

To our knowledge, there is no study that reviews the quality of published guidelines for clinical practice in the Middle East and North Africa (MENA) region. Several systematic reviews have been conducted to compare the quality of guidelines among high-income countries including the United States<sup>19–21</sup> and Europe.<sup>22–26</sup> Similar systematic reviews were also performed for low- and middle-income countries including Turkey,<sup>7</sup> China,<sup>9</sup> and Sri Lanka.<sup>8</sup> The quality of clinical practice guidelines varies across countries. In the United States and Europe, lowest scores were assigned to “applicability” and “editorial independence”, whereas, in other developing countries including Turkey, China and Sri Lanka, the rigour of development received low scores on AGREE II Instrument.

The MENA region consists of high-, middle-, and low-income countries.<sup>27,28</sup> In addition, there are variations in the financing of healthcare and the socioeconomic contexts in these countries.<sup>29</sup> Therefore, conclusions from the previously mentioned systematic reviews cannot be generalized to the MENA region. The aim of this study is to

assess the quality of CPGs in the MENA region using the validated AGREE II Instrument.<sup>10</sup>

## Methodology

The review’s protocol is registered with the International Prospective Register of Systematic Reviews (PROSPERO; registration number: CRD42019132437).

## Identification of Guidelines

The sources were the MEDLINE and EMBASE databases through the Ovid interface, and the review was conducted on May 25, 2019, to identify CPGs. Additionally, gray literature has been manually searched to identify CPGs in all relevant health organization websites including those of the ministries of health and medical organizations of the MENA countries involved ([Appendix 1](#)). Keywords and terms relating to CPGs and all the MENA countries were combined using Boolean search operators ([Appendix 2](#)).

## Selection of Guidelines

We used the institution of medicine (IOM) definition for clinical practice guidelines:

Statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.<sup>1</sup>

Therefore, the included guidelines should fulfil the following criteria:

1. Guidelines are developed by medical societies or governmental institutions.
2. Guidelines should describe the methods used to search the literature and identify eligible studies.
3. Guidelines should provide structured recommendations based on reviewed studies.

We included English language guidelines that were produced by countries with MENA region organizations.<sup>27,28</sup> Short summaries, narrative and systematic reviews, abstracts, and posters were excluded. The detailed criteria are listed in [Table 1](#).

## Data Collection Process

One author (N. A.) conducted the search of electronic databases. Three authors—L. S., N. A., and W. H.—searched and screened the gray literature. Afterwards, two independent authors were involved in screening the results from the electronic databases by title, abstract, and

**Table 1** Eligibility Criteria

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> <li>* 21 MENA countries have been identified and included. They are Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, the Occupied Palestinian Territory, Oman, Qatar, SA, Somalia, Sudan, the Syrian Arab Republic, Tunisia, the United Arab Emirates, and Yemen.<sup>27,28</sup></li> <li>* Published and unpublished CPGs.</li> <li>* CPGs published from 2010 to 2019.</li> <li>* Published in English languages.</li> <li>* The most recent, updated CPGs will be used for appraisal if several editions were available, unless the CPG authors referred the reader to a previous version in a specific section of the guideline.</li> <li>* Documents that met the definition of CPGs as defined in the Introduction.</li> <li>* CPGs accessible online.</li> </ul>	<ul style="list-style-type: none"> <li>* Languages apart from English.</li> <li>* Separate recommendation papers regarding the treatment only (short summaries) or papers dedicated for patients.</li> <li>* Guidelines developed especially for HCPs other than doctors and/or clinical pharmacists (eg, physiotherapists and nurses).</li> <li>* Guidelines used for a single institution (eg, guidelines regarding infection control) or in a specific hospital.</li> <li>* Adopted guidelines.</li> <li>* Non-disease oriented, that is, guidelines on specific instructions in using certain medications.</li> </ul>

then full text to select eligible guidelines. Conflicts and disagreements were resolved by discussion or by the involvement of an independent reviewer, if necessary. Also, two authors independently extracted and assessed the quality of the selected CPGs. Extracted data included the CPG name, specialty, year of publication, and country.

