

Note: This is Online Appendix 3 of Mazibuko RP, Odendaal W, Cooper S, et al. Capacity development of researchers involved in guideline development in Malawi, Nigeria and South Africa: A mixed-methods study. Afr J Prm Health Care Fam Med. 2026;18(1), a5193. <https://doi.org/10.4102/phcfm.v18i1.5193>

Appendix 3: The tables for the different core skills sections and the soft skills.

Table 1 Confidence level ratings in the systematic review of effectiveness

	Systematic Review of Effectiveness (n=13)									
	Pre-GELA(n=13)					Post GELA				
Confidence levels	Level 1- No knowledge on this topic n(%)	Level 2- I have heard of this topic but do not feel confident to do it n(%)	Level 3- Slightly confident to do it n(%)	Level 4- I have mastered this topic n(%)	N (Capacity developed)	Level 1- No knowledge on this topic n(%)	Level 2- I have heard of this topic but do not feel confident to do it n(%)	Level 3- Slightly confident to do it n(%)	Level 4- I have mastered this topic n(%)	Total number of respondents with level 4 confidence after GELA n(%)
Formulating a review question					2 (15)					
Identifying a gap in evidence and providing a rationale for conducting systematic review	0	0	1 (8)	12 (92)		0	0	0	2 (100)	13 (100)
Writing a structured research question according to the PICO acronym	0	0	0	13 (100)		0	0	0	2 (100)	13 (100)

Defining eligibility criteria according to the PICO question	0	0	1 (8)	12 (92)		0	0	0	2 (100)	13 (100)
Deciding which study designs to include in the systematic review	0	0	2 (15)	11 (85)		0	0	0	2 (100)	13 (100)
Registering a title and developing a protocol	0	0	1 (8)	12 (92)		0	0	0	2 (100)	13 (100)
Searching for studies					4 (31)					
How to develop a search strategy	0	2 (15)	4 (31)	7 (54)		0	0	1 (25)	3 (75)	10 (76)
Using controlled vocabulary and text words (MeSH terms and Boolean operators) in a search strategy	0	2 (15)	5 (38)	6 (46)		0	0	2 (50)	2 (50)	8 (61)
Using search filters and limits	0	2 (15)	3 (23)	8 (62)		0	0	1 (25)	3 (75)	11 (85)
Choosing appropriate databases	0	1 (8)	3 (23)	9 (69)		0	0	1 (25)	3 (75)	12 (92)
Searching electronic databases for evidence	0	1 (8)	3 (23)	9 (69)		0	0	0	4 (100)	13 (100)

Searching for ongoing studies	0	2 (15)	3 (23)	8 (62)		0	1 (25)	2 (50)	1 (25)	9 (69)
Searching for grey literature (unpublished data)	0	4 (31)	6 (46)	3 (23)		0	0	3 (75)	1 (25)	4 (31)
Other search approaches (e.g. hand searching, contacting experts in the field)	0	3 (23)	3 (23)	7 (54)		0	1 (25)	1 (25)	2 (50)	9 (69)
Using reference management software	0	1 (8)	2 (15)	10 (77)		0	0	0	4 (100)	13 (100)
Extracting data					3 (23)					
Defining what data to extract	0	0	3 (23)	10 (77)		0	0	0	3 (100)	13 (100)
Creating data extraction forms	0	0	4 (31)	9 (69)		0	0	0	3 (100)	
Completing the data extraction forms	0	0	2 (15)	11 (85)		0	0	0	3 (100)	13 (100)
Extracting data that is presented graphically	0	0	9 (69)	4 (31)		0	0	1 (33)	2 (67)	6 (46)
Extracting dichotomous data	0	0	2 (15)	11 (85)		0	0	0	3 (100)	13 (100)
Extracting continuous data	0	1 (8)	3 (23)	9 (69)		0	0	1 (33)	2 (67)	11 (85)

