Assessing quality of systematic reviews in dermatology from the Philippines using AMSTAR 2
Part 1: Methodologic quality of dermatological systematic reviews from the Philippines

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ABSTRACT

BACKGROUND: Quality systematic reviews (SRs) are essential in the practice of evidence-based dermatology. We assessed the methodologic quality of SRs in dermatology from the Philippines.

METHODS: We searched databases (MEDLINE, CDSR, PROSPERO, HERDIN; from inception until June 30, 2019), and secondary sources. We included SRs, authored by Filipino primary authors, which included clinical trials on any intervention for the treatment or prevention of a dermatologic disease or for maintenance of healthy skin, hair or nails. Two reviewers independently extracted data and appraised the methodological quality of each included SR using the AMSTAR 2. The 16-item AMSTAR 2 has 7 critical items and 9 non-critical items. The number of critical items mainly determine the overall confidence in the results of the review. Descriptive analysis using means and standard deviation for continuous data, and frequency and percentage distribution for categorical data were employed.

RESULTS: Twenty SRs were included in this review, and were mostly published in the 2010s. Majority of SRs had three authors, who belonged to a single institution, with at least one dermatologist. The most common topic was infections and both oral and topical interventions were used. Majority had 5 included studies in the SRs, with a median number of 425 participants. The median number of critical flaws in the included SRs was 4.5, and non-critical flaws, 5. Overall confidence was critically low in majority (19/20) of included reviews, with only one review rated as low.

CONCLUSION: The methodologic quality of the dermatology SRs from the Philippines based on the AMSTAR 2 tool was poor with a rating of critically low in majority. There is a need to improve quality of conduct and reporting through dissemination of the reporting guidelines such as the PRISMA

Keywords: methodological quality, conduct of review, dermatology, systematic reviews, meta-analysis, Philippines

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INTRODUCTION

Evidence-based dermatology is an essential tool for clinical practice. There is a need for high-quality unbiased systematic reviews that have comprehensively searched for all relevant data to inform dermatologists on current best treatments.[1]

A methodologic review is defined as "reviews that focus on research methods rather than research outcomes, have been used in many fields to improve research practice, inform debate, and identify islands of practice."[2]

Systematic reviews of randomized controlled trials that have homogeneity are the highest level of evidence.[3] Systematic reviews are defined as a "review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review."[4] They are useful in summarizing study results, or to explore differences in results between subgroups.[1] Meta-analysis refers to the use of statistical methods in a systematic review to integrate the results of included studies.[4]

A study that utilized PubMed surveys and empirical evaluation of meta-analyses noted the rapid increase in production of systematic reviews and meta-analyses in 'epidemic' proportion. This study concluded that "the large majority of produced systematic reviews and meta-analyses are possibly unnecessary, misleading, and/or conflicted."[5] The authors commented that these reviews often serve mostly as easily produced publishable units or marketing tools rather than promoting evidence-based health care. It also noted the possible harm of suboptimal systematic reviews and meta-analyses given the major prestige and influence these types of studies have acquired. Its recommendations were to realign the publication of systematic reviews and meta-analyses to remove biases and conflict of interests and to integrate them better with the primary production of evidence. In addition, some systematic reviews that are not properly guided by important clinical questions, may mislead clinical decision-making.[11]

The PRISMA (**P**referred **R**eporting **I**tems for **S**ystematic Reviews and **M**eta-**A**nalyses) was published in 2009, as an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses to guide authors in manuscript submission to journals. Although it may be used as journal editors and peer reviewers to critically appraise submitted manuscripts or published reviews and meta-analyses, it was not meant to be a quality assessment instrument to gauge their methodologic quality.[4] The AMSTAR (A MeaSurement Tool to Assess Systematic Reviews) was initially developed in 2007 to evaluate the methodological quality of systematic reviews of randomized trials. It was then updated to AMSTAR 2 in 2017 to enable a more detailed assessment of systematic reviews and to include non-randomized studies of healthcare interventions. With decisions based on real world observational evidence, AMSTAR 2 aims to assist decision makers to identify high quality systematic reviews.[6] The 16-item checklist includes assessing the research question and inclusion criteria, protocol, study design selection, search strategy, study selection and data extraction process, statistical analysis, risk of bias analysis, source of funding and conflict of interest disclosure. Based on seven identified critical domains, overall confidence in the results of a systematic review can be rated as high, moderate, low or critically low. The initial validation of the AMSTAR 2 by the developers showed moderate to substantial level of agreement between most items. The developers are encouraging investigators to provide feedback and report their experiences to improve the usability of AMSTAR 2. There is an ongoing study to evaluate its reliability, usability, and applicability.[7]

An overview of 56 methodological reviews or reports that assessed the quality of a cohort of 5371 SRs of interventions using PRISMA, Quality of Reporting of Meta-analyses (QUOROM), Overall Quality Assessment Questionnaire (OQAQ), or AMSTAR, showed that reporting and methodological quality of SRs are inconsistent.[8] Of 23 reports (N=1794 SRs) that used AMSTAR and 22 reports (N=1367) that used OQAQ, only 37% assessed risk of bias in the included studies. Aspects which were well reported were criteria for study selection and study characteristics of included studies (80%, AMSTAR) and criteria for study selection, search methods used to find the evidence, methods used to combine the findings, and if they determined whether the conclusions were supported by the data (73 to 80%, OQAQ).

