APPENDICES

CONTENTS

Appendix 1: Search strategies

Emcare

1 (Aruba* or Andorra* or "United Arab Emirates" or UAE or Emirati* or Antigua* or Barbuda* or Australia* or Austria* or Belgi* or Bahrain* or Baham* or Bermuda* or Barbad* or Brunei* or Canada* or Switzerland or Swiss or "Channel Island*" or Chile or Chilean* or Curacao* or "Cayman Island*" or Caymanian* or Cypr* or Czech* or German* or Denmark or Danish or Spain* or Estonia* or Finland or Finnish or France or French or Faroe* or "United Kingdom" or UK or England or Wales or welsh or Scotland or Brit* or Scot* or English or Gibraltar * or Gree* or Greenland* or Guam* or Chamorros or Hong Kong* or Croatia* or Hungar* or "Isle of Man" or Manx or Ireland or Irish or Iceland* or Israel* or Ital* or Japan* or "St Kitts" or Korea* or Kuwait* or Liechtenstein* or Lithuania* or Luxembourg* or Latvia* or Maca* or "St Martin*" or "Sint Maarten*" or Monaco or Monegasqu* or Malta or Maltese or "Northern Mariana Island*" or "New Caledonia*" or Netherlands or Dutch or Norw* or Nauru* or "New Zealand" or Kiwi or Oman* or Palau* or Poland or Polish or "Puerto Ric*" or Portug* or "French Polynesia*" or Qatar* or "Saudi Arabia*" or Singapor* or "San Marino" or "Sammarinese" or Slovak* or Slovenia* or Sweden or Swedish or Seychell* or Creole or "Turks Caicos" or Trinidad* or Tobago* or Uruguay* or "United States" or USA or America* or Venezuela* or "Virgin Island*" or EU or "European Union" or European*).ti,ab. 1458038
2 developed country/ or european union/ 13481
3 developed countr*.mp. 13352
4 (high income countr* or high-income countr*).mp. 6622
5 industrialised countr*.mp. 623
6 more economically developed countr*.mp. 22
7 MEDC.mp. 8
8 advanced countr*.mp. 158
9 advanced econom*.mp. 92
10 developed econom*.mp. 161
11 industrialized econom*.mp. 11
12 industrialised econom*.mp. 8
13 (Migrant* or refugee* or immigrant* or foreigner* or newcomer* or new-comer* or migration or immigration or emigrant* or nonnative* or non-native* or diaspora or border crossing* or transient* or asylum-seek*).mp. 163314
14 ((displaced or undocumented or foreign* or resettle* or settle* or displace*) adj3 (person* or people)).mp. 1301
15 exp Migration/ 8976
16 exp Refugee/7217
17 13 or 14 or 15 or 16 163953
18 (pregnan* or postpartum or post-partum or postnatal or post-natal or puerper* or antenatal or ante-natal or prenatal or pre-natal or antepartum or ante-partum or peripartum or peri-partum or birth* or trimester* or mother* or mum or mums or mom or moms or perinatal or peri-natal or childbirth* or obstetric* or maternity or maternal).mp. 460639
19 exp perinatal period/ or exp puerperium/ or exp pregnancy/ 125861
20 18 or 19 464076

21 (intervention* or prevent* or program* or strateg* or class* or special*).mp. 2320749
22 (Peer-led or "peer led" or doula* or midwi*).mp. 22932
23 ((antenatal or Postnatal) and (session* or lesson* or workshop*)).mp. 1060
24 21 or 22 or 23 2333617
25 1 and 17 and 20 and 24 2274
26 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 27873
27 17 and 20 and 26 212
28 25 or 27 2410

Embase

1 (Aruba* or Andorra* or "United Arab Emirates" or UAE or Emirati* or Antigua* or Barbuda* or Australia* or Austria* or Belgi* or Bahrain* or Baham* or Bermuda* or Barbad* or Brunei* or Canada* or Switzerland or Swiss or "Channel Island*" or Chile or Chilean* or Curacao* or "Cayman Island*" or Caymanian* or Cypr* or Czech* or German* or Denmark or Danish or Spain* or Estonia* or Finland or Finnish or France or French or Faroe* or "United Kingdom" or UK or England or Wales or welsh or Scotland or Brit* or Scot* or English or Gibraltar * or Gree* or Greenland* or Guam* or Chamorros or Hong Kong* or Croatia* or Hungar* or "Isle of Man" or Manx or Ireland or Irish or Iceland* or Israel* or Ital* or Japan* or "St Kitts" or Korea* or Kuwait* or Liechtenstein* or Lithuania* or Luxembourg* or Latvia* or Maca* or "St Martin*" or "Sint Maarten*" or Monaco or Monegasqu* or Malta or Maltese or "Northern Mariana Island*" or "New Caledonia*" or Netherlands or Dutch or Norw* or Nauru* or "New Zealand" or Kiwi or Oman* or Palau* or Poland or Polish or "Puerto Ric*" or Portug* or "French Polynesia*" or Qatar* or "Saudi Arabia*" or Singapor* or "San Marino" or "Sammarinese" or Slovak* or Slovenia* or Sweden or Swedish or Seychell* or Creole or "Turks Caicos" or Trinidad* or Tobago* or Uruguay* or "United States" or USA or America* or Venezuela* or "Virgin Island*" or EU or "European Union" or European*).ti,ab. 5387298
2 developed country/ or european union/ 64842
3 developed countr*.mp. 65772
4 (high income countr* or high-income countr*).mp. 16400
5 industrialised countr*.mp. 1957
6 more economically developed countr*.mp. 49
7 MEDC.mp. 51
8 advanced countr*.mp. 668
9 advanced econom*.mp. 218
10 developed econom*.mp. 516
11 industrialized econom*.mp. 40
12 industrialised econom*.mp. 11
13 (Migrant* or refugee* or immigrant* or foreigner* or newcomer* or new-comer* or migration or immigration or emigrant* or nonnative* or non-native* or diaspora or border crossing* or transient* or asylum-seek*).mp. 1056344
14 ((displaced or undocumented or foreign* or resettle* or settle* or displace*) adj3 (person* or people)).mp. 2841
15 exp Migration/ 48713
16 exp Refugee/ 16436
17 13 or 14 or 15 or 16 1057673

18 (pregnan* or postpartum or post-partum or postnatal or post-natal or puerper* or antenatal or ante-natal or prenatal or pre-natal or antepartum or ante-partum or peripartum or peri-partum or birth* or trimester* or mother* or mum or mums or mom or moms or perinatal or peri-natal or childbirth* or obstetric* or maternity or maternal).mp. 2417880
19 exp perinatal period/ or exp puerperium/ or exp pregnancy/ 824664
20 18 or 19 2436673
21 (intervention* or prevent* or program* or strateg* or class* or special*).mp. 9841412
22 (Peer-led or "peer led" or doula* or midwi*).mp. 47440
23 ((antenatal or Postnatal) and (session* or lesson* or workshop*)).mp. 3201
24 21 or 22 or 23 9869943
25 1 and 17 and 20 and 24 6620
26 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 114481
27 17 and 20 and 26 956
28 25 or 27 7319