Critical appraisal					4 (31)					
Understand the process of critical appraisal	0	0	4 (31)	9 (69)		0	0	0	4 (100)	13 (100)
Identify an appropriate tool to appraise included studies	0	0	4 (31)	9 (69)		0	0	1 (25)	3 (75)	12 (92)
Understand bias and various domains that need to be appraised	0	0	4 (31)	9 (69)		0	0	1 (25)	3 (75)	12 (92)
Critically appraise randomised controlled trials	0	0	4 (31)	9 (69)		0	0	1 (25)	3 (75)	12 (92)
Critically appraises non-randomised studies	0	2 (14)	6 (43)	5 (39)		0	0	1 (25)	3 (75)	8 (62)
Discuss critical appraisal with a second reviewer and resolve conflicts	0	0	4 (31)	9 (69)		0	0	0	4 (100)	13 (100)
Summarising study characteristics and preparing for synthesis					3 (23)					
Summarising the characteristics	0	0	1 (8)	12 (92)		0	0	0	3 (100)	13 (100)

of each study										
Determining comparability across studies	0	0	5 (38)	8 (62)		0	0	5 (38)	8 (62)	8 (62)
Identifying relevant comparisons from the included studies	0	0	5 (38)	8 (62)		0	0	0	3 (100)	11 (83)
Data synthesis and analysis					3 (23)					
Use data analysis software (RevMan, R, Stata, Excel)	0	1 (8)	6 (46)	6 (46)		0	0	2 (67)	1 (33)	7 (54)
Pool dichotomous data using appropriate effect measures	0	3 (23)	3 (23)	7 (54)		0	0	2 (67)	1 (33)	8 (62)
Pool continuous data using appropriate effect measures	0	3 (23)	3 (23)	7 (54)		0	0	2 (67)	1 (33)	8 (62)
Interpret meta-analysis	0	3 (23)	1 (8)	9 (69)		0	0	1 (33)	2 (67)	11 (85)
Perform meta-regression	3 (23)	10 (77)	0	0		0	1 (33)	2 (67)	0	0
Identify heterogeneity	0	3 (23)	1 (8)	9 (69)		0	0	1 (33)	2 (67)	11 (85)
Address heterogeneity	0	4 (31)	2 (15)	7 (54)		0	0	2 (67)	1 (33)	8 (62)

Conduct subgroup analysis	0	3 (23)	2 (15)	8 (62)		0	0	2 (67)	1 (33)	9 (69)
Interpret subgroup analysis	0	3 (23)	2 (15)	8 (62)		0	0	1 (33)	2 (67)	10 (77)
Interpret absolute effects	0	2 (15)	4 (32)	7 (54)		0	1 (33)	1 (33)	1 (33)	8 (62)
Conduct sensitivity analysis	0	4 (31)	2 (15)	7 (54)		0	2 (67)	1 (33)	0	7 (54)
Interpret sensitivity analysis	0	3 (23)	3 (23)	7 (53)		0	1 (33)	1 (33)	1 (33)	8 (62)
Conduct narrative synthesis when a meta-analysis is not possible	0	2 (15)	4 (31)	7 (54)		0	0	2 (67)	1 (33)	8 (62)
Perform Network meta-analysis	3 (23)	9 (69)	1 (8)	0		2 (67)	0	1 (33)	0	0
Grading certainty of evidence					3 (23)					
Understanding the GRADE approach to assess the certainty of evidence	0	1 (8)	4 (31)	8 (62)		0	0	0	3 (100)	11 (85)
Identifying important outcomes	0	1 (8)	5 (38)	7 (54)		0	0	1 (33)	2 (67)	9 (69)