The methodological quality of 150 systematic reviews on surgical interventions showed only 48% compliance with AMSTAR.[9] Poorly reported items include description of any conflict(s) of interest in both the included studies and the performance of the review (item 11, 9%); providing a list of included and excluded studies, even as appendices (item 5, 27%); and describing a comprehensive literature search (item 3, 29%). Another methodologic review of 38 systematic reviews on exercise therapy for chronic low back pain used the AMSTAR 2 tool and showed that the overall confidence in the results of majority of the included reviews (28 or 74%) was rated as 'critically low' with only 3 (8%) rated as high.[10]

Journal endorsement of PRISMA resulted in increase of both quality of reporting and methodological quality of published studies in leading high-impact

gastroenterology and hepatology journals (p = 0.003)[11] and emergency medicine journals *p* = 0.001).[12] Other variables associated with significantly higher quality of reporting in a cohort of 487 SRs/MAs published in evidence-based Chinese journals were: SRs/MAs with more than 3 authors, from a university or hospital + university cooperation, multiple affiliations (≥2), and funding.[13] A review of methodological quality of 38 published dermatological systematic reviews using the OQAQ, showed that Cochrane reviews published both in peer-reviewed journals (n=11) and in The Cochrane Library (n=17) had higher overall quality scores than non-Cochrane reviews (n=10) (median 6.0 and 6.5 vs. 4.5, P-values 0.01 and 0.002).[14]

There is a need to assess the quality of systematic reviews on dermatologic interventions in the Philippines to produce more reliable and accurate evidence. This will guide authors, publishers and users of systematic reviews and eventually lead to more judicious clinical practice.

OBJECTIVE

To determine the methodologic quality of systematic reviews on interventions in dermatology in the Philippines

Table 1. 16 items in the AMSTAR 2 tool.

No.	Item	Responses
1	Did the research questions and inclusion criteria for the review include the components of PICO?	'Yes' or 'No'
2	**Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?**	**'Yes,' 'Partial Yes, or 'No'**
3	Did the review authors explain their selection of the study designs for inclusion in the review?	'Yes' or 'No'
4	**Did the review authors use a comprehensive literature search strategy?**	**'Yes,' 'Partial Yes', or ''No''**
5	Did the review authors perform study selection in duplicate?	'Yes' or 'No'
6	Did the review authors perform data extraction in duplicate?	'Yes' or 'No'
7	**Did the review authors provide a list of excluded studies and justify the exclusions?**	**'Yes,' 'Partial Yes,' or 'No'**
8	Did the review authors describe the included studies in adequate detail?	'Yes,' 'Partial Yes,' or 'No'
9	**Did the review authors use a satisfactory technique for assessing the risk of bias in individual studies that were included in the review?**	**'Yes,' 'Partial Yes,' or 'No'**
10	Did the review authors report on the sources of funding for the studies included in the review?	'Yes' or 'No'
11	**If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?**	**'Yes,' 'No,' or 'No meta-analysis conducted'**
12	If meta-analysis was performed, did the review authors assess the potential impact of risk of bias in individual studies on the results of the meta-analysis or other evidence synthesis?	'Yes,' 'No,' or 'No meta-analysis conducted'
13	**Did the review authors account for risk of bias in individual studies when interpreting/ discussing the results of the review?**	**'Yes' or 'No'**
14	Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	'Yes' or 'No'
15	**If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?**	**'Yes,' 'No,' or 'No meta-analysis conducted'**
16	Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	'Yes' or 'No'

**in bold font are the seven critical domains*

METHODS

This is part 1 of a 2-part series on this study. Part 2 determined the validity and reliability of the AMSTAR 2 tool. The registered protocol for this review can be requested from the author.

1. **Study design:** Methodologic review

2. **Eligibility of studies:**

Inclusion criteria: Systematic reviews or meta-analyses, which included interventional clinical trials (randomized or non-randomized) for the treatment or prevention of dermatologic disease or maintenance of healthy skin, hair and nails; Any language, status or date of publication; Primary author should be Filipino or have a Philippine affiliation

Exclusion criteria: Narrative reviews, umbrella reviews, overviews, network meta-analyses, systematic reviews on diagnostic accuracy, screening or prognosis.

3. **Searching for eligible studies:**

We searched all articles indexed in the following databases (from inception to June 2019): MEDLINE, Cochrane Library, PROSPERO, using keywords 'systematic review' or 'meta-analysis', 'Philippin* or Filipin*, and HERDIN (from inception to June 2019) using 'systematic review' or 'meta-analysis'. We also hand searched reference lists of included, excluded reviews and reference articles, issues of the Journal of the Philippine Dermatological Society (JPDS) (from 1992 to May 2019), and Acta Medica Philippina (from 2008 to June 2019), and contacted authors and organizations in the field.