SCOPUS

TITLE-ABS-KEY (aruba* OR andorra* OR "United Arab Emirates" OR uae OR emirati* OR antigua* OR barbuda* OR australia* OR austria* OR belgi* OR bahrain* OR baham* OR bermuda* OR barbad* OR brunei* OR canada* OR switzerland OR swiss OR "Channel Islands" OR chile OR chilean* OR curacao* OR "Cayman Islands" OR caymanian* OR cypr* OR czech* OR german* OR denmark OR danish OR spain* OR estonia* OR finland OR finish OR france OR french OR faroe* OR "United Kingdom" OR uk OR england OR wales OR scotland OR brit* OR scot* OR english OR "Gibraltar *" OR gree* OR greenland* OR guam* OR chamorros OR "Hong Kong*" OR croatia* OR hungar* OR "Isle of Man" OR manx OR ireland OR irish OR iceland* OR israel* OR ital* OR japan* OR "St Kitts" OR korea* OR kuwait* OR liechtenstein* OR lithuania* OR luxembourg* OR latvia* OR maca* OR "St Martin*" OR "Sint Maarten*" OR monaco OR monegasqu* OR malta OR maltese OR "Northern Mariana Island*" OR "New Caledonia*" OR netherlands OR dutch OR norw* OR nauru* OR "New Zealand" OR kiwi OR oman* OR palau* OR poland OR polish OR "Puerto Ric*" OR portug* OR "French Polynesia*" OR qatar* OR "Saudi Arabia*" OR singapor* OR "San Marino" OR sammarinese OR slovak* OR slovenia* OR sweden OR swedish OR seychell* OR creole OR "Turks Caicos" OR trinidad* OR tobago* OR uruguay* OR "United States" OR usa OR america* OR venezuela* OR "Virgin Island*" OR eu OR "European Union" OR european* OR "high income countr*" OR "high-income countr*" OR "industrialised countr*" OR "more economically developed countr*" OR "advanced countr*" OR "advanced econom*" OR "MEDC" OR "developed econom*" OR "industrialized econom*" OR "industrialised econom*") **AND** TITLE-ABS-KEY (migrant* OR refugee* OR immigrant* OR foreigner* OR newcomer* OR new-comer* OR migration OR immigration OR emigrant* OR nonnative* OR non-native* OR diaspora OR "border crossing*" OR transient* OR asylum-seek* OR "Displaced people*" OR "undocumented people*" OR "foreign* people*" OR "resettle* people*" OR "settle* people*" OR "Displaced person*" OR "undocumented person*" OR "foreign* person*" OR "resettle* person*" OR "settle* person*") **AND** TITLE-ABS-KEY (pregnan* OR postpartum

OR post-partum OR postnatal OR post-natal OR puerperal OR antenatal OR ante-natal OR prenatal OR pre-natal OR antepartum OR ante-partum OR peripartum OR peri-partum OR birth* OR trimester* OR mother* OR mum OR mums OR mom OR moms OR perinatal OR peri-natal OR childbirth* OR obstetric* OR puerper* OR maternity OR maternal) **AND** TITLE-ABS-KEY ((intervention* OR prevent* OR program* OR strateg* OR class* OR special* OR peer-led OR "peer led" OR doula* OR midwi*) OR ((antenatal OR postnatal) AND (class* OR session* OR lesson* OR workshop*)))
8815

MEDLINE
Ovid MEDLINE(R) ALL <1946 to December 09, 2022>
1 (Aruba* or Andorra* or "United Arab Emirates" or UAE or Emirati* or Antigua* or Barbuda* or Australia* or Austria* or Belgi* or Bahrain* or Baham* or Bermuda* or Barbad* or Brunei* or Canada* or Switzerland or Swiss or "Channel Island*" or Chile or Chilean* or Curacao* or "Cayman Island*" or Caymanian* or Cypr* or Czech* or German* or Denmark or Danish or Spain* or Estonia* or Finland or Finnish or France or French or Faroe* or "United Kingdom" or UK or England or Wales or welsh or Scotland or Brit* or Scot* or English or Gibraltar * or Gree* or Greenland* or Guam* or Chamorros or Hong Kong* or Croatia* or Hungar* or "Isle of Man" or Manx or Ireland or Irish or Iceland* or Israel* or Ital* or Japan* or "St Kitts" or Korea* or Kuwait* or Liechtenstein* or Lithuania* or Luxembourg* or Latvia* or Maca* or "St Martin*" or "Sint Maarten*" or Monaco or Monegasqu* or Malta or Maltese or "Northern Mariana Island*" or "New Caledonia*" or Netherlands or Dutch or Norw* or Nauru* or "New Zealand" or Kiwi or Oman* or Palau* or Poland or Polish or "Puerto Ric*" or Portug* or "French Polynesia*" or Qatar* or "Saudi Arabia*" or Singapor* or "San Marino" or "Sammarinese" or Slovak* or Slovenia* or Sweden or Swedish or Seychell* or Creole or "Turks Caicos" or Trinidad* or Tobago* or Uruguay* or "United States" or USA or America* or Venezuela* or "Virgin Island*" or EU or "European Union" or European*).ti,ab. 3264235
2 developed countries/ or european union/ 38606
3 developed countr*.mp. 59651
4 (high income countr* or high-income countr*).mp. 11176
5 industrialised countr*.mp. 1502
6 more economically developed countr*.mp. 36
7 MEDC.mp. 43
8 advanced countr*.mp. 492
9 advanced econom*.mp. 233
10 developed econom*.mp. 455
11 industrialized econom*.mp. 43
12 industrialised econom*.mp. 11
13 (Migrant* or refugee* or immigrant* or foreigner* or newcomer* or new-comer* or migration or immigration or emigrant* or nonnative* or non-native* or diaspora or border crossing* or transient* or asylum-seek*).mp. 782544
14 ((displaced or undocumented or foreign* or resettle* or settle* or displace*) adj3 (person* or people)).mp. 4461
15 exp Human Migration/ 27663
16 Refugees/ 12718
17 "Transients and Migrants"/ 13851

18 13 or 14 or 15 or 16 or 17 784919
19 (pregnan* or postpartum or post-partum or postnatal or post-natal or antenatal or ante-natal or prenatal or pre-natal or antepartum or ante-partum or peripartum or peri-partum or birth* or trimester* or mother* or mum or mums or mom or moms or perinatal or peri-natal or childbirth* or obstetric* or puerper* or maternity or maternal).mp. 1856432
20 exp peripartum period/ or exp postpartum period/ or exp pregnancy/ 1013266
21 19 or 20 1878022
22 (intervention* or prevent* or program* or strateg* or class* or special*).mp. 7862429
23 (Peer-led or "peer led" or doula* or midwi*).mp. 41688
24 ((antenatal or Postnatal) and (session* or lesson* or workshop*)).mp. 1994
25 22 or 23 or 24 7888583
26 1 and 18 and 21 and 25 4520
27 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 89366
28 18 and 21 and 27 1198
29 26 or 28 5360

Web of Science Search Strategy
Database: Web of Science Core Collection
Entitlements:

- WOS.IC: 1993 to 2022
- WOS.CCR: 1985 to 2022
- WOS.SCI: 1900 to 2022
- WOS.AHCI: 1975 to 2022
- WOS.BHCI: 2005 to 2022
- WOS.BSCI: 2005 to 2022
- WOS.ESCI: 2015 to 2022
- WOS.ISTP: 1990 to 2022
- WOS.SSCI: 1900 to 2022
- WOS.ISSHP: 1990 to 2022

Searches:

1: TS=(Aruba* OR Andorra* OR "United Arab Emirates" OR UAE OR Emirati* OR Antigua* OR Barbuda* OR Australia* OR Austria* OR Belgi* OR Bahrain* OR Baham* OR Bermuda* OR Barbad* OR Brunei* OR Canada* OR Switzerland OR Swiss OR "Channel Island*" OR Chile OR Chilean* OR Curacao* OR "Cayman Island*" OR Caymanian* OR Cypr* OR Czech* OR German* OR Denmark OR Danish OR Spain* OR Estonia* OR Finland OR Finnish OR France OR French OR Faroe* OR "United Kingdom" OR UK OR England OR Wales OR welsh OR Scotland OR Brit* OR Scot* OR English OR "Gibraltar *" OR Gree* OR Greenland* OR Guam* OR Chamorros OR "Hong Kong*" OR Croatia* OR Hungar* OR "Isle of Man" OR Manx OR Ireland OR Irish OR Iceland* OR Israel* OR Ital* OR Japan* OR "St Kitts" OR Korea* OR Kuwait* OR Liechtenstein* OR Lithuania* OR Luxembourg* OR Latvia* OR Maca* OR "St Martin*" OR "Sint Maarten*" OR Monaco OR Monegasqu*

OR Malta OR Maltese OR "Northern Mariana Island*" OR "New Caledonia*" OR Netherlands OR Dutch OR Norw* OR Nauru* OR "New Zealand" OR Kiwi OR Oman* OR Palau* OR Poland OR Polish OR "Puerto Ric*" OR Portug* OR "French Polynesia*" OR Qatar* OR "Saudi Arabia*" OR Singapor* OR "San Marino" OR Sammarinese OR Slovak* OR Slovenia* OR Sweden OR Swedish OR Seychell* OR Creole OR "Turks Caicos" OR Trinidad* OR Tobago* OR Uruguay* OR "United States" OR USA OR America* OR Venezuela* OR "Virgin Island*" OR EU OR "European Union" OR European* OR "high income countr*" OR "high-income countr*" OR "industrialised countr*" OR "more economically developed countr*" OR "advanced countr*" OR "advanced econom*" OR "MEDC" OR "developed econom*" OR "industrialized econom*" OR "industrialised econom*")
Date Run: Mon Dec 12 2022 13:10:27 GMT+0000 (Greenwich Mean Time)
Results: 10269737

2: TS=(migrant* OR refugee* OR immigrant* OR foreigner* OR newcomer* OR new-comer* OR migration OR immigration OR emigrant* OR nonnative* OR non-native* OR diaspora OR "border crossing*" OR transient* OR asylum-seek* OR "Displaced people*" OR "undocumented people*" OR "foreign* people*" OR "resettle* people*" OR "settle* people*" OR "Displaced person*" OR "undocumented person*" OR "foreign* person*" OR "resettle* person*" OR "settle* person*")
Date Run: Mon Dec 12 2022 13:12:33 GMT+0000 (Greenwich Mean Time)
Results: 1534587

3: TS=(pregnan* OR postpartum OR post-partum OR postnatal OR post-natal OR antenatal OR ante-natal OR prenatal OR pre-natal OR antepartum OR ante-partum OR peripartum OR peri-partum OR birth* OR trimester* OR mother* OR mum OR mums OR mom OR moms OR perinatal OR peri-natal OR childbirth* OR obstetric* OR puerper* OR maternity OR maternal)

Date Run: Mon Dec 12 2022 13:13:05 GMT+0000 (Greenwich Mean Time)
Results: 1676056

4: TS=((intervention* OR prevent* OR program* OR strateg* OR class* OR special* OR peer-led OR "peer led" OR doula* OR midwi*) OR ((antenatal OR postnatal) AND (class* OR session* OR lesson* OR workshop*)))

Date Run: Mon Dec 12 2022 13:13:46 GMT+0000 (Greenwich Mean Time)
Results: 12259143

5: #4 AND #3 AND #2 AND #1
Date Run: Mon Dec 12 2022 13:13:54 GMT+0000 (Greenwich Mean Time)
Results: 5662

APA PsycInfo <1806 to December Week 1 2022>

1 (Aruba* or Andorra* or "United Arab Emirates" or UAE or Emirati* or Antigua* or Barbuda* or Australia* or Austria* or Belgi* or Bahrain* or Baham* or Bermuda* or Barbad* or Brunei* or Canada* or Switzerland or Swiss or "Channel Island*" or Chile or Chilean* or Curacao* or "Cayman Island*" or Caymanian* or Cypr* or Czech* or German* or Denmark or Danish or Spain* or Estonia* or Finland or Finnish or France or French or Faroe* or "United Kingdom" or UK or England or Wales or welsh or Scotland or Brit* or Scot* or English or Gibraltar * or Gree* or Greenland* or Guam* or Chamorros or Hong Kong* or Croatia* or Hungar* or "Isle of Man" or Manx or Ireland or Irish or Iceland* or Israel* or Ital* or Japan* or "St Kitts" or Korea* or Kuwait* or Liechtenstein* or Lithuania* or Luxembourg* or Latvia* or Maca* or "St Martin*" or "Sint Maarten*" or Monaco or Monegasqu* or Malta or Maltese or "Northern Mariana Island*" or "New Caledonia*" or Netherlands or Dutch or Norw* or Nauru* or "New Zealand" or Kiwi or Oman* or Palau* or Poland or Polish or "Puerto Ric*" or Portug* or "French Polynesia*" or Qatar* or "Saudi Arabia*" or Singapor* or "San Marino" or "Sammarinese" or Slovak* or Slovenia* or Sweden or Swedish or Seychell* or Creole or "Turks Caicos" or Trinidad* or Tobago* or Uruguay* or "United States" or USA or America* or Venezuela* or "Virgin Island*" or EU or "European Union" or European*).ti,ab. 998036
2 developed countries/ 1444
3 developed countr*.mp. 6366
4 (high income countr* or high-income countr*).mp. 2276
5 industrialised countr*.mp. 162
6 more economically developed countr*.mp. 9
7 MEDC.mp. 4
8 advanced countr*.mp. 149
9 advanced econom*.mp. 164
10 developed econom*.mp. 377
11 industrialized econom*.mp. 54
12 industrialised econom*.mp. 3
13 (Migrant* or refugee* or immigrant* or foreigner* or newcomer* or new-comer* or migration or immigration or emigrant* or nonnative* or non-native* or diaspora or border crossing* or transient* or asylum-seek*).mp. 106941
14 ((displaced or undocumented or foreign* or resettle* or settle* or displace*) adj3 (person* or people)).mp. 1523
15 exp Human Migration/ 17211
16 13 or 14 or 15 108706
17 (pregnan* or postpartum or post-partum or postnatal or post-natal or antenatal or ante-natal or prenatal or pre-natal or antepartum or ante-partum or peripartum or peri-partum or birth* or trimester* or mother* or mum or mums or mom or moms or perinatal or peri-natal or childbirth* or obstetric* or puerper* or maternity or maternal).mp. 286207
18 exp Intrapartum Period/ or exp Antepartum Period/ or Perinatal Period/ or exp pregnancy/ or Postnatal Period/ or exp Birth/ or exp Prenatal Care/ 54584
19 17 or 18 287131
20 (intervention* or prevent* or program* or strateg* or class* or special*).mp. 1754113
21 (Peer-led or "peer led" or doula* or midwi*).mp. 5292
22 ((antenatal or Postnatal) and (session* or lesson* or workshop*)).mp. 857
23 20 or 21 or 22 1756811

24 1 and 16 and 19 and 23 1693
25 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 9141
26 16 and 19 and 25 69
27 24 or 26 1739

Cochrane Central Register of Controlled Trials
Issue 11 of 12, November 2022

Search Name: CL
Date Run: 22/12/2022 10:48:39
Comment:

ID Search Hits
#1 MeSH descriptor: [Developed Countries] explode all trees 52
#2 MeSH descriptor: [European Union] explode all trees 65
#3 (developed countr*):ti,ab,kw 4180
#4 (high income countr*):ti,ab,kw 2009
#5 (high-income countr*):ti,ab,kw 854
#6 (industrialised countr*):ti,ab,kw 459
#7 (economically developed countr*):ti,ab,kw 35
#8 (MEDC):ti,ab,kw 2
#9 (advanced countr*):ti,ab,kw 1500
#10 (advanced econom*):ti,ab,kw 957
#11 (developed econom*):ti,ab,kw 3125
#12 (industrialized econom*):ti,ab,kw 62
#13 (industrialised econom*):ti,ab,kw 62
#14 {OR #1-#13} 10948
#15 (Migrant*):ti,ab,kw 441
#16 (refugee):ti,ab,kw 444
#17 (immigrant*):ti,ab,kw 839
#18 (foreigner):ti,ab,kw 21
#19 (newcomer*):ti,ab,kw 48
#20 (new-comer*):ti,ab,kw 5
#21 (migration):ti,ab,kw 3759
#22 (immigration):ti,ab,kw 231
#23 (emigrant*):ti,ab,kw 238
#24 (nonnative*):ti,ab,kw 86
#25 (non-native*):ti,ab,kw 77
#26 (diaspora):ti,ab,kw 4
#27 (border crossing*):ti,ab,kw 16
#28 (transient*):ti,ab,kw 19243
#29 (asylum-seek*):ti,ab,kw 82
#30 ((displaced or undocumented or foreign* or resettle* or settle* or displace*) NEAR/3 (person* or people)):ti,ab,kw 89
#31 MeSH descriptor: [Human Migration] explode all trees 68
#32 MeSH descriptor: [Refugees] this term only 173
#33 MeSH descriptor: [Transients and Migrants] this term only 80
#34 {OR #15-#33} 24729
#35 (pregnan* or postpartum or post-partum or postnatal or post-natal or antenatal or ante-natal or prenatal or pre-natal or antepartum or ante-partum or peripartum or

peri-partum or birth* or trimester* or mother* or mum or mums or mom or moms or perinatal or peri-natal or childbirth* or obstetric* or puerper* or maternity or maternal):ti,ab,kw 119742
#36 MeSH descriptor: [Peripartum Period] explode all trees 21
#37 MeSH descriptor: [Postpartum Period] explode all trees 1942
#38 MeSH descriptor: [Pregnancy] explode all trees 25029
#39 {OR #35-#38} 119890
#40 #14 AND #34 AND #39 54

Interface - EBSCOhost Research Databases
Search Screen - Advanced Search
Database - CINAHL Plus

#	Query	Limiters/Expanders	Results
S1	MH "developed countries"	Search modes - Boolean/Phrase	4,144
S2	(MH "European Union")	Search modes - Boolean/Phrase	6,324
S3	TX developed countr*	Search modes - Boolean/Phrase	14,015
S4	TX high income countr*	Search modes - Boolean/Phrase	5,938
S5	TX high-income countr*	Search modes - Boolean/Phrase	5,253
S6	TX industrialised countr*	Search modes - Boolean/Phrase	409
S7	TX economically developed countr*	Search modes - Boolean/Phrase	113
S8	TX MEDC	Search modes - Boolean/Phrase	9
S9	TX advanced countr*	Search modes - Boolean/Phrase	564
S10	TX advanced econom*	Search modes - Boolean/Phrase	406
S11	TX developed econom*	Search modes - Boolean/Phrase	1,039
S12	TX industrialized econom*	Search modes - Boolean/Phrase	50
S13	TX industrialised econom*	Search modes - Boolean/Phrase	11
S14	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13	Search modes - Boolean/Phrase	27,284
S15	TX Migrant* or refugee* or immigrant* or foreigner* or newcomer* or new-comer* or migration or immigration or emigrant* or nonnative* or non-native* or diaspora or border	Search modes - Boolean/Phrase	106,229

	crossing* or transient* or asylum-seek*		
S16	TX (displaced or undocumented or foreign* or resettle* or settle* or displace*) n3 (person* or people)	Search modes - Boolean/Phrase	1,998
S17	(MH "Refugees+") OR (MH "Transients and Migrants")	Search modes - Boolean/Phrase	14,390
S18	S15 OR S16 OR S17	Search modes - Boolean/Phrase	107,366
S19	TX pregnan* or postpartum or post-partum or postnatal or post-natal or antenatal or ante-natal or prenatal or pre-natal or antepartum or ante-partum or peripartum or peri-partum or birth* or trimester* or mother* or mum or mums or mom or moms or perinatal or peri-natal or childbirth* or obstetric* or puerper* or maternity or maternal	Search modes - Boolean/Phrase	502,585
S20	(MH "Pregnancy+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	246,130
S21	(MH "Postnatal Period+")	Expanders - Apply equivalent subjects Search modes - Boolean/Phrase	16,885
S22	(MH "Postnatal care+") OR (MH "Prenatal Care") OR (MH "Perinatal Care")	Search modes - Boolean/Phrase	29,500
S23	S19 OR S20 OR S21 OR S22	Search modes - Boolean/Phrase	504,522
S24	S14 AND S18 AND S23	Search modes - Boolean/Phrase	237
S25	TI (Aruba* or Andorra* or "United Arab Emirates" or UAE or Emirati* or Antigua* or Barbuda* or Australia* or Austria* or Belgi* or Bahrain* or Baham* or Bermuda* or Barbad* or Brunei* or Canada* or Switzerland or Swiss or "Channel Island*" or Chile or Chilean* or Curacao* or "Cayman Island*" or Caymanian*	Search modes - Boolean/Phrase	1,194,855

	or Cypr* or Czech* or German* or Denmark or Danish or Spain* or Estonia* or Finland or Finnish or France or French or Faroe* or "United Kingdom" or UK or England or Wales or welsh or Scotland or Brit* or Scot* or English or Gibraltar * or Gree* or Greenland* or Guam* or Chamorros or Hong Kong* or Croatia* or Hungar* or "Isle of Man" or Manx or Ireland or Irish or Iceland* or Israel* or Ital* or Japan* or "St Kitts" or Korea* or Kuwait* or Liechtenstein* or Lithuania* or Luxembourg* or Latvia* or Maca* or "St Martin*" or "Sint Maarten*" or Monaco or Monegasqu* or Malta or Maltese or "Northern Mariana Island*" or "New Caledonia*" or Netherlands or Dutch or Norw* or Nauru* or "New Zealand" or Kiwi or Oman* or Palau* or Poland or Polish or "Puerto Ric*" or Portug* or "French Polynesia*" or Qatar* or "Saudi Arabia*" or Singapor* or "San Marino" or "Sammarinese" or Slovak* or Slovenia* or Sweden or Swedish or Seychell* or Creole or "Turks Caicos" or Trinidad* or Tobago* or Uruguay* or "United States" or USA or America* or Venezuela* or "Virgin Island*" or EU or "European Union" or European*) OR AB (Aruba* or Andorra* or "United Arab Emirates" or UAE or Emirati* or Antigua* or Barbuda* or Australia* or Austria* or Belgi* or Bahrain* or Baham* or Bermuda* or Barbad* or Brunei* or Canada* or Switzerland or Swiss or "Channel Island*" or Chile or Chilean* or Curacao* or "Cayman Island*" or Caymanian* or Cypr* or Czech* or German* or Denmark or Danish or Spain*		