to include in Summary of findings (SoF) tables										
Assessing the certainty of evidence: Assessing study limitations	0	1 (8)	6 (46)	6 (46)		0	0	1 (33)	2 (67)	8 (62)
Assessing the certainty of evidence: Assessing inconsistency	1 (8)	1 (8)	5 (38)	6 (46)		0	1 (33)	0	2 (67)	8 (62)
Assessing the certainty of evidence: Assessing imprecision	1 (8)	1 (8)	6 (46)	5 (38)		0	1 (33)	0	2 (67)	7 (54)
Assessing the certainty of evidence: Assessing indirectness	1 (8)	1 (8)	5 (38)	6 (46)			1 (33)		2 (67)	8 (62)
Assessing the certainty of evidence: Assessing publication bias	0	1 (8)	7 (53)	5 (38)		0	1 (33)	0	2 (67)	7 (54)
Interpreting findings in light of the certainty of evidence	0	1 (8)	6 (46)	6 (46)		0	1 (33)	0	2 (67)	8 (62)

Generating SoF tables or evidence profiles	1 (8)	2 (15)	4 (31)	6 (46)		0	1 (33)	1 (33)	1 (33)	7 (54)
Using GRADE-Pro GDT software	2 (15)	1 (8)	5 (38)	5 (38)			1 (33)	1 (33)	1 (33)	6 (46)

Table 2 Confidence level ratings of the qualitative evidence synthesis

Qualitative evidence synthesis (n=9)										
	Pre-GELA(n=9)				N (Capacity developed)	Post GELA				Total number of respondents with level 4 confidence after GELA n(%)
	Level 1- No knowledge on this topic n(%)	Level 2- I have heard of this topic but do not feel confident to do it n(%)	Level 3- Slightly confident to do it n(%)	Level 4- I have mastered this topic n(%)		Level 1- No knowledge on this Topic n(%)	Level 2- I have heard of this topic but do not feel confident to do it n(%)	Level 3- Slightly confident to do it n(%)	Level 4- I have mastered this Topic n(%)	
Formulating a review question					5 (56)					
Identifying a gap in evidence and providing a rationale for conducting a qualitative evidence synthesis	0	0	4 (44)	5 (56)		0	0	2 (40)	3 (60)	8 (89)
Writing a structured research question according	0	0	2 (22)	7 (78)		0	0	0	5 (100)	9 (100)

to SPIDER/SPICE/PIC(O)/other										
Defining eligibility criteria according to the question	0	0	3 (33)	6 (67)		0	0	0	5 (100)	9 (100)
Registering a title and developing a protocol	0	2 (22)	3 (33)	4 (44)		0	0	2 (40)	3 (60)	7 (78)
Using QES in clinical guideline development	2 (22)	2 (22)	3 (33)	2 (22)		0	0	3 (60)	2 (40)	4 (44)
Searching for studies					4 (44)					
How to develop a search strategy	0	2 (22)	5 (56)	2 (22)		0	0	3 (75)	1 (25)	3 (33)
Using controlled vocabulary and text words (MeSH terms, Boolean operators) in a search strategy	0	2 (22)	4 (44)	3 (33)		0	0	2 (50)	2 (50)	5 (56)
Using search filters and limits	0	2 (22)	3 (33)	4 (44)		0	1 (25)	1 (25)	2 (50)	6 (67)
Choosing appropriate databases	0	1 (11)	6 (67)	2 (22)		0	0	2 (50)	2 (50)	4 (44)
Searching electronic databases for evidence	0	2 (22)	5 (56)	2 (22)		0	0	1 (25)	3 (75)	5 (56)
Searching for ongoing studies	0	4 (44)	3 (33)	2 (22)		0	0	4 (100)	0	2 (22)
Searching for grey literature (unpublished data)	0	4 (44)	3 (33)	2 (22)		0	0	4 (100)	0	2 (22)
Other search approaches (e.g. hand searching, contacting experts in the field)	0	3 (33)	3 (33)	3 (33)		0	0	4 (100)	0	2 (22)
Using reference management software	0	1 (11)	2 (22)	6 (67)		0	0	0	4 (100)	9 (100)
Extracting descriptive data					5 (56)					