Two independent reviewers (RFG and either MCFB or AJMG) screened the titles and abstracts and agreed on potentially relevant ones. They read full texts of potentially relevant reports and selected those studies that fulfilled the inclusion criteria. Disagreements were resolved by discussion or consulting a third reviewer.

4. **AMSTAR 2 tool**

There are 16 items in the AMSTAR tool that have responses varying from 'Yes', 'No', 'Partial Yes', or 'Not applicable', and 'No meta-analysis' (Table 1).

Overall confidence in results was rated as 'high' , 'moderate', 'low' and 'critically low,' based on 7 critical and 9 non-critical domains (Table 2).

5. **Data collection**

Two reviewers independently extracted data from the full text of each included SR. Disagreements were resolved by discussion or a third reviewer. The following data items were entered into a pre-tested data collection form:

General data: Citation, number of authors, foreign co-author, department/unit of author/s,

Table 2. Rating overall confidence in the results of systematic reviews

Rating	Description
High	No or one non-critical weakness: the systematic review provides an accurate and comprehensive summary of the results of the available studies that address the question of interest
Moderate	More than one non-critical weakness*: the systematic review has more than one weakness but no critical flaws. It may provide an accurate summary of the results of the available studies that were included in the review
Low	One critical flaw with or without non-critical weaknesses: the review has a critical flaw and may not provide an accurate and comprehensive summary of the available studies that address the question of interest
Critically low	More than one critical flaw with or without non-critical weaknesses: the review has more than one critical flaw and should not be relied on to provide an accurate and comprehensive summary of the available studies

**Multiple non-critical weaknesses may diminish confidence in the review and it may be appropriate to move the overall appraisal down from moderate to low confidence. (Adapted from Shea 2017[6])*

institutional affiliation and whether university- or research-based or not, year of publication, source of funding, type of journal (indexed or not; whether endorsed PRISMA or not), language

Methods: language restrictions, publication restrictions, Cochrane or non-Cochrane review, whether used PRISMA or not

Characteristics of Included studies: Study design of included studies, number of included studies, number of total participants, type of disease, type of intervention

Responses to AMSTAR 2 tool

6. Outcomes

a. Number of fulfilled AMSTAR 2 items

b. Number of SRs that reported each item in AMSTAR 2

c. Number of SRs with rating for overall confidence in results (high, moderate, low, critically low) based on AMSTAR 2, stratified according to study variables (year of publication, number of authors, number of affiliations, university- or research-based affiliation, journal endorsement of PRISMA, mention of using PRISMA in report, source of funding)

7. Data analysis

Descriptive analysis such as means and SD for continuous data, and frequency and percentage distribution for categorical data was done using Microsoft Excel. We could not analyze impact of variables on AMSTAR 2 rating since majority of the SRs were critically low quality, and only one SR had low quality. Thus, we did not compute for odds ratio for variables for general information (number of authors, presence of a foreign author or statistician/epidemiologist as author, year published), author affiliation (university- or research-based; number of affiliations), study methods (mention of using PRISMA), type of journal (whether indexed, whether endorsed PRISMA), and source of funding.

8. Ethical Considerations

All data collected from the published articles was considered as public domain and did not require confidentiality. If a reviewer was an author of an included study, she was not assigned to extract data from that study.

RESULTS:

Search Results

Thirty five studies were retrieved and assessed for eligibility and 20 SRs were included. Fourteen studies were excluded because they did not have a Filipino primary author nor affiliated to a Philippine institution while one study was also excluded because it was a withdrawn Cochrane protocol (Figure 1).

