Supplemental material

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BMJ Glob Health

Supplement 5. Study quality and risk of bias assessment

No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
1	Hepner et al. (2002)[61]	1	1	1	1	0	0	1	0	0	0	5	Moderate
2	Pinn & Pallett (2002)[62]	1	1	1	1	0	1	1	0	0	0	6	Moderate
3	Nordeng & Havnen (2004)[63]	1	1	1	0	0	0	1	0	0	0	4	Moderate
4	Forster et al. (2006)[64]	1	1	1	0	0	0	0	0	0	1	4	Moderate
5	Chuang et al. (2007)[165]	0	0	0	0	0	0	1	0	1	0	2	Low
6	Sawalha (2007)[65]	1	1	1	1	0	0	0	0	0	1	5	Moderate
7	Ologe et al., (2008)[66]	1	1	1	1	0	1	0	0	0	0	5	Moderate
8	Rahman et al., (2008)[67]	1	1	0	1	0	0	0	0	1	0	4	Moderate
9	Chuang et al., (2009)[68]	0	0	0	0	0	0	1	0	1	0	2	Low
10	Fakeye et al., (2009)[69]	1	1	1	0	0	0	0	1	0	0	4	Moderate
11	Holst et al. (2009)[70]	1	1	1	1	0	0	0	0	0	0	4	Moderate
12	Rahman et al. (2009)[71]	1	1	0	1	0	0	1	0	1	0	5	Moderate
13	Bercaw et al. (2010)[72]	1	1	1	1	0	0	1	0	0	0	5	Moderate
14	Cuzzolin et al. (2010)[73]	1	1	1	0	0	0	0	0	0	0	3	Low
15	Lapi et al. (2010)[74]	1	1	1	0	0	0	0	0	0	0	3	Low
16	Nordeng et al. (2010)[75]	1	0	1	1	0	1	1	0	1	0	6	Moderate
17	Pereira et al. (2010)[76]	1	1	1	0	0	1	0	0	0	1	5	Moderate
18	Bello et al. (2011)[77]	1	1	1	1	0	1	1	0	0	0	6	Moderate
19	Kalder et al. (2011)[78]	1	1	1	1	0	1	0	0	0	0	5	Moderate

No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
20	Nordeng et al. (2011)[79]	1	1	1	0	0	0	1	0	0	0	4	Moderate
21	Tabatabaee (2011)[80]	1	1	1	0	0	0	0	0	0	0	3	Low
22	Tamuno et al. (2011)[81]	1	1	1	0	0	0	0	1	0	1	5	Moderate
23	Yusuff et al. (2011)[82]	1	1	1	0	0	1	0	0	0	1	5	Moderate
24	Facchinetti et al. (2012)[166]	1	1	1	0	0	0	0	0	0	0	3	Low
25	Hashem et al. (2012)[83]	1	0	1	0	0	1	0	0	0	0	3	Low
26	Khadivzadeh & Ghabel (2012)[84]	1	1	1	1	0	0	0	1	0	0	5	Moderate
27	Moussally & Berard (2012)[167]	1	0	1	1	0	0	1	0	1	0	5	Moderate
28	Sattari et al. (2012)[51]	1	1	1	1	0	1	1	1	1	0	8	High
29	Al-Ramahi et al. (2013)[85]	1	1	0	0	0	0	0	0	0	1	3	Low
30	Frawley et al. (2013)[168]	0	0	0	0	0	0	1	0	1	0	2	Low
31	Gardiner et al. (2013)[86]	1	1	1	1	0	0	1	0	0	0	5	Moderate
32	Kennedy et al. (2013)[87]	1	1	1	0	0	0	0	0	1	1	5	Moderate
33	Teoh et al. (2013)[88]	1	1	1	1	0	0	1	0	0	0	5	Moderate
34	Bayisa et al. (2014)[52]	1	1	1	1	0	1	1	1	0	1	8	High
35	Emmanuel et al. (2014)[89]	1	1	1	1	0	1	0	1	0	0	6	Moderate
36	Hall & Jolly (2014)[90]	1	1	1	0	0	0	0	1	0	0	4	Moderate
37	Mothupi (2014)[91]	1	1	1	0	0	0	1	0	1	0	5	Moderate
38	Orief et al. (2014)[92]	1	1	1	1	0	1	0	0	0	0	5	Moderate
39	Pallivalappila et al. (2014)[93]	1	1	1	1	0	0	0	0	0	0	4	Moderate