Defining what data to extract	0	1 (11)	3 (33)	5 (56)		0	0	1 (20)	4 (80)	9 (100)
Creating data extraction forms	0	2 (22)	2 (22)	5 (56)		0	0	2 (40)	3 (60)	8 (89)
Completing the data extraction process		1 (11)	4 (44)	4 (44)				1 (20)	4 (80)	8 (89)
Critical appraisal					5 (56)					
Understand the process of critical appraisal	0	2 (22)	2 (22)	5 (56)		0	0	2 (40)	3 (60)	8 (89)
Identify an appropriate tool to appraise included studies	0	2 (22)	2 (22)	5 (56)		0	1 (20)	1 (20)	3 (60)	8 (89)
Understand bias and various domains that need to be appraised	0	2 (22)	2 (22)	5 (56)		0	0	2 (40)	3 (60)	8 (89)
Critically appraise qualitative studies	0	2 (22)	4 (44)	3 (33)		0	0	2 (40)	3 (60)	6 (67)
Discuss critical appraisal with a second reviewer and resolve conflicts	0	2 (22)	3 (33)	4 (44)		0	0	3 (60)	2 (40)	6 (67)
Coding data					3 (33)					
Create a code book	0	2 (22)	2 (22)	5 (56)		0	0	2 (67)	1 (33)	6 (67)
Code included studies	0	1 (11)	3 (33)	5 (56)		0	0	2 (67)	1 (33)	6 (67)
Use coding software (e.g. Atlas.ti, NVIVO, Dedoose)	1 (11)	2 (22)	3 (33)	3 (33)		0	0	2 (67)	1 (33)	4 (44)
Develop themes for coded data	1 (11)	0	3 (33)	5 (56)		0	0	1 (33)	2 (67)	7 (78)
Data analysis and synthesis					5 (56)					
Methods for QES: thematic synthesis	1 (11)	0	3 (33)	5 (56)		0	0	4 (80)	1 (20)	6 (67)

Methods for QES: framework synthesis	1 (11)	1 (11)	5 (56)	2 (22)		0	1 (20)	4 (80)	0	2 (22)
Methods of QES: Meta-ethnography	3 (33)	1 (11)	3 (33)	2 (22)		1 (20)	2 (40)	2 (40)	0	2 (22)
Balanced description and interpretation of emerging themes	1 (11)	2 (22)	1 (11)	5 (56)		0	1 (20)	2 (40)	2 (40)	7 (78)
Reflexivity (e.g. examining your own position in a situation)	1 (11)	1 (11)	3 (33)	4 (44)		0	0	3 (60)	2 (40)	6 (67)
QES writing skills	1 (11)	2 (22)	2 (22)	4 (44)		0	0	4 (80)	1 (20)	5 (56)
GRADE-CERQual					7 (78)					
Understanding the GRADE-CERQual approach to assess the confidence in the evidence	1 (11)	3 (33)	3 (33)	2 (22)		0	1 (14)	4 (57)	2 (29)	4 (44)
Assessing the confidence in the evidence: Assessing methodological limitations	1 (11)	4 (44)	1 (11)	3 (33)		0	1 (14)	4 (57)	2 (29)	5 (56)
Assessing the confidence in the evidence: Assessing coherence	1 (11)	4 (44)	1 (11)	3 (33)		0	1 (14)	4 (57)	2 (29)	5 (56)
Assessing the confidence in the evidence: Assessing adequacy of data	1 (11)	4 (44)	1 (11)	3 (33)		0	1 (14)	4 (57)	2 (29)	5 (56)
Assessing the confidence in the evidence: Assessing relevance	1 (11)	4 (44)	1 (11)	3 (33)		0	0	5 (71)	2 (29)	5 (56)
Generating Summary of Qualitative Findings tables and evidence profiles	1 (11)	4 (44)	1 (11)	3 (33)		0	1 (14)	4 (57)	2 (29)	5 (56)