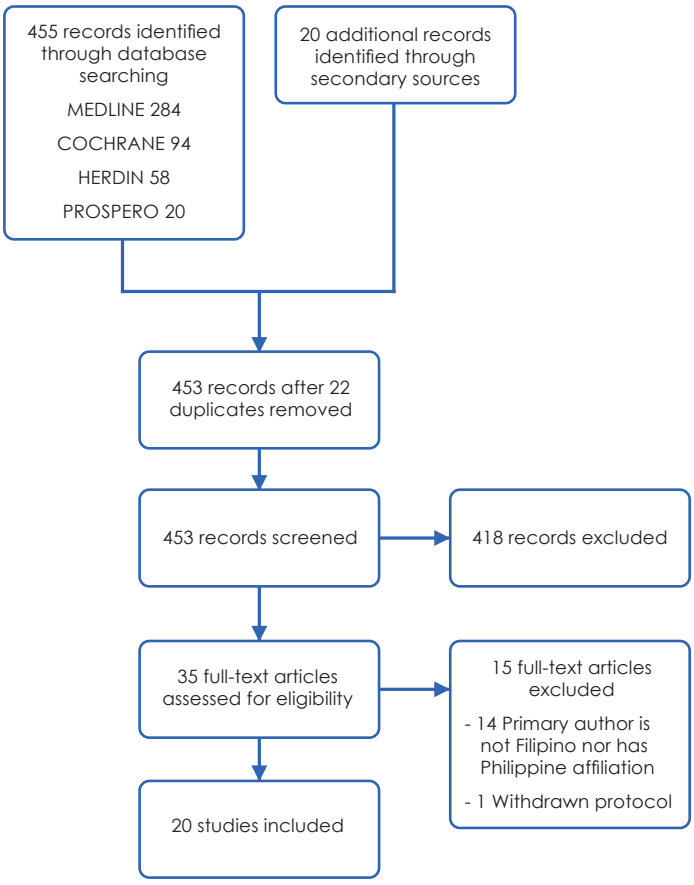


Figure 1. Study flow diagram

1. Characteristics of included studies

The details of characteristics of included SRs are in Tables 3 and 4.

Table 3. Summary of characteristics of included SRs according to methods/journal details

No.	Study ID	No. of authors	Foreign Author?	Specialty	No. of Institutional Affiliations	Univ. or Research-based affiliation?	Cochrane Review?	Journal	Utilized PRISMA?	Indexed Journal?	Journal Endorsed PRISMA?1
1	Abalos 2019[15]	3	N	Dermatology	1	Y	N	AMP	N	Y	Y
2	Ang-Tiu 2012[16]	3	N	Dermatology	1	Y	N	AMP	N	Y	Y
3	Camaclang 2019[17]	3	N	Dermatology	1	Y	N	AMP	Y	Y	Y
4	Cua 2019[18]	4	N	Dermatology	1	Y	N	AMP	N	Y	Y
5	De las Alas 2012[19]	3	N	Dermatology	1	Y	N	Expert Rev. Med. Devices	N	Y	N
6	Dimabayu 2009[20]	13	N	Medical Students	1	N	N	St.Luke's J Med	NA	No info	NA
7	Flores-Genuino 2019[21]	4	N	Dermatology	2	Y	N	AMP	Y	Y	Y
8	Gatmaitan-Dumlao 2017[22]	3	N	Dermatology	1	Y	N	PJIM	Y	Y	Y
9	Intong 2004[23]	2	N	Dermatology	1	Y	N	JPDS	NA	N	NA
10	Lim-Ong 2002[24]	2	N	Dermatology	1	Y	N	JPDS	NA	N	NA
11	Meghrajani 2013[25]	4	N	Dermatology	4	Y	N	Expert Rev. Clin. Pharmacol.	N	Y	N
12	Nacianceno 2019[26]	3	N	Dermatology	2	Y	N	AMP	N	Y	Y
13	Ochoa-Nicolas 1998[27]	3	N	Dermatology	3	Y	N	JPDS	NA	N	NA
14	Pontejos 2009[28]	3	N	Dermatology	1	Y	N	JPDS	NA	Y	NA
15	Santiago 2004[29]	1	N	Family Medicine	no info	No info	N	FFP	NA	No info	NA
16	Seguban 2017[30]	7	N	Cardiology	1	N	N	PJC	Y	No info	No info
17	Sison 2017[31]	3	N	Dermatology	1	Y	N	JPDS	Y	Y	Y
18	Tan 2004[32]	2	N	Dermatology	1	Y	N	JPDS	NA	N	NA
19	Uy 2017[33]	3	N	Dermatology	1	Y	N	JPDS	N	Y	Y
20	Yang 1999[34]	3	N	Dermatology	2	Y	N	JPDS	NA	N	NA

[1]Not applicable to articles published before 2009
NA, Not applicable; AMP, Acta Medica Philippina; PJIM, Philippine Journal of Internal Medicine; JPDS, Journal of the Philippine Dermatological Society; FF,P The Fillipino Family Physician; PJC, Philippine Journal of Cardiology