## AGREE II Instrument Domain Descriptions

The AGREE II Instrument consists of six major domains that include a total of 23 different items.<sup>10</sup> The domains includes, scope and purpose, stakeholder involvement, rigor of development, clarity of presentation, applicability and editorial independence. Following these domains, there are two general rating items also known as overall assessments. The first overall assessment question requires the user to make a judgment regarding the overall quality of a guideline, taking into consideration the criteria considered in the assessment process. In the second overall assessment question, the user is asked whether she/he recommends using the CPG or not.<sup>10</sup>

Each of the 23 items of the six domains and the overall assessment questions were rated as a part of the quality assessment. The AGREE II Instrument provides a rating scale from 1 to 7 with 1 indicating strong disagreement and 7 indicating strong agreement. The points between 2 and 6 can be chosen depending on the quality of reporting and its completeness. After rating the items, the score of each domain should be calculated independently. This is done by the summation of each item's score in the domain and then calculating the total by scaling the domain's score as percentage of the maximum possible score. The formula for calculating the scaled score is as follows:

Obtained score – Minimum possible score/Maximum possible score – Minimum possible score.

No specific score is defined as a minimum score by the AGREE II consortium. Thus, determining whether a CPG is of high or low quality is the decision of the user of the instrument. Consequently, for this review, a quality score threshold was selected considering all six domain scores to be 60% and above based on consensus among the authors. Therefore, high-quality guidelines will be those in which all domains score 60% or more.<sup>10</sup>

## Data Synthesis

We used descriptive statistics with mean (SD), median, and range for each domain score, calculated using Microsoft Excel (2016).<sup>30</sup>

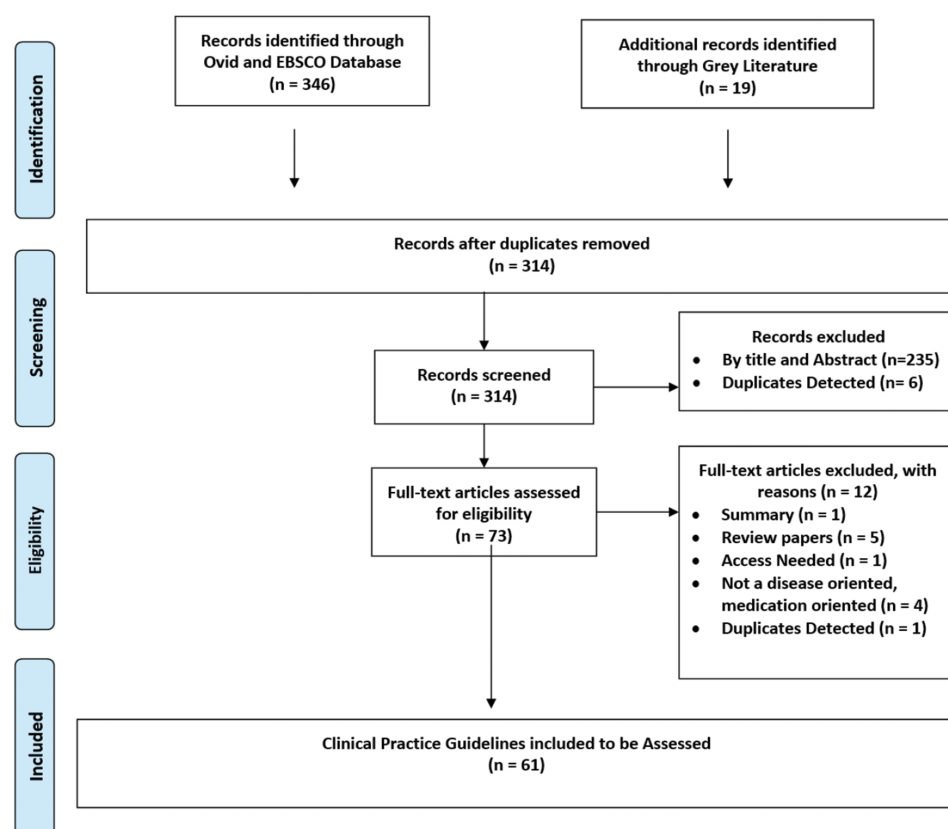
## Results

### Selection of CPGs

Following the authors' systematic search strategy, a total of 346 records were identified in the previously described databases, with an additional 19 papers identified through the gray literature search. After removing duplicates, the number of guidelines was 314, of which 235 were found to be irrelevant after screening by title and abstract, and 6 were excluded as duplicates. Therefore, 73 guidelines were considered for full-text screening, and 12 of these were excluded for different reasons mentioned in the flow chart (Figure 1). The final number of included guidelines was 61.