Table 3 Confidence level ratings of the health economic evidence

Health economics evidence (n=6)										
	Pre-GELA (n=6)				N (Capacity developed)	Post GELA				Total number of respondents with level 4 confidence after GELA n(%)
	No knowledge on this Topic n(%)	I have heard of this topic but I do not feel confident to do it n(%)	Slightly confident to do it n(%)	I have mastered this Topic n(%)		No knowledge on this Topic n(%)	I have heard of this topic but I do not feel confident to do it n(%)	Slightly confident to do it n(%)	I have mastered this Topic n(%)	
Formulating a review question					3 (50)					
Identifying a gap in evidence and providing a rationale for conducting a health economics evidence synthesis	0	2 (33)	3 (50)	1 (17)		0	0	2 (67)	1 (33)	2 (33)
Writing a structured research question	0	2 (33)	3 (50)	1 (17)		0	0	2 (67)	1 (33)	2 (33)
Defining eligibility	0	2 (33)	3 (50)	1 (17)		0	0	2 (67)	1 (33)	2 (33)

criteria according to the question										
Registering a title and developing a protocol	0	0	3 (50)	3 (50)		0	0	2 (67)	1 (33)	4 (67)
Searching for studies					5 (83)					
How to develop a search strategy	0	0	5 (83)	1 (17)		0	0	2 (40)	3 (60)	4 (67)
Using controlled vocabulary and text words (MeSH terms, Boolean operators) in a search strategy	0	0	5 (83)	1 (17)		0	0	2 (40)	3 (60)	4 (67)
Using search filters and limits	0	0	5 (83)	1 (17)		0	0	2 (40)	3 (60)	4 (67)
Choosing appropriate databases	0	1 (17)	5 (83)	0		0	0	2 (40)	3 (60)	3 (50)
Searching electronic databases for evidence	0	0	5 (83)	1 (17)		0	0	2 (40)	3 (60)	4 (67)
Searching for ongoing studies	0	2 (33)	3 (50)	1 (17)		0	1 (20)	2 (40)	2 (40)	3 (50)

Searching for grey literature (unpublished data)	0	1 (17)	4 (67)	1 (17)		0	0	3 (60)	2 (40)	3 (50)
Other search approaches (e.g. hand searching, contacting experts in field)	0	1 (17)	4 (67)	1 (17)		0	0	3 (60)	2 (40)	3 (50)
Using reference management software	0	0	2 (33)	4 (67)		0	0	0	5 (100)	6 (100)
Extracting data					3 (50)					
Defining what data to extract	0	2 (33)	3 (50)	1 (17)		0	0	2 (67)	1 (33)	2 (33)
Creating data extraction forms	0	3 (50)	2 (33)	1 (17)		0	1 (33)	1 (33)	1 (33)	2 (33)
Completing the data extraction process	0	2 (33)	3 (50)	1 (17)		0	0	2 (67)	1 (33)	2 (33)
Critical appraisal					4 (67)					
Understand the process of critical appraisal	0	4 (67)	1 (17)	1 (17)		0	0	1 (25)	3 (75)	4 (67)
Identify an appropriate tool to appraise included studies	0	3 (50)	2 (33)	1 (17)		0	0	1 (25)	3 (75)	4 (67)

Understand bias and various domains that need to be appraised	0	5 (84)	0	1 (17)		0	0	1 (25)	3 (75)	4 (67)
Critically appraise included studies	0	4 (67)	1 (17)	1 (17)		0	0	1 (25)	3 (75)	4 (67)
Discuss critical appraisal with a second reviewer and resolve conflicts	0	3 (50)	3 (50)	0		0	0	1 (25)	3 (75)	4 (67)
Data analysis and synthesis					4 (67)					
Interpreting economic evidence for clinical guideline development	1 (17)	2 (33)	3 (50)	0		0	0	2 (50)	2 (50)	2 (33)
Economic evaluation of health interventions, for example using cost-effectiveness analysis, cost-benefit analysis	1 (17)	2 (33)	2 (33)	1 (17)		0	0	3 (75)	1 (25)	2 (33)
Measuring the costs of health	1 (17)	3 (50)	1 (17)	1 (17)		0	0	3 (75)	1 (25)	2 (33)

interventions, for example through micro-costing, activity-based costing										
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Table 4 Confidence level ratings of Evidence-to-Decision making