	or Estonia* or Finland or Finnish or France or French or Faroe* or "United Kingdom" or UK or England or Wales or welsh or Scotland or Brit* or Scot* or English or Gibraltar * or Gree* or Greenland* or Guam* or Chamorros or Hong Kong* or Croatia* or Hungar* or "Isle of Man" or Manx or Ireland or Irish or Iceland* or Israel* or Ital* or Japan* or "St Kitts" or Korea* or Kuwait* or Liechtenstein* or Lithuania* or Luxembourg* or Latvia* or Maca* or "St Martin*" or "Sint Maarten*" or Monaco or Monegasqu* or Malta or Maltese or "Northern Mariana Island*" or "New Caledonia*" or Netherlands or Dutch or Norw* or Nauru* or "New Zealand" or Kiwi or Oman* or Palau* or Poland or Polish or "Puerto Ric*" or Portug* or "French Polynesia*" or Qatar* or "Saudi Arabia*" or Singapor* or "San Marino" or "Sammarinese" or Slovak* or Slovenia* or Sweden or Swedish or Seychell* or Creole or "Turks Caicos" or Trinidad* or Tobago* or Uruguay* or "United States" or USA or America* or Venezuela* or "Virgin Island*" or EU or "European Union" or European*)		
S26	S18 AND S23 AND S25	Search modes - Boolean/Phrase	4,466
S27	TX intervention* or prevent* or program* or strateg* or "classes" or "specialist" OR "specialists" OR Peer-led or "peer led" or doula* or midwi*	Search modes - Boolean/Phrase	2,112,926
S28	TX (antenatal or Postnatal) AND (session* or lesson* or workshop*)	Search modes - Boolean/Phrase	1,184
S29	S27 OR S28	Search modes - Boolean/Phrase	2,113,168
S30	S26 AND S29	Search modes - Boolean/Phrase	1,960

S31	S24 OR S30	Search modes - Boolean/Phrase	2,128

Grey Literature and Registry Searching:

WHO International Clinical Trials Registry Platform (ICTRP):
https://trialsearch.who.int/AdvSearch.aspx using Pregnancy AND migrant

Clinicaltrials.gov:
https://clinicaltrials.gov/ct2/search/advanced?cond=&term=&cntry=&state=&city=&dist= using the terms 'Pregnancy' 'Migrant' in the 'other terms' search field

Google Scholar:
Pregnancy refugee OR migrant OR asylum "high income"

World Health Organization Website:
site:who.int pregnancy refugee OR migrant OR asylum "high income":
https://www.google.com/search?q=site%3Awho.int+pregnancy+refugee+OR+migrant+OR+asylum+%22high+income%22

UN Refugee Agency Website:
site:unhcr.org pregnancy refugee OR migrant OR asylum "high income":
https://www.google.com/search?q=site%3Aunhcr.org+pregnancy+refugee+OR+migrant+OR+asylum+%22high+income%22

Appendix 2: Characteristics of included studies

Ref Num Main Paper	First Author	Year	Country	Study Design	Study Population	Sample Size	Intervention	Comparison	Outcome Measures	Outcomes	Co-Production Methods	CONSORT Adherence	Quality Score
38	Ahrne	2023	Sweden	Quasi-experimental trial with 1 intervention and 1 historical control group, nested in an intervention development and feasibility study	Pregnant Somali-born women (<25 gestational weeks)	145: 64 women in language-supported antenatal care (gANC) and 81 in standard ANC (sANC)	Language-supported group antenatal care (seven 60-minute group sessions led by 1-2 midwives + 15-30min individual appointments with designated midwife)	Women attending standard ANC	Primary: Women's overall ratings of antenatal care and emotional wellbeing (Edinburgh Postnatal Depression Scale (EPDS) in gestational week ≥35 and 2months post partum. Secondary outcomes: Care experiences, information received, social support, knowledge of pregnancy danger signs, postnatal visit attendance, and obstetric outcomes including birthweight, gestational age, and Apgar <7 at 5mins.	No differences regarding overall ratings of antenatal care between groups (late pregnancy OR 1.42, 95% CI 0.50 to 4.16 and 6–8 weeks post partum OR 2.71, 95% CI 0.88 to 9.41). The reduction in mean EPDS score was greater in the intervention group when adjusting for differences at baseline (mean difference −1.89; 95% CI –3.73 to −0.07). Women in gANC were happier with received pregnancy and birth information, e.g. caesarean section where 94.9% (n=37) believed the information was sufficient compared with 17.5% (n=7) in standard care (p<0.001) in late pregnancy. Median (IQR) birthweight 3580g (3180-3778g) in group ANC, compared to 3490g (3166-3776g) in standard ANC (p=0.839). Median (IQR) gestational age in weeks 40.0 weeks (39.0-40.0 weeks) in group ANC, compared to 40.0 weeks (39.0-40.3 weeks) in standard ANC, (p=0.839). Apgar <7 at 5mins n=0 (0%) neonates in group ANC compared to n=1 (1.7%) in standard ANC, (p=1.00). For postnatal visits, n=51 (81%) in group ANC compared to n=47 (64%) in standard ANC, (p=0.032).	Yes	N/A	WEAK
37	Bang	2014	South Korea	Controlled Clinical Trial	Pregnant immigrant women from China, Vietnam, and the Philippines residing in Kyunggi province and Seoul	39	Postpartum nursing home-visiting programme including emotional support and parenting education for 3 months	Usual care	Maternal depression measured using mean EPDS score	6 weeks PP: Control group mean EPDS 8.79 (S.D. 4.54), intervention mean EPDS 7.80 (S.D. 4.38), p=0.001. 3 months PP: Control group mean EPDS score 8.47 (S.D. 4.33), intervention mean EPDS 8.20 (S.D. 3.90), p=0.470	Yes	N/A	WEAK

39	Byrskog	2020	Sweden	Retrospective cohort study	Pregnant migrant women	147,375 births: Non-Swedish born migrant women with Community-Based Doula (CBD) support at birth (n = 880), migrant women not receiving CBD support (n = 16,789), and Swedish-born women (n = 129,706)	Community-Based Doula (CBD) support who is bilingual (language matched to mother's main language)	Migrant women not receiving CBD support, & Swedish-born women.	Via maternal birth records, obstetric measures: Induction of labour, use of epidural analgesia, nitrous oxide, bath, non-instrumental vaginal delivery, instrumental vaginal delivery (vacuum extraction and forceps), emergency caesarean, third- or fourth-degree perineal injury, length of mother's hospital stay after the birth > 2 days and low Apgar score < 7 at five minutes	In migrant women, CBD support was associated with less use of pain relief in nulliparous women (epidural aOR 0.64, CI 0.50–0.81; bath aOR 0.64, CI 0.42–0.98), and in parous women with increased odds of induction of labour (aOR 1.38, CI 1.08–1.76) and longer hospital stay after birth (aOR 1.19, CI 1.03–1.37). CBD support was not associated with non-instrumental births, perineal injury or low Apgar score. Compared with Swedish-born women, migrant women with CBD used less pain relief (nulliparous women: epidural aOR 0.50, CI 0.39–0.64; nitrous oxide aOR 0.71, CI 0.54–0.92; bath aOR 0.55, CI 0.36–0.85; parous women: nitrous oxide aOR 0.68, CI 0.54–0.84) and nulliparous women with CBD support had increased odds of emergency caesarean section (aOR 1.43, CI 1.05–1.94) and longer hospital stay after birth (aOR 1.31, CI 1.04–1.64)	Yes	N/A	WEAK
40	Damsted Rasmussen	2023	Denmark	Cluster RCT	All births in 19 of 20 maternity wards in Denmark	188,658 births	MAMAACT, an antenatal care (ANC) intervention: A 6-h training session for midwives in intercultural communication and cultural competence, two follow-up dialogue meetings, and health education materials for pregnant women on warning signs of pregnancy complications in six languages	Comparison of outcomes pre- and post-implementation of the intervention. Comparison conducted for the overall study population as well as for children born to immigrants from LMIC separately	A composite perinatal mortality and morbidity outcome, including stillbirths, neonatal deaths, Apgar score<7, umbilical arterial pH<7.0, admissions to a neonatal intensive care unit (NICU) >48h, and NICU admissions for mechanical ventilation. Additional outcomes were the individual measures	Intervention increased the risk of the composite outcome (aOR 1.16, 95% CI 0.99–1.34), mainly driven by differences in NICU admission risk (composite outcome excluding NICU, aOR 0.98, 95% CI 0.84–1.14). The intervention slightly increased the risk of low Apgar score and decreased the risk of low arterial pH, reflecting, however, small differences in absolute numbers. Other outcomes were unchanged	Yes	No	WEAK