Table 4. Summary of characteristics of included SRs as to content/study details

No.	Study ID	Intervention	Mode of Administration	Type of Disease	No. of Studies	No. of Participants
1	Abalos 2019	Potassium hydroxide	Topical	Anogenital warts	4	214
2	Ang-Tiu 2012	Pimecrolimus	Topical	Seborrheic dermatitis	4	227
3	Camaclang 2019	Excimer Laser + Topical	Topical	Psoriasis	3	130
4	Cua 2019	Azathioprine	Oral	Alopecia areata	6	48
5	De las Alas 2012	Pulsed dye laser	Topical	Keloids And hypertrophic scars	8	281
6	Dimabayu 2009	Probiotics	Oral	Atopic dermatitis	7	493
7	Flores-Genuino 2019	Oral azoles	Oral	Pityriasis versicolor	94	2894 (RCTs); 3452 (NRS)
8	Gatmaitan-Dumlao 2017	Oral isotretinoin	Oral	Non-melanoma skin cancer	4	4047
9	Intong 2004	Pimecrolimus	Topical	Atopic dermatitis	2	964
10	Lim-Ong 2002	Calcipotriol + PUVA	Topical	Vitiligo	2	44
11	Meghrajani 2013	Topical corticosteroids	Topical	Acute radiation dermatitis	6	413
12	Nacianceno 2019	Measles-Mumps-Rubella Vaccine	Intralesional	Cutaneous warts	5	436
13	Ochoa-Nicolas 1998	Systemic corticosteroids	Oral	Postherpetic neuralgia	4	131
14	Pontejos 2009	Blue light	Topical	Acne vulgaris	4	186
15	Santiago 2004	Akapulko; Guava	Topical	Scabies; Wound disinfection	10	No information
16	Seguban 2017	Sulodexide	Oral	Venous ulcers	4	482
17	Sison 2017	Combination therapy	Oral And Topical	Psoriasis	6	1308
18	Tan 2004	Cimetidine	Oral	Warts	3	137
19	Uy 2017	Non-Multidrug Therapy	Oral	Leprosy	4	2186
20	Yang 1999	BCG Vaccination	Intralesional	Leprosy	3	42588

The earliest published SR was 1998, while the latest was 2019. Majority (12 or 60 %) were published in the last decade (2010s) (Figure 2).

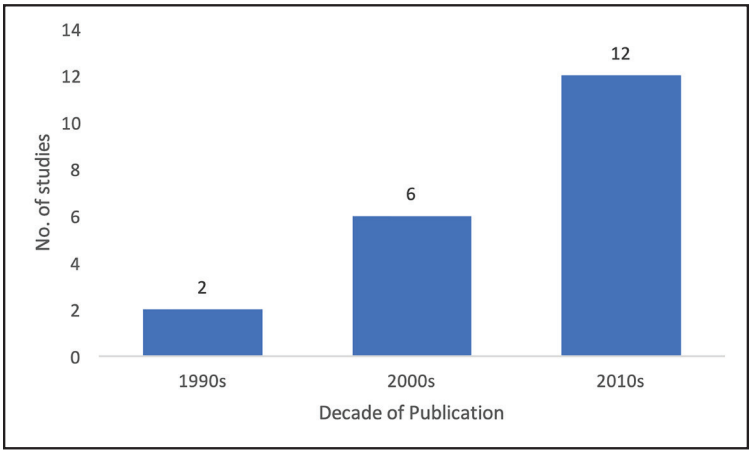
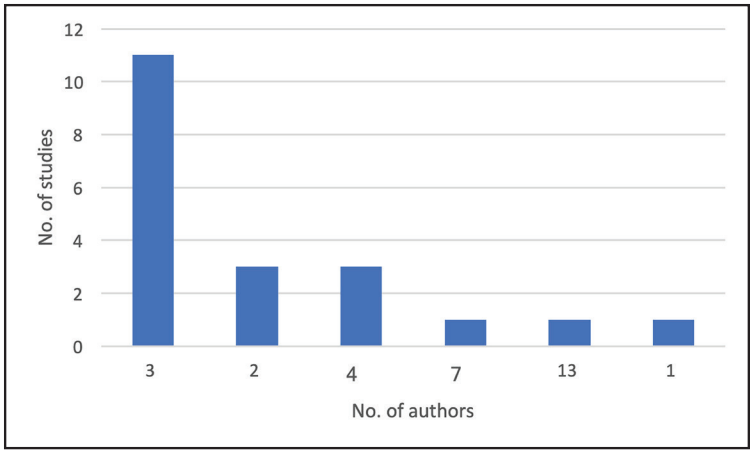


Table 4. Summary of characteristics of included SRs as to content/ study details

Majority (11 or 55%) had 3 authors, with one SR each having 13 authors and a sole author (Figure 3).

Table 3. Distribution of studies based on number of authors



Majority (17 or 85%) were authored by dermatologists (Figure 4).

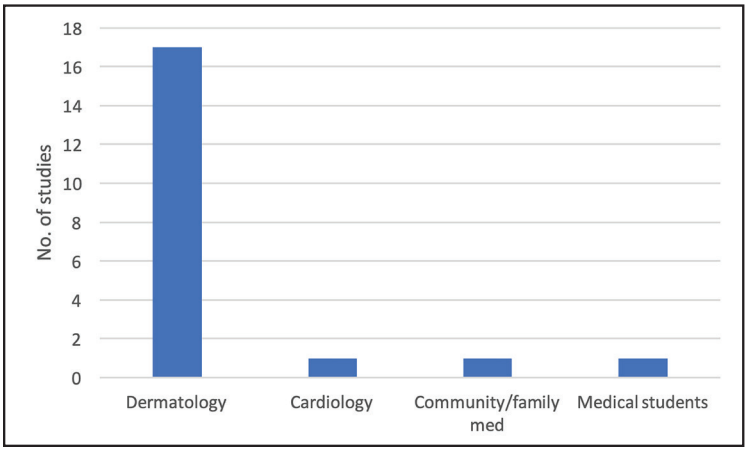


Figure 4. Distribution of studies according to specialty of authors

Majority of SRs (18 or 90%) were done in university-based institutions, with 14 (70%) only in a single institution (Figure 5).