No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
40	Zaki & Albarraq (2014)[94]	1	1	1	1	0	1	0	1	0	0	6	Moderate
41	Adusi-Poku et al. (2015)[95]	1	1	0	0	0	0	1	1	0	0	4	Moderate
42	Afshary et al. (2015)[96]	1	0	0	1	0	1	0	0	0	1	4	Moderate
43	Ali-Shtayeh et al. (2015)[97]	1	1	0	0	0	1	0	0	1	0	4	Moderate
44	Bello & Isah (2015)[98]	1	1	0	0	0	1	0	1	0	0	4	Moderate
45	Elberry et al. (2015)[99]	1	1	1	0	0	1	1	0	0	1	6	Moderate
46	Mugomeri et al. (2015)[100]	1	1	1	1	0	1	0	1	0	0	6	Moderate
47	Nergard et al. (2015)[101]	1	1	1	0	0	0	1	0	1	1	6	Moderate
48	Pallivalapila et al. (2015)[102]	1	1	1	0	0	0	0	0	0	0	3	Low
49	Budzynska et al. (2016)[169]	1	1	1	0	0	1	1	0	0	1	6	Moderate
50	de Araujo et al. (2016)[53]	1	1	1	1	0	1	1	1	0	1	8	High
51	Elkhoudri et al. (2016)[54]	1	1	1	1	0	0	1	0	1	1	7	High
52	Hanafy et al. (2016)[103]	1	1	1	1	0	1	0	0	0	0	5	Moderate
53	Hwang et al. (2016)[104]	1	1	1	0	0	1	0	0	0	1	5	Moderate
54	Laelago et al. (2016)[105]	1	1	1	1	0	1	0	0	0	0	5	Moderate
55	Mbarambara et al. (2016)[106]	1	0	0	1	0	1	1	0	0	0	4	Moderate
56	Tang et al. (2016)[170]	1	1	1	0	0	0	0	0	0	0	3	Low
57	Varghese et al. (2016)[107]	1	1	1	1	0	1	1	0	0	0	6	Moderate
58	Yusof et al. (2016)[108]	1	1	1	1	0	1	0	1	0	0	6	Moderate
59	Al-Ghamdi et al. (2017)[109]	1	1	1	0	0	1	0	0	1	1	6	Moderate

No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
60	Alsubaie et al. (2017)[110]	1	1	0	1	0	1	0	0	1	1	6	Moderate
61	Barisic et al. (2017)[111]	1	1	1	1	0	1	1	0	0	0	6	Moderate
62	Cabut et al. (2017)[112]	1	1	1	1	0	1	1	0	0	0	6	Moderate
63	Kissal et al. (2017)[113]	1	1	1	1	0	1	1	0	0	0	6	Moderate
64	Koc et al. (2017)[114]	1	1	1	1	0	1	0	0	0	0	5	Moderate
65	Mekuria et al. (2017)[115]	1	1	0	0	0	1	0	0	0	0	3	Low
66	Onyiapat et al. (2017)[116]	1	1	0	0	0	1	1	0	0	1	5	Moderate
67	Ahmed et al. (2018)[117]	1	1	1	0	0	0	0	0	0	0	3	Low
68	Alonso-Castro et al. (2018)[118]	1	1	1	1	0	1	0	0	1	0	6	Moderate
69	Ameade et al. (2018)[119]	1	0	1	1	0	1	1	1	0	0	6	Moderate
70	Beyene & Beza (2018)[162]	1	0	0	0	0	1	0	0	0	1	3	Low
71	Botyar et al. (2018)[120]	1	1	0	1	0	0	1	0	1	0	5	Moderate
72	Jambo et al. (2018)[121]	1	1	1	0	0	1	0	0	0	0	4	Moderate
73	James et al. (2018)[122]	1	1	1	0	0	1	0	0	0	0	4	Moderate
74	Marwa et al. (2018)[123]	1	1	0	0	0	1	0	0	0	0	3	Low
75	Rafiee et al. (2018)[124]	1	1	1	1	0	1	0	0	0	0	5	Moderate
76	Tahery et al. (2018)[125]	1	1	0	1	0	1	0	0	0	1	5	Moderate
77	Abdollahi & Yazdani (2019)[126]	1	1	1	1	0	0	0	0	0	1	5	Moderate
78	Al Essa et al. (2019)[127]	1	1	1	1	0	1	0	0	0	0	5	Moderate
79	Biazar et al. (2019)[128]	1	1	1	1	0	0	0	0	0	1	5	Moderate