59	Drewry	2015	USA	Retrospective cohort study	2000–2007 National Center for Health Statistics (NCHS) live birth files from sixteen US states	583,917	Prenatal care costs covered for low-income women without health insurance in six US states - the State Children's Health Insurance Program's Unborn Child Ruling Expansions	10 states without expanded health insurance to cover unborn children	Prenatal care utilisation and birth outcomes	In enacting states all indices measuring prenatal care utilisation were significantly improved ($p<0.01$) across the eight-year period. In non-enacting states, early prenatal care and adequacy of care declined significantly. The differences in these outcomes were significant between enacting and non-enacting states. Foreign-born Latina birth outcomes were virtually identical in terms of percentage of low birthweight, preterm, and gestational age and temporal changes were similar. Except for large for gestational age, outcomes worsened for both groups of states, but enacting states were no different statistically from non-enacting states in this decline. A model including only high-risk women demonstrated that early prenatal care was significantly better at baseline for enacting states compared to non-enacting	No	N/A	WEAK

57	Dube	2022	Australia	Retrospective cohort study	Women from a refugee background attending a tertiary maternity hospital between 2016-2019	1259	Specialist midwifery service (Refugee Midwifery Group Practice) – there were several aspects to this specialist model including designated midwife care throughout the perinatal period, including during birth. The group sessions and individual appointments were conducted in a community venue. There was a social worker on site during antenatal group sessions. The social worker was the main point of referral to social/emotional supports, including a psychologist. A physiotherapist from the hospital visited the community venue every 3 months.	Standard antenatal care	Primary maternal outcomes: ≥5 antenatal visits, spontaneous onset of labour, epidural analgesia in the first stage of labour, and vaginal birth. Primary neonatal outcomes: preterm birth (at least 20-weeks' gestation or 400g birthweight and <37 completed weeks) and exclusive breastfeeding at discharge from hospital (feeding at the breast, and/or expressed breast milk)	Women who received Refugee Midwifery Group Practice care were more likely to have spontaneous onset of labour (adjusted odds ratio 2·20, 95% confidence interval 1·71–2·82; p<0·0001), have vaginal births (1·55, 1·23–1·95; p<0·0001), and less likely to use epidural analgesia in the first stage of labour (0·67, 0·50–0·89; p=0·0067) or have a preterm baby (0·60, 0·36–0·99; p=0·047). There was no statistically significant difference between groups in women attending ≥5 antenatal visits, with both groups being above 90%, or exclusive breastfeeding at discharge from hospital. Specialist Group Practice care were more likely to attend their first antenatal visit before 14 weeks (adjusted odds ratio 2·94, 2·19–3·95; p<0·0001), have a spontaneous vaginal birth (1·28, 1·02–1·61; p<0·036), have a successful vaginal birth after caesarean (1·69, 1·03–2·76; p=0·037), have physiological management of the third stage (4·66, 2·12–10·27; p<0·0001), have their babies born before arrival to the hospital (2·13, 1·07–4·24; p=0·032), and less likely to have low birthweight babies (0·54, 0·33–0·89; p=0·015)	No	N/A	MODERATE
58	Dundek	2006	USA	Retrospective cohort study	Somali pregnant women	352	Somali speaking birth doula	Standard birth care	Mode of birth - vaginal vs. Caesarean section	Overall caesarean birth rates (both primiparous and multiparous) for Somali women attended by a doula were 17% during the program period, compared with 26.6% caesarean birth rate among Somali women not attended by a doula. When only primiparous women were considered, 18.2% Somali women attended by doulas had a caesarean. Primiparous Somali women not attended by a doula had a caesarean birth rate of 27.9% (no significance testing done)	Yes	N/A	WEAK

60	European Union Agency for Fundamental Rights	2015	Germany, Greece, Sweden	Economic analysis using modelled data	Irregular migrants who are pregnant in Germany, Greece, and Sweden (modelled scenario)	Estimated probability of pregnancy amongst undocumented migrants in each country: Germany - 3.65%; Greece - 4.12%; Sweden - 5.25%.	Free access to comprehensive prenatal care	No access to free prenatal care	Probability of experiencing low birthweight, saving to the healthcare system, and number of low birthweight cases that can prevented.	Probability of LBW with adequate care: 3.2%; without adequate care 15.0%. Access to adequate prenatal care may generate savings of up to 48% in Germany and Greece and up to 69% in Sweden (approximately €56, €52 and €177 per woman, respectively) over 2 years. The provision of prenatal care may be half as expensive as treating LBW as a consequence of not providing access to care during pregnancy. In addition, LBW cases can also be prevented through the provision of access to prenatal care, ranging from 4 cases per 1,000 women in Germany, 5 cases in Greece and 6 in Sweden	No	N/A	MODERATE
43	Janssen	2009	Canada	Cohort analytic (two groups pre + post)	Immigrant women of Chinese descent	250	Chinese language infant feeding hotline	Women not using the Chinese language hotline	Exclusive breastfeeding rate at 2 months postpartum	44.1% of women using the hotline were exclusively breastfeeding; this compares to 15.6% among women not using the hotline at 2 months postpartum, odds ratio 3.02, 95% CI (1.78–5.09)	Yes	N/A	WEAK
41	Jin	2020	Japan	Cohort (one group pre + post)	Chinese women who are giving birth in Japan	38	Three components: (1) Specialist antenatal class in third trimester, (2) Conversation cards for use in hospital at birth to help with seeking support from nurses with common issues, and (3) Mobile social network group on WeChat®	Before (third trimester) and after intervention implementation (after birth, and first month PP)	Anxiety measured by STAI, depression measured by EPDS, use of social network group	45.0% participants held discussions through WeChat®, mainly asking questions regarding child-rearing and milk, and exchanging information related to procedures for their babies' residence cards. 5.3% used the conversation card during hospitalisation. No significant differences in anxiety as measured by STAI scores. The percentage of participants scoring >10 on EPDS did not change after the intervention	No	N/A	MODERATE

44	Kieffer	2013	USA	RCT	Pregnant Latina migrant women (<20 weeks gestation) in Detroit US	278	Healthy MOMs Healthy Lifestyle Intervention: 14-session curriculum conducted weekly in Spanish comprising home visits, group meetings antenatally, and home and group visits postpartum. Intervention aimed at empowering women to develop skills to reduce barriers to healthy eating and exercise	Control group that received a 16-week parenting education program	Maternal depressive symptoms measured by the CES-D	The MOMs group had a significantly greater decrease in CES-D score from baseline to follow-up than the control group (mean difference in change score =-1.83 points; 95 % CI:-3.59,-0.07; p=0.042)	Yes	Yes	STRONG