### Clinical Practice Guidelines Characteristics

The description of the general characteristics of the assessed guidelines including the date and origin is illustrated in



**Figure 1** Flow diagram of the selection process of CPGs.

(Table 2). Among the 61 selected CPGs, 34 guidelines were from Saudi Arabia,<sup>31–64</sup> 12 were from multiple MENA countries,<sup>65–76</sup> eight were from Lebanon,<sup>77–84</sup> three were from Bahrain,<sup>85–87</sup> and one was from each of the following countries: Iran,<sup>88</sup> Egypt,<sup>89</sup> and Jordan.<sup>90</sup>

## AGREE II Appraisal Results

The main domains that had higher scores were clarity of presentation (mean 82%, range 39–100%) and scope and purpose (mean 63%, range 3–100%); meanwhile, domains with the lowest scores were rigor of development (mean 28%, range 0–71%), applicability (mean 29%, range 0–75%), stakeholders' involvement (mean 53%, range 14–97%), and editorial independence (mean 59%, range 0–100%).

Out of the 61 guidelines, 58 (95%) guidelines scored >60% in the clarity of presentation domain, whereas only 5 (8%) and 7 (11.5%) scored >60% in applicability and rigor of development, respectively. The summary statistics for CPG quality assessment are presented in Table 3. The detailed assessment is presented in Appendix 3.

## Discussion

This study was performed to examine the quality of CPGs in the MENA region using the AGREE II Instrument. In this review, a total of 61 guidelines were suitable for inclusion, and their quality varied. Among the six domains of the AGREE II Instrument, CPGs scored the highest on clarity of presentation (mean 82%), while the lowest score was granted to the rigor of development domain (mean 28%).

Our results were consistent with those of similar reviews assessing CPGs in Turkey, Sri Lanka, and China.<sup>7–9</sup> The similarities were that the lowest scores were attributed to the rigor of development and applicability domains, whereas the highest scores were attained in the clarity of presentation followed by the scope and purpose domain. As opposed to the findings of Hu et al<sup>9</sup>, editorial independence, which includes the role of funding bodies and potential conflicts of interest, was sufficiently reported in 50% of the included guidelines. This indicates the transparency of the guideline development process in the MENA region.

The impact of economic status on clinical practice and research has been widely investigated.<sup>91–93</sup> Few systematic