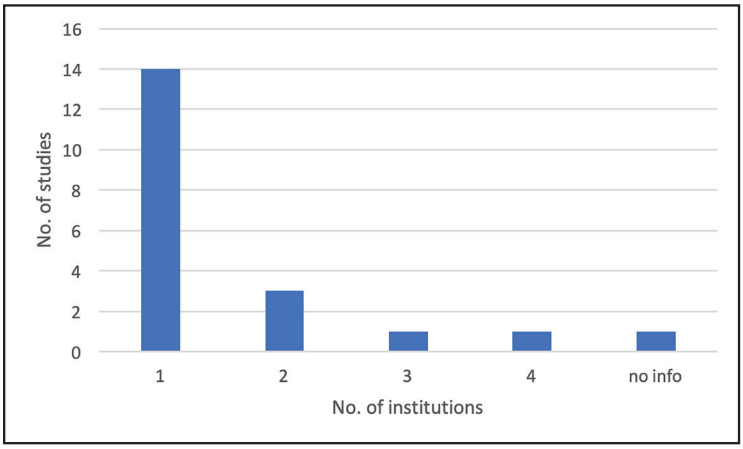


Figure 5. Distribution of studies according to number of institutions

The most common disease category of the SRs was infections/ infestations (8/20 or 40%) (Figure 6).

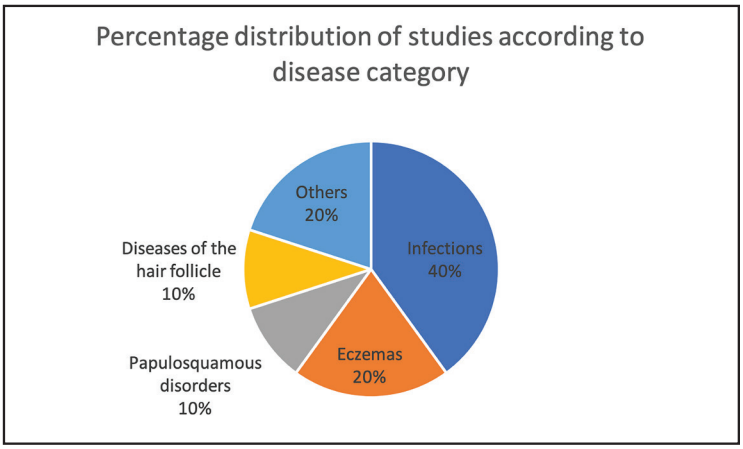


Figure 6. Percentage distribution of studies according to disease category

Topical interventions accounted for 41% (10/22), followed by oral interventions at 41% (9/22) (Figure 7).

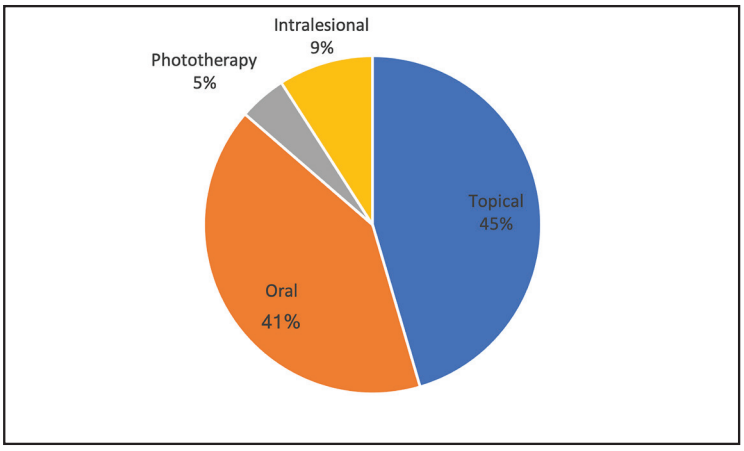


Figure 7. Percentage distribution of studies according to type of intervention

Note: Total is 22 since some reviews studied more than one type of intervention

Majority (13 or 65%) had 5 or less included studies in the SRs, while six had 6 to 10 studies, and one had 94 studies. The median number of total participants was 434, most commonly between 101 to 300 participants in 7 or 35% of studies (Figure 8)