61	Korenbrot	2000	USA	Retrospective cohort study	All foreign-born and US-born women giving birth in California between 1990 and 1997	4,480,657 births	A range of state-wide policies introduced between 1994 and 1996 to restrict access to Medicaid (free healthcare access) for undocumented migrants, which included access to maternity care	US-born women (likely to have Medicaid coverage)	Number of births, use of prenatal care, low birthweight, pre-term birth	The adjusted odds of birth for foreign-born women with Medicaid compared to US-born women fell from 1994 (OR 1.00) to 1995 (OR 0.86, CI 0.85–0.87), and from 1996 (OR 0.90, CI 0.89–0.91) to 1997 (OR 0.87, CI 0.86–0.88). No increase in odds of birth to uninsured foreign-born women. No decline in the use of prenatal care by foreign-born women, and no worsening of birth outcomes after passage of the reforms. Foreign-born women were more likely to have inadequate prenatal care than US-born women, and the improvement in outcomes that occurred for US-born women from 1994 to 1997 did not occur for foreign-born women. There were, however, significant improvements in low birthweight outcomes for US-born women between 1994 and 199.7. However, relative odds of low weight births to foreign-born women have been increasing slowly but steadily from 1991 to 1997. The adjusted relative odds of preterm births, on the other hand, did not differ for foreign-born women after the policy changes, nor did they differ significantly from those of US-born women; and they changed little over time.	No	N/A	MODERATE
42	Linares	2019	USA	RCT	Hispanic immigrant women	39	Women received peer counselling (from the same Hispanic community) and lactation professional support throughout the perinatal period up to 6 months postpartum: 1–2 prenatal visits, one in-hospital visit, two home postpartum visits, and pre/post-natal follow-up phone calls as needed	Usual care including usual breastfeeding education in antenatal clinic	Breastfeeding initiation in hospital; Exclusive breastfeeding (EBF) rate over time postpartum	Breastfeeding initiation at hospital stay was high in both groups, 100% and 90% in the Intervention vs. Control group respectively. Baseline mean for intention to breastfeed was higher in the intervention group relative to the control, albeit not statistically significant, this was used as control variable in the longitudinal analysis of EBF status. The final model for the repeated measures assessment of group and time differences in EBF status, controlling for baseline Intention to BF, indicated that the group main effect was significant ($\chi 2 = 4.3$, $p = 0.038$), and was the main effect of Time ($\chi 2 = 10.6$, $p = 0.014$)	Yes	Yes	WEAK

48	Lutenbacher	2018	USA	RCT	Hispanic women (>90% non-US born)	178	The Maternal Infant Health Outreach Worker (MIHOW) program: Peer mentors providing monthly home visits during pregnancy and up to 6 months postpartum. MIHOW interventionists are recruited from the local Hispanic community and complete 40 hours of training. The MIHOW model stresses recognising family strengths and utilising those to address their own family needs; relationships begin in pregnancy and consist of monthly home visits and periodic group gatherings.	Minimal education intervention (MEI): distribution of printed educational materials about maternal and infant health and development to all study participants (i.e., women assigned to both study groups)	Maternal depression measured with median EPDS score, exclusive breastfeeding, infant put to sleep on back, prenatal care visits	Compared to the MEI group, women in the MIHOW group demonstrated a statistically significant greater decrease in EPDS scores between the baseline and prenatal assessments with the values remaining lower throughout the postpartum period (d=0.57, p<0.001). 80% (n=68 of 86, 79.1%) in the MEI group reported never breastfeeding exclusively, this was significantly lower in the MIHOW group (n=50 of 90, 55.6%, d=0.38, p=0.011). The women in the MIHOW group were more likely to report positioning the infant on the back than did the women in the MEI group (98 vs. 66–75%, d=0.63, p<0.001). 99% percent received prenatal care beginning at ~13 weeks gestation, no statistically significant differences between the groups (d=0.04–0.12).	Yes	No	WEAK

49	Malebranche	2020	Canada	Retrospective cohort study	Primiparous refugees and asylum seekers attending a specialist refugee health clinic	179	Specialist antenatal care at a refugee health clinic including interdisciplinary support from psychologists, nurses, social workers, dieticians, patient navigators, and pharmacists. Telephone translators are available for all visits	None	Time to initiation of care measured by time from arrival in Canada to first visit regardless of pregnancy status; adequacy of antenatal care defined by the Adequacy of Prenatal Care Utilization Index (APNCU); Obstetric outcomes: (1) gestational age at delivery; (2) preterm birth (defined as a livebirth<37 weeks' gestation), and; (3) mode of delivery (defined as vaginal, assisted or caesarean section). Newborn outcomes: (1) birthweight (defined as the first recorded weight in the delivery record); (2) small for gestational age (SGA)| (defined as<10th percentile of birth weight compared to newborns of the same gestational age); (3) large for gestational age (LGA) (defined as >90th percentile of birth weight compared to newborns of the same gestational age), and; (4) Neonatal Intensive Care Unit (NICU) consultation at the time of delivery	Median time to first clinic visit from arrival among all women was 0.9 months (IQR 2.6 months). Overall, 40.8% of women (n=73) received adequate or adequate plus antenatal care. Among obstetric and newborn outcomes, the median gestational age at delivery was 39.7 weeks (IQR 2.0). 7% (n=13) of women delivered preterm. 63% (n = 112) of women had vaginal births, 22.3% (n=40) delivered by caesarean section and 11% required an assisted delivery (n=20). Median newborn birthweight was 3310 grams (IQR 667g). 9% of women gave birth to SGA infants and 25.7% to LGA infants	No	N/A	MODERATE

45	McEnery	1986	UK	Controlled Clinical Trial	Pakistani and Indian pregnant women living in the UK	69	Antenatal education programme in Urdu: course of 12 weekly lectures, each lasting 1.5 hours, covering fertility, pregnancy, childbirth and child-rearing by a health visitor, midwife or nutritionist. Written literature provided and there were opportunities for discussion	Routine antenatal care and English-speaking antenatal care, referred to as 'non-educated group'	Perinatal outcomes - Caesarean section rates, birthweight, sole breastfeeding. Infant health at 1 years - haemoglobin assay, vaccination status	Perinatal outcomes - 25% (n=4) of educated women had a Caesarean section compared to 8% (n=15) of non-educated women. Mean birthweight was 3.13kg in the educated group, and 3.12kg in the non-educated group. 25% (n=4) of the educated group were sole breastfeeding compared to 31% (n=16) amongst non-educated group. Infant outcomes - Mean haemoglobin level was 11.9 g/dl in the non-educated group, and 11.1 g/dl in the educated group. 100% (n=16) of educated group had completed vaccine schedule, compared to 72% (n=37) amongst non-educated. *(No significance testing was completed in this paper)*	No	N/A	WEAK
50	O'Connell	2010	USA	Retrospective cohort study	Immigrant women who are pregnant and living in the local area - primarily form Mexico Guatemala, and El Salvador	364 (94.5% of mothers in the Mobile group and 96.2% in the Comparison group were foreign born)	MOMmobile medical van providing antenatal and postnatal care to migrant women. Services offered include pregnancy tests, prenatal and postpartum care, annual gynaecological exams, sexually transmitted infection screening, health education, lab work, Women Infants and Children (WIC) eligibility, Healthy Start screenings and additional community referrals	Usual maternity care (women living in same zip codes as the mobile clinic served)	Trimester that antenatal care began, adequacy of antenatal care measured by the Kessner Index, birthweight, and preterm birth	81% of mobile clinic attenders began antenatal care in the first trimester, compared to 63% in the control group (p=0.0006). 89% of mobile clinic attenders had adequate antenatal care compared to 73% amongst controls (p=0.0003). There were no significant differences in birthweight, however the mobile group did have a lower percentage of LBW infants (4.4% vs. 8.8%) than the comparison group. 5% of mobile attenders had a preterm birth compared to 10% of controls (p=0.0492). Logistic regression analysis showed improvement of prenatal care utilisation; and reduction in preterm birth was associated with MOMmobile access after adjusting potential confounding factors	No	N/A	MODERATE