**Table 2** Characteristics of CPGs

CPG ID	CPG Title	Specialty	Year	Country
Haddad et al <sup>107</sup>	The 2018 Lebanese Society of Infectious Diseases and Clinical Microbiology Guidelines for the use of antimicrobial therapy in complicated intra-abdominal infections in the era of antimicrobial resistance.	Infectious disease	2019	Lebanon
Jazieh et al <sup>31</sup>	Saudi lung cancer prevention and screening guidelines.	Oncology	2018	SA
Al Amro et al <sup>32</sup>	Practical guidelines for screening and treatment of retinopathy of prematurity in Saudi Arabia.	Ophthalmology	2018	SA
Abusamra et al <sup>43</sup>	The Saudi Clinical Management guidelines for prostate cancer.	Oncology	2018	SA
Alharbi et al <sup>54</sup>	The Saudi Clinical Management Guidelines for Urothelial Cell Carcinoma of the Urinary Bladder	Oncology	2018	SA
Bazarbashi et al <sup>109</sup>	The Saudi Clinical Management guidelines for renal cell carcinoma	Oncology	2018	SA
Husni et al <sup>77</sup>	The Lebanese society of infectious diseases and clinical microbiology guidelines for the treatment of urinary tract infections.	Infectious disease	2017	Lebanon
Jazieh et al <sup>60</sup>	Saudi lung cancer management guidelines 2017.	Oncology	2017	SA
Al-Hameed et al <sup>61</sup>	The Saudi clinical practice guideline for the prophylaxis of venous thromboembolism in long-distance travelers.	Hematology	2017	SA
Al-Jahdali et al <sup>62</sup>	The Saudi Thoracic Society guidelines for diagnosis and management of noncystic fibrosis bronchiectasis.	Respiratory disorders	2017	SA
Bashiri et al <sup>63</sup>	Management of convulsive status epilepticus in children: An adapted clinical practice guideline for pediatricians in Saudi Arabia.	Neurology	2017	SA
Al-Jazairi et al <sup>64</sup>	Guidelines for the secondary prevention of rheumatic heart disease: Endorsed by Saudi Pediatric Infectious Diseases Society (SPIDS).	Rheumatology	2017	SA
Al-Hameed et al <sup>33</sup>	The Saudi clinical practice guideline for the prophylaxis of venous thromboembolism in medical and critically ill patients.	Hematology	2016	SA
Alfadda et al <sup>34</sup>	The Saudi clinical practice guideline for the management of overweight and obesity in adults	Metabolic disorders	2016	SA
Alotaibi et al <sup>35</sup>	Saudi Oncology Society and Saudi Urology Association combined clinical management guidelines for testicular germ cell tumors.	Oncology	2016	SA
Alfadhel et al <sup>75</sup>	Guidelines for acute management of hyperammonemia in the Middle East region.	Acid Base disorders	2016	ME
Al-Moamary et al <sup>36</sup>	The Saudi Initiative for Asthma-2016 update: Guidelines for the diagnosis and management of asthma in adults and children.	Respiratory disorders	2016	SA
Al-Salam et al <sup>37</sup>	The golden hour approach: Practical guidelines of the Saudi neonatology society on managing very low birth weight infants in the first hour of life.	Neonatology	2016	SA
Al-Mandeel et al <sup>38</sup>	Clinical practice guidelines on the screening and treatment of precancerous lesions for cervical cancer prevention in Saudi Arabia.	Oncology	2014	SA

(Continued)

**Table 2** (Continued).

CPG ID	CPG Title	Specialty	Year	Country
Alavian et al <sup>87</sup>	Recommendations for the clinical management of hepatitis C in Iran: A consensus-based national guideline.	Hepatology	2016	Iran
Alsanea et al <sup>39</sup>	National Guidelines for Colorectal Cancer Screening in Saudi Arabia with strength of recommendations and quality of evidence.	Oncology	2015	SA
Al-Hameed et al <sup>40</sup>	Prophylaxis and treatment of venous thromboembolism in patients with cancer: The Saudi clinical practice guideline.	Hematology	2015	SA
Al-Hameed et al <sup>41</sup>	The Saudi clinical practice guideline for the diagnosis of the first deep venous thrombosis of the lower extremity.	Hematology	2015	SA
Al-Saleh et al <sup>42</sup>	2015 guidelines for osteoporosis in Saudi Arabia: Recommendations from the Saudi Osteoporosis Society.	Endocrinology	2015	SA
Al-Hameed et al <sup>44</sup>	The Saudi clinical practice guideline for the treatment of venous thromboembolism: Outpatient versus inpatient management.	Hematology	2015	SA
Alothman et al <sup>74</sup>	Clinical practice guidelines for the management of invasive Candida infections in adults in the Middle East region: Expert panel recommendations.	Infectious diseases	2014	ME
Ibrahim et al <sup>88</sup>	The Egyptian Hypertension Society: Egyptian hypertension guidelines.	Cardiology	2014	Egypt
Khan e al <sup>45</sup>	Saudi Guidelines on the Diagnosis and Treatment of Pulmonary Hypertension: Pregnancy in pulmonary hypertension.	Pulmonology	2014	SA
Khan et al <sup>47</sup>	The Saudi guidelines for the diagnosis and management of COPD.	Respiratory disorders	2014	SA
Al-Abdely et al <sup>73</sup>	Clinical practice guidelines for the treatment of invasive Aspergillus infections in adults in the Middle East region: Expert panel recommendations.	Infectious diseases	2014	ME
Moghnieh et al <sup>78</sup>	The Lebanese Society for Infectious Diseases and Clinical Microbiology (LSIDCM) guidelines for adult Community-Acquired Pneumonia (CAP) in Lebanon.	Infectious diseases	2014	Lebanon
Idrees et al <sup>46</sup>	Saudi guidelines on the diagnosis and treatment of pulmonary hypertension: 2014 updates.	Pulmonary hypertension	2014	SA
Abdo et al <sup>48</sup>	Saudi guidelines for the diagnosis and management of hepatocellular carcinoma: Technical review and practice guidelines.	Oncology	2012	SA
Al Jahdali et al <sup>49</sup>	Saudi guidelines for testing and treatment of latent tuberculosis infection.	Infectious diseases	2010	SA
Bohlega et al <sup>72</sup>	Guidelines for the pharmacological treatment of peripheral neuropathic pain: Expert panel recommendations for the middle east region.	Neurology	2010	ME
Okasha et al <sup>67</sup>	Arab treatment guidelines for the management of major depressive disorder.	Psychiatry	2017	Arab
Shatila et al <sup>79</sup>	LSN MS guidelines for the management of multiple sclerosis.	Neurology	2012	Lebanon
Jassim et al <sup>68</sup>	Pan Arab Osteoporosis Society Guidelines for Osteoporosis Management	Endocrinology	2017	Arab