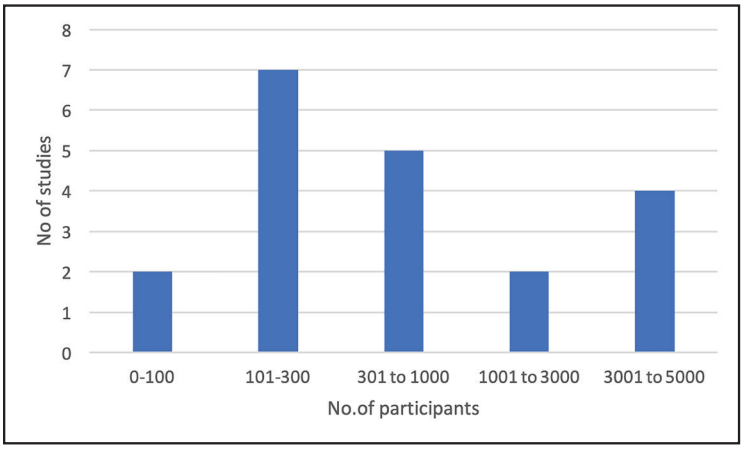


Figure 8. Distribution of studies according to total number of participants

Only four SRs mentioned using PRISMA in the report (Flores-Genuino 2019; Gatmaitan-Dumlao 2017; Seguban 2017; Sison 2017). Majority (12 or 60%) were published in indexed journals, five in Acta Medica Philippina, three in Journal of the Philippine Dermatological Society, two in Expert Review Clinical Pharmacology, and one each in Expert Review Medical Devices, and Philippine Journal of Internal Medicine. Of 11 SRs published after 2009 (date of PRISMA publication), majority (8) were published in journals that instructed authors to use PRISMA reporting checklist for systematic review submissions.

The most highly reported item was that on adequate description of included studies (item 8) in 17 (85%) studies (Table 3). Among the critical items, only two items (item#7 – Excluded studies; and item #9 –Satisfactory risk of bias) were reported in majority of studies (65%). The least reported critical items were a registered review protocol (item #2) (5%), and investigation of publication bias (item #15) (15%). No study got a point for item #3 (study selection criteria), since none explained their choice for included study design.

Table 3. Frequency distribution of studies that reported each AMSTAR 2 item

Item No.	Description	No of studies	%
1	PICO	15	75
2	**Protocol**	**1**	**5**
3	Study selection criteria	0	0
4	**Comprehensive search strategy**	**8**	**40**
5	Duplicate study selection	8	40
6	Duplicate data extraction	6	30
7	**Excluded studies**	**13**	**65**
8	Included studies	17	85
9	**Satisfactory risk of bias**	**13**	**65**
10	Funding sources in included studies	5	25
11	**Appropriately combined studies in meta-analysis**	**6**	**30**
12	Assess potential risk of bias impact on meta-analysis	4	20
13	**Discuss impact of risk of bias**	**6**	**30**
14	Heterogeneity explained & discussed	6	30
15	**Investigated publication bias presence and impact**	**3**	**15**
16	Conflict of interest/Funding	12	60

**In bold font are critical items*

Overall confidence was critically low in majority (19/20) of included reviews (Table 4). We were not able to determine the association of potential factors with AMSTAR 2 rating due to only one review with low confidence rating, and none for moderate and high confidence ratings. The median number of critical flaws was 4, and non-critical flaws, 5.

Table 4. Summary of overall confidence rating based on AMSTAR 2

No.	Study ID	No. of reported AMSTAR 2 items (%)	No. of critical flaws	No. of non-critical weaknesses	Overall confidence rating
1	Abalos 2019	9 (56)	3	4	Critically Low
2	Ang-Tiu 2012	6 (38)	4	6	Critically Low
3	Camaclang 2019	8 (50)	4	4	Critically Low
4	Cua 2019	5 (31)	5	6	Critically Low
5	De las Alas 2012	6 (38)	5	5	Critically Low
6	Dimabayu 2009	6 (38)	5	5	Critically Low
7	Flores-Genuino 2019	12 (75)	1	3	Low
8	Gatmaitan-Dumlao 2017	6 (38)	4	6	Critically Low
9	Intong 2004	6 (38)	5	5	Critically Low
10	Lim-Ong 2002	2 (13)	6	8	Critically Low
11	Meghrajani 2013	6 (38)	4	6	Critically Low
12	Nacianceno 2019	8 (50)	4	4	Critically Low
13	Ochoa-Nicolas 1998	3 (19)	6	7	Critically Low
14	Pontejos 2009	11 (69)	3	2	Critically Low
15	Santiago 2004	0	7	9	Critically Low
16	Seguban 2017	6 (38)	5	5	Critically Low
17	Sison 2017	9 (56)	3	4	Critically Low
18	Tan 2004	6 (38)	5	5	Critically Low
19	Uy 2017	6 (38)	4	6	Critically Low
20	Yang 1999	3 (19)	6	7	Critically Low
			Median = 4.5	Median = 5	

DISCUSSION

A total of 20 systematic reviews on dermatologic interventions were published by Filipino authors since 1998, a relatively small number compared to the total number of systematic review articles tagged in PubMed. Between 1991 and 2014, annual publications of systematic reviews increased by 2,728% and by 2,635% for meta-analyses compared to only 153% for all PubMed indexed items, with more systematic reviews published compared to randomized trials.[5] Although caution has been advised with regard to the conduct of systematic reviews especially those that include small, underpowered and unreliable trials, [35] it can be expected that more systematic reviews on dermatologic interventions will be published in Philippine and international journals in the future. Therefore this is a good time to appraise the conduct of systematic reviews on dermatologic interventions by Filipino investigators.