Evidence-to-decision (n=12)										
	Pre-GELA					Post-GELA				
	Level 1- No knowledge on this topic n(%)	Level 2- I have heard of this topic but do not feel confident to do it n(%)	Level 3- Slightly confident to do it n(%)	Level 4- I have mastered this topic n(%)	N (Capacity developed)	Level 1- No knowledge on this topic n(%)	Level 2- I have heard of this topic but do not feel confident to do it n(%)	Level 3- Slightly confident to do it n(%)	Level 4- I have mastered this topic n(%)	Total number of respondents with level 4 confidence after GELA n(%)
Facilitating guideline development structure					9 (75)					
Overseeing group process and panel composition and conflict of interest management	2 (17)	2 (17)	7 (58)	1 (8)		0	2 (22)	4 (44)	3 (33)	4 (42)
Formulating a healthcare question	1 (8)	0	8 (67)	3 (25)		0	0	2 (22)	7 (78)	10 (83)
Overseeing evidence acquisition and	2 (17)	0	7 (58)	3 (25)		1 (11)	0	2 (22)	6 (67)	9 (75)

interpreting evidence syntheses										
Identifying priority topics	1 (8)	2 (17)	7 (58)	2 (17)		1 (11)	0	4 (44)	4 (44)	6 (50)
Assessing available clinical practice guidelines	2 (17)	1 (8)	5 (42)	4 (33)		1 (11)	0	2 (22)	6 (67)	11 (92)
Making judgements about the quality or certainty of evidence					5 (42)					
Rating the certainty of body of evidence by considering each of the 5 domains:	2 (17)	0	5 (42)	5 (42)		0	1 (20)	1 (20)	3 (60)	8 (67)
Rating the certainty of the evidence for the domains pertaining to rating up	2 (17)	2 (17)	7 (58)	1 (8)		0	1 (20)	3 (60)	1 (20)	2 (17)
Rating the overall certainty of the evidence across all outcomes	1 (8)	2 (17)	7 (58)	2 (17)		0	1 (20)	2 (40)	2 (40)	4 (33)
Summarising the evidence to facilitate decision-making	1 (8)	2 (17)	7 (58)	2 (17)		0	1 (20)	2 (40)	2(40)	4 (33)

										confidence after GELA n(%)
Leadership skills					14 (70)					
Project coordination and management	0	6 (30)	10 (50)	4 (20)		0	0	7 (50)	7 (50)	11 (55)
Chairing project meetings	0	9 (45)	5 (25)	6 (30)		0	2 (14)	4 (29)	8 (57)	14 (70)
Resourcefulness (Knowing options, finding solutions)	0	6 (30)	11 (55)	3 (15)		0	2 (14)	5 (36)	7 (50)	10 (50)
Communication skills	0	5 (25)	11 (55)	4 (20)		0	1 (7)	8 (57)	5 (36)	9 (45)
Networking	1 (5)	5 (25)	12 (60)	2 (10)		1 (7)	1 (7)	6 (43)	6 (43)	8 (40)
Flexibility and adaptation (Dealing with interferences or back orders)	1 (5)	7 (35)	10 (50)	2 (10)		1 (7)	1 (7)	6 (43)	6 (43)	8 (40)
Mentorship and collaboration	0	5 (25)	12 (60)	3 (15)		0	0	4 (29)	10 (71)	13 (65)
Working in a multidisciplinary team	0	2 (10)	13 (65)	5 (25)		0	0	3 (21)	11 (79)	16 (80)