(Continued)



Table 2 (Continued).

CPG ID	CPG Title	Specialty	Year	Country
Jordanian Osteoporosis Prevention Society <sup>89</sup>	Jordanian Osteoporosis Prevention Society Guideline-2017	Endocrinology	2017	Jordan
EBHC guidelines on Venous Thromboembolism in Patients with Stroke <sup>51</sup>	Clinical Practice Guideline on Prevention of Venous Thromboembolism in Patients with Stroke	Hematology	2014	SA
EBHC guideline on Allergic Rhinitis in Asthma <sup>52</sup>	Clinical Practice Guideline on Allergic Rhinitis in Asthma	Ear, Nose and Throat	2014	SA
EBHC guideline on the Diagnosis of First Deep Vein Thrombosis of Lower Extremity <sup>110</sup>	Clinical Practice Guideline on the Diagnosis of Suspected First Deep Vein Thrombosis of Lower Extremity	Hematology	2014	SA
EBHC guideline on the Use of Thrombolytic Therapy in Acute Stroke <sup>53</sup>	Clinical Practice Guideline on the Use of Thrombolytic Therapy in Acute Stroke	Neurology	2014	SA
EBHC guideline on Fracture Prevention in Elderly <sup>55</sup>	Clinical Practice Guideline on the Role of Vitamin D, Calcium and Exercise in Fracture Prevention in Elderly	Endocrinology	2014	SA
EBHC guideline on Antithrombotic Treatment of Patients with Non-valvular Atrial Fibrillation <sup>56</sup>	Clinical Practice Guideline on Antithrombotic Treatment of Patients with Non-valvular Atrial Fibrillation	Cardiology	2014	SA
EBHC guideline on the Treatment of Venous Thromboembolism <sup>57</sup>	Clinical Practice Guideline on the Treatment of Venous Thromboembolism	Hematology	2014	SA
EBHC guideline on Screening Strategies for the Detection of Breast Cancer <sup>58</sup>	Clinical Practice Guideline on the Use of Screening Strategies for the Detection of Breast Cancer	Oncology	2014	SA
Alhasan et al <sup>50</sup>	Clinical Practice Guideline on the Timing of Initiation of Dialysis	Nephrology	2015	SA
Bahrain MOH guidelines on Middle East Respiratory Syndrome coronavirus <sup>84</sup>	Guideline On Middle East Respiratory Syndrome coronavirus (MERS-CoV)	Infectious diseases	2014	Bahrain
Bahrain MOH guidelines for Management of Suspected or Confirmed Cholera <sup>85</sup>	Guideline for Management of Suspected or Confirmed Cholera	Infectious diseases	2015	Bahrain
Bahrain MOH guidelines for Management of Influenza A (H1N1) <sup>86</sup>	Management of Influenza A (H1N1) and Influenza like Illness (ILI)	Infectious diseases	2015	Bahrain
Lebanese Ministry of public health guidelines for Tuberculosis Prevention, Care <sup>80</sup>	National Guidelines for Tuberculosis Prevention, Care and Elimination in LEBANON- 2017	Infectious diseases	2017	Lebanon
Ziadé et al <sup>81</sup>	Protocol for prescription and follow up of biologics and targeted Synthetic Disease Modifying AntiRheumatic Drugs (b/tsDMARDS) in the management of Chronic Inflammatory Rheumatic Diseases (CIRDs): Rheumatoid Arthritis (RA), Axial Spondylo Arthritis (AxSpa), Psoriatic Arthritis (PsA)	Rheumatology	2018	Lebanon
Mokhbat et al <sup>82</sup>	National Guidelines for diagnosis and management of HIV infected adults. ANTIRETROVIRAL THERAPY MANAGEMENT	HIV infection	2012	Lebanon
Fuleihan et al <sup>83</sup>	(Osteoporosis Assessment and Treatment) FRAX Based Lebanese Osteoporosis Guidelines 2013	Osteoporosis	2013	Lebanon