Majority (19 of 20) of the systematic reviews had a critically low overall confidence rating based

on AMSTAR 2. This means that these 19 systematic reviews have more than one critical flaw and may not provide an accurate and comprehensive synthesis of current evidence. Eighty percent (16/20) of the systematic reviews had four or more critical flaws. The aim of systematic reviews is to provide a summary of the results of available studies on a particular research question so as to help form well-informed clinical decisions. If the systematic reviews were not well conducted and reported, then the results may not be reliable and relevant to clinical practice.

There was one systematic review with low overall confidence rating (Flores-Genuino 2019), while there was none with high rating. Flores-Genuino 2019 was a non-Cochrane review, whose authors were affiliated with a university, was published in an indexed journal, and utilized PRISMA checklist in the report. We could not assess the impact of variables related to review methods and author/journal characteristics due to insufficient number of systematic reviews with high, moderate, and low ratings.

Among the seven critical domains, the criteria with the least compliance was protocol registration prior to the start of the review. In fact only 1 of the 20 papers had a preregistered written protocol; a non-Cochrane review published in 2019, Since the systematic review is a type of observational research, the written protocol provides the methods which the investigators have to follow. Transparency in the conduct of the research reduces bias, and may increase the quality of the study. This study shows that this recommended criterion was not practiced and this may be due to several factors including 1) lack of awareness of the recommendation, 2) not a requirement for publication, and 3) lack of knowledge of networks for protocol registration.

The second critical domain which had the least compliance was the investigation of the presence of publication bias and its impact on the results of the study. Only 3 of the 20 systematic reviews assessed publication bias. However 19 of the 20 reviews worked on 10 or less studies which may explain the lack of quantitative analysis for publication bias. Visual inspection of funnel plot asymmetry, as well as statistical analysis using Egger's and Begg's tests require 10 or more studies, making them unreliable tests for publication bias.[6,36] When there is publication bias, small-sized studies with non-significant results are underrepresented[37].

Although 85% of the reviews reported the details of the included studies, only 65% accounted for the excluded studies. It is important that the excluded studies are described and the reasons they were not included be identified so that the impact of their exclusion can be easily assessed. Risk of bias was adequately assessed in 65% of the reviews but only 30% discussed its impact on the review. The presence of bias may decrease the quality of the results of the review, consequently making the findings weak or inconclusive, and not useful for decision-making in patient care.

Among the AMSTAR 2 items, 75% were able to comply with the formulation of a good research question including the PICO components: population, intervention, control group and outcome. These components serve as keywords for literature search, which is only a small part of another AMSTAR 2 item, a comprehensive search strategy. Only 40% of the reviews conducted a comprehensive search strategy which included searching at least 2 databases, searching the reference lists of included studies, trial registries and grey literature, consulting field experts, and justifying publication restrictions. It is important to demonstrate that a comprehensive search has been carried out since small studies with positive findings have a greater tendency to be published compared to small studies with negative findings resulting to inflated treatment effects.[35]

Only 40% of the reviews reported performance of study selection in duplicate, whereas only 30% performed data extraction in duplicate. This is relatively low compared to an assessment of reviews using AMSTAR 2 on the effectiveness of exercise interventions on low back pain which found that 74% of the reviews performed study selection in duplicate and 60% extracted data in duplicate. In a methodologic review comparing single screening to conventional double screening in study selection, the median number of missed studies is 5% (range, 0 to 58%), and in 3/7 singe screenings, the findings would have changed substantially. [38] There were more errors from single data extraction than double data extraction (relative difference: 21.7%, P 5 .019).[39] Thus, there is a need for at least two reviewers to do independent study selection and data extraction and agree on a consensus, for more reliable and accurate results.

Conflict of interest was declared by authors in 60% of the reviews. This is important since pharmaceutical and medical device industries have initiated many of the systematic reviews to provide insights on their products, as well as their competitors.'[5] Those that yielded positive results have a greater tendency to be published by the sponsoring companies, compared to meta-analyses with unfavorable results. In relation to

this, it is also important to report the funding sources of included studies in the reviews, but only 24% of the reviews complied with this AMSTAR 2 item.

CONCLUSION

A large majority (95%) of the systematic reviews on interventions for dermatological conditions in the Philippines have been assessed to have critically-low overall confidence rating using AMSTAR 2, indicative of a need to improve the reporting quality of systematic reviews. This reflects the situation of systematic reviews in other specialty fields, such as surgical interventions and chronic low back pain. Investigators should be encouraged to use PRISMA reporting guidelines in writing their manuscripts, and the AMSTAR 2 tool for self-appraisal prior to submission to journals. Assessment of reporting compliance to AMSTAR 2 can also be done by peer reviewers or journal editors prior to acceptance of submitted systematic reviews.

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