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No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
80	Nega et al. (2019)[129]	1	1	1	0	0	0	0	0	0	1	4	Moderate
81	Saber et al. (2019)[130]	1	1	0	1	0	1	1	0	0	1	6	Moderate
82	Yazdi et al. (2019)[131]	1	1	1	1	0	1	0	0	0	0	5	Moderate
83	Zaitoun et al. (2019)[55]	1	1	1	1	0	0	1	0	1	1	7	High
84	Ahmed et al. (2020a)[27]	1	1	1	0	0	1	0	0	0	0	4	Moderate
85	Ahmed et al. (2020b)[132]	1	1	1	0	0	1	0	0	0	1	5	Moderate
86	Aljofan & Alkhamaiseh (2020)[56]	1	1	1	1	0	1	0	1	1	0	7	High
87	El Hajj et al. (2020)[133]	1	1	1	0	0	0	0	0	0	0	3	Low
88	Gbagbo & Nkrumah (2020)[163]	1	0	1	1	0	1	0	0	0	0	4	Moderate
89	Kekana & Sebitloane (2020)[134]	1	1	1	1	0	1	1	0	0	0	6	Moderate
90	Obadeji et al. (2020)[135]	1	1	1	1	0	1	1	0	0	0	6	Moderate
91	Pakseresht et al. (2020)[136]	1	1	1	1	0	1	0	0	0	1	6	Moderate
92	Sema et al. (2020)[137]	1	1	0	0	0	0	0	0	0	0	2	Low
93	Tuha et al. (2020)[138]	1	1	0	1	0	0	0	0	0	0	3	Low
94	Adama et al. (2021)[139]	1	1	0	1	0	1	0	0	0	0	4	Moderate
95	Addis et al. (2021)[164]	1	0	0	0	0	1	0	0	0	0	2	Low
96	Ake et al. (2021)[140]	1	0	0	1	0	1	0	0	0	0	3	Low
97	Almoayad et al. (2021)[57]	1	1	1	1	0	1	0	0	1	1	7	High
98	Alsous et al. (2021)[141]	1	1	1	0	0	1	0	0	0	0	4	Moderate
99	Ayhan & Akalin (2021)[142]	1	1	1	1	0	0	1	0	1	0	6	Moderate

No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
100	Babatunde et al. (2021)[143]	1	0	0	0	0	1	0	0	0	0	2	Low
101	Bekele & Gonfa (2021)[144]	1	0	0	0	0	1	0	0	0	0	2	Low
102	da Matta et al. (2021)[145]	1	1	1	1	0	1	1	0	0	0	6	Moderate
103	Emiru et al. (2021)[146]	1	1	1	1	0	1	0	0	0	1	6	Moderate
104	Karimian et al. (2021)[147]	1	1	0	0	0	1	0	0	0	0	3	Low
105	Nnaemeka et al. (2021)[58]	1	1	1	1	0	1	1	1	1	0	8	High
106	Quzmar et al. (2021)[148]	1	1	1	0	0	1	0	1	1	0	6	Moderate
107	Umar et al. (2021)[59]	1	1	1	1	0	1	1	1	0	1	8	High
108	Ahmed et al. (2022)[149]	1	1	1	0	0	1	0	0	0	0	4	Moderate
109	Anteneh et al. (2022)[150]	1	1	0	0	0	0	0	0	1	1	4	Moderate
110	Barnes et al. (2022)[151]	1	1	1	1	0	0	0	0	1	0	5	Moderate
111	Bebitoglu et al. (2022)[152]	1	1	1	0	0	1	0	0	0	0	4	Moderate
112	Belayneh et al. (2022)[153]	1	1	1	0	0	1	0	0	0	0	4	Moderate
113	Elba et al. (2022)[154]	1	1	0	1	0	1	1	1	0	0	6	Moderate
114	Jahan et al. (2022)[155]	1	1	0	0	0	0	1	1	0	1	5	Moderate
115	Kahssay et al. (2022)[156]	1	1	0	0	0	0	0	0	0	0	2	Low
116	Kamel et al. (2022)[157]	1	1	1	1	0	0	1	0	0	1	6	Moderate
117	Mohamud (2022)[158]	1	1	0	0	0	1	0	0	0	0	3	Low
118	Saleh et al. (2022)[60]	1	1	1	1	0	1	1	1	0	0	7	High
119	Tesfaye et al. (2022)[159]	1	0	0	0	0	1	0	0	1	0	3	Low

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No.	Study (year)	External validity				Internal validity						11[b]	
		1	2	3	4	5	6	7	8	9	10		
120	Wake & Fitie (2022)[160]	1	1	0	0	0	0	0	0	0	0	2	Low
121	Isiiko et al. (2023)[161]	1	1	0	1	0	1	0	0	0	0	4	Moderate

*items adapted from Hoy et al.[42]

1) Was the study's target population a close representation of the general pregnant women in relation to relevant variables?

2) Was the sampling frame a true or close representation of the target population?

3) Was some form of random selection used to select the sample, OR was a census undertaken?

4) Was the likelihood of nonresponse bias minimal (response rate > 75%)?

5) Were data collected directly from the subjects (as opposed to a proxy)?

6) Was an acceptable case definition of HM used in the study?

7) Was the study instrument that measured the parameter of interest shown to have validity and reliability?

8) Was the same mode of data collection used for all subjects?

9) Was the length of the shortest prevalence period for the parameter of interest appropriate (survey of currently pregnant or women in perinatal period)?

10) Were the numerator(s) and denominator(s) for the parameter of interest (HM use and disclose rate) appropriate?

11) Summary of the item on the overall risk of study bias

[a] 0: low risk of bias; 1: high risk of bias

[b] 0–3: low risk; 4–6: moderate risk; 7–10: high risk