(Continued)

**Table 2** (Continued).

CPG ID	CPG Title	Specialty	Year	Country
Abulkhair et al <sup>65</sup>	Modification and implementation of NCCN guidelines on breast cancer in the Middle East and North Africa region.	Oncology	2010	MENA
Yusuf et al <sup>71</sup>	Modification and implementation of NCCN guidelines on hepatobiliary cancers in the Middle East and North Africa region.	Oncology	2010	MENA
Bazarbachi et al <sup>66</sup>	Modification and implementation of NCCN guidelines on lymphomas in the Middle East and North Africa region.	Oncology	2010	MENA
Hassen et al <sup>70</sup>	Modification and implementation of NCCN guidelines on prostate cancer in the Middle East and North Africa region.	Oncology	2010	MENA
İçli et al <sup>69</sup>	Modification and implementation of NCCN guidelines on colon cancer in the Middle East and North Africa region.	Oncology	2010	MENA
Jazieh et al <sup>76</sup>	Modification and implementation of NCCN guidelines on non-small cell lung cancer in the Middle East and North Africa region.	Oncology	2010	MENA

**Abbreviations:** EBHC, Evidence-Based Health Care; SA, Saudi Arabia; ME, Middle East; MOH, Ministry of Health; MENA, Middle East and North Africa.

**Table 3** Summary of the Domain Scores of CPGs Using the AGREE II Instrument (N = 61)

Domains	Clinical Practice Guidelines (n=61)				Domain Score >60% No. (%)
	Mean	Median	SD	Range	
Scope and purpose	63%	61%	22.62%	3–100	37 (60.6%)
Stakeholder involvement	53%	53%	23.06%	14–97	20 (32.7%)
Rigor of development	28%	20%	21.44%	0–71	7 (11.5%)
Clarity of Presentation	82%	83%	15.20%	39–100	58 (95%)
Applicability	29%	23%	19.37%	0–75	5 (8%)
Editorial independence	59%	63%	40.60%	0–100	32 (52.5%)

reviews have been conducted to compare and identify the gaps in several guidelines in low-income and middle-income countries compared with high-income countries.<sup>94–96</sup> Since some of the MENA countries are classified as low-income and middle-income, as described in the data of the World Bank, the results of such research can be taken into consideration.<sup>28</sup> Results from those reviews found several factors in the CPGs of low- and middle-income countries that had an impact on their quality and resulted in less clear and applicable guidelines.<sup>28,95</sup> These factors can be broadly classified into evidence-related and contextual-related.<sup>97,98</sup> Regarding evidence-related factors, the ability to search and critique clinical evidence is limited in developing countries.<sup>97,98</sup> Moreover, Baradaran-Seyed et al state that despite the awareness of health-research priorities and needs, using existing knowledge from daily practice to inform larger clinical studies is suboptimal.<sup>97</sup> Additionally, Owolabi et al found that there

is a lack of compliance with the trustworthiness standards as defined in the Institute of medicine for guideline development.<sup>95</sup> One of the quality assessment items within the rigor of development domain was procedure for updating.<sup>10</sup> Some reviews showed that most of these guidelines were outdated, older than 5 years, which is an issue since medical knowledge is evolving and many updates occur regularly.<sup>28,95</sup>

Contextual-related factors mainly affect the applicability of guidelines.<sup>10</sup> Healthcare policies and economic and contextual factors vary among different countries of the MENA region.<sup>99</sup> For example, the access and efficient utilization of primary healthcare services in the region is suboptimal.<sup>100</sup> In addition, despite the global reduction of communicable disease and the increasing rate of non-communicable diseases, some countries in the MENA region, such as Egypt and Morocco, have an increasing trend for both types.<sup>99</sup> Workforce in the region is a major



concern, and the number of physicians per 1000 people is lower than expected for middle-income countries such as Yemen, Morocco, the West Bank and Gaza, and Iraq. This factor is also superimposed with a lack of training and professional development, especially in rural regions.<sup>101</sup> Finally, out-of-pocket expenditures account for 74% of private health expenditures, a factor that negatively affects the disadvantaged population. This may explain the reasons behind the poor quality of CPGs in the MENA region, especially in the development and applicability domains.

## Strengths and Limitations

To the authors' knowledge, this is the first review performed on the assessment of the quality of CPGs in the MENA region. The search for clinical practice guidelines extends beyond medical journals, and this breadth enhances the inclusiveness of the search strategy.

A major limitation in this study is that our search strategy excludes non-English language studies, and this exclusion may result in language and publication bias. Moreover, poorly indexed studies and those not indexed in PubMed, EMBASE, databases might be missed. In addition, the included clinical practice guidelines have several weaknesses in their design and reporting that may limit the conclusions of this systematic review. The quality assessment of guidelines was assessed by two appraisers, according to the AGREE II guidance, the preferred number of appraisers is four which increases the reliability.

Finally, we could not access the hard copies published by governmental bodies and ministries of health, this could limit the comprehensiveness of grey literature search.

## Implications

Identifying weaknesses and areas for improvement in CPGs of the MENA region can guide policymakers and organizations, such as the ministries of health, to implement several strategies to develop high-quality CPGs.

First, a guideline development group should consist of a multidisciplinary team including clinicians, epidemiologists and statisticians, policymakers, and patients' advocates. These members need to receive special training in the development process for guidelines, which includes but is not limited to effective searching in medical databases, critical appraisal, and utilization of The Grading of

Recommendations Assessment, Development, and Evaluation (GRADE tool).<sup>102</sup>

In addition, the strengthening of collaboration between clinicians, researchers, professional societies, and stakeholders in the MENA region is urgently needed.<sup>103</sup> This can be achieved by inviting clinicians and researchers to join guideline development groups, thereby creating a healthy environment where local and international experts meet and share their experience. The involvement of patients and the general public is important in the guideline development phase as it enhances the shared decision-making process and thus improves patient outcomes.<sup>104,105</sup> Despite the importance of such involvement, studies have reported suboptimal engagement. Therefore, effective utilization of patient support groups and health charity associations as a potential source for targeted patients is warranted. Tackling these issues could potentially enhance the quality of local guidelines and thus increase their implementation and potential impact.

## Conclusion

From this review, it was found that the number of retrieved guidelines published in the MENA region is limited considering the large geographical area of the MENA region. The main domains with higher quality scores were clarity of presentation and scope and purpose, whereas domains with the lowest scores were rigor of development and applicability. The authors' findings will help policymakers identify areas for improvement in CPGs, and this identification can lead them to implement strategies such as the training of individuals and the recruitment of international experts to ultimately develop high-quality CPGs.

## Disclosure

The authors report no conflicts of interest for this work.

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