51	Reavy	2012	USA	Retrospective cohort study	Women from a refugee background	227	C.A.R.E. (Culturally Appropriate Resources and Education) Health Advisor: The advisor works at the CARE Clinic. Migrant women are offered group antenatal care clinics and postnatal clinics lasting 2 hours. Staff remind women about appointments in advance. Those who don't have transport are supported to book a taxi (although this is not fully reimbursed). Education classes are also offered. Staff include Health Advisors with links to family/community services, certified medical interpreters, and peer health advisors. Mothers can access basic necessities including things for infants and mothers in an 'incentive store;. Women are given points to enable shopping in the store for attending appointments, eating well, and participation in health services	Before / After introduction of the Health Advisor role	Number of missed appointments, childhood immunisations in first year of life	Following introduction of the Health Advisor, the 'no-show' rate, or missed clinic appointments, dropped from 25% to 3%. 100% childhood vaccination rate at 1 year of life	Yes	N/A	MODERATE
52	Riggs	2017	Australia	Retrospective cohort study	Karen Burmese women from a refugee background	17,645 for antenatal care attendance assessment, 25 for mental health assessments	Healthy Happy Beginnings (HHB) is group pregnancy care and information model. A multidisciplinary team including a midwife, maternal and child health nurse, and bicultural worker co-facilitate group sessions. Individual antenatal appointments with a midwife and an interpreter are	For antenatal attendance: Usual care for other Karen women, and women from other refugee backgrounds. For mental health before- and after-comparison only	Attendance at first antenatal appointment before 13 weeks gestation, depression and anxiety symptoms measured using the HSCL	29% of Karen women participating in HHB attended their first antenatal appointment during the first 12 weeks of pregnancy, compared to 25% of Karen women attending standard care, and 24% of women of other refugee backgrounds. During pregnancy 33% reported depressive symptoms, this decreased to 12% after childbirth. 19% reported anxiety during pregnancy, and this decreased to 10% after childbirth. (No significance testing was conducted, no comparison group)	Yes	N/A	WEAK

							provided alongside group the sessions						
62	Rodriguez	2020	USA	Economic analysis using modelled data	Undocumented pregnant migrants living in 32 US states without free prenatal care	Modelled cohort of 84,000 pregnant undocumented migrants	Offering free antenatal care to undocumented migrants across 32 US states	Free delivery care cover only (current practice)	Infant deaths, cases of cerebral palsy, cost of prenatal care, infant deaths averted, cost-effectiveness analysis	Extending to offer prenatal care would cost $380 more per woman than covering the delivery only. This additional coverage would incur a public cost of $66.5 million with an estimated 117 fewer infant deaths and 34 fewer cases of children with moderate to severe disability associated with cerebral palsy. For every 865 additional women receiving prenatal care, one infant death would be averted, at a cost of $328,700 for prenatal care. Similarly, 2,564 women would have to receive prenatal care to prevent one case of severe cerebral palsy, at a cost of $974,320 for prenatal care. A Monte Carlo simulation of 10,000 trials was performed to further assess the robustness of the model. At a willingness-to-pay threshold of $100,000 per QALY, prenatal care coverage was cost effective in 99% of strategies, regardless of how model inputs were varied across distributions. Providing antenatal care for low-income women, regardless of citizenship status, is a cost-effective strategy: it improves health outcomes and associated QALYs at a willingness-to pay threshold of $100,000	No	N/A	MODERATE

46	Rossiter	1994	Australia	Controlled Clinical Trial	Pregnant Vietnamese migrants: 93% born in Vietnam	182	Language and culture specific education programme: 25-minute video followed by 3x 2-hour small group discussion sessions	Written education information	4 weeks: Initiating and continuing breastfeeding. 6 months: Postpartum breastfeeding continuation	There was a significant difference in the number of subjects who initiated breastfeeding (Chi-squared=17.14, p<0.001) and who continued to breastfeed at 4 weeks after birth (Chi-squared=9.67, p=0.001) between the experimental and control groups. Most subjects (70.2%, n=73) in the experimental group compared with 37.8% (n=28) of subjects in the control group breast-fed their infant at birth. At 4 weeks after birth, 50.0% (n=52) of subjects in the experimental group compared with only 25.6% (n=19) of those in the control group continued to breastfeed. At 6 months postpartum there was no significant difference in the number of subjects who continued to breastfeed (Chi-squared=1.75, p=0.185) between the experimental and control groups. Only 25.7% (n=26) of subjects in the experimental group and 16.2% (n=12) in the control group continued breastfeeding	No	N/A	WEAK

53	Sana	2016	USA	Retrospective cohort study	Immigrant and non-immigrant Hispanic women	4,971 Hispanic women	Women, Infants and Children (WIC) program: a federal program aimed at improving maternal and child health through education, food supplements, and health referrals	Non-immigrant Hispanic women receiving usual care	Participation in WIC programme, adequate prenatal care, low birth weight (LBW), preterm birth (PTB)	Maternal immigrant status was significantly associated with enrolment in the WIC program, adjusted (AOR 1.64, 95% CI 1.36, 1.98, p<0.01) models. The odds of participating in WIC were 64% higher among immigrant Hispanic mothers compared to native-born Hispanic mothers. The odds of LBW were lower for immigrant Hispanic women in WIC compared to those not enrolled in WIC, adjusted model (AOR 0.71, 95% CI 0.51,1.00, P<0.05). WIC enrolment was significantly associated with preterm birth - the odds of preterm birth were 23% less (OR 0.77, 95% CI 0.61, 0.97, P<.05) for Hispanic mothers participating in WIC compared to nonparticipants.	No	N/A	MODERATE

47	Schytt	2022	Sweden	RCT	Pregnant immigrant women from 5 hospitals across Sweden (Somali-, Arabic-, Polish-, Russian- and Tigrinya-speaking women who could not communicate fluently in Swedish)	164	Community-Based Doula (CBD) support around birth. The doula spoke the same language and was from the same culture as the mother. The doula and mother meet twice prior to the birth to get to know each other and discuss the woman's wishes regarding labour. The CBD would then attend labour ward with the women and stay with her throughout labour and birth to provide emotional and physical support as well as communication assistance. After the birth, the woman and CBD met once or twice to follow up on any questions or concerns the woman had regarding the birth and the postpartum period	Standard labour care (SC)	Maternal depressive symptoms / emotional wellbeing measured by EPDS (mean and median score calculation, a score of 13 or more suggests severe symptoms of depression); Women's overall ratings of labour care were measured by a single item question taken from the MFMCQ (Migrant Friendly Maternity Care Questionnaire)	Mean scores on the EPDS were similar at baseline (CBD 7.34 vs SC 6.71; mean difference 0.63; CI 95% -2.56–1.30) and at the postpartum follow-up (CBD 4.76 vs SC 3.44; mean difference 1.32; CI 95% -2.78–0.13). There were no differences between the groups regarding women's intrapartum care experiences (very happy with care: CBD 80.2% (n = 65) vs SC 79.1% (n = 53); OR 1.07 CI 95% 0.48–2.40)	Yes	Yes	WEAK
63	Stanhope	2021	USA	Retrospective cohort study	Hispanic immigrant pregnant women	11,210,097 births to Hispanic mothers in 3,162 counties in 50 states	Local level enforcement of the 287(g) programme which allows police departments to get funding for immigration enforcement	Counties which did not implement the 287(g) programme	Very preterm birth (VPTB) rates amongst US-born and first-generation Hispanic women	The incidence density ratio (IDR) of VPTB for US-born women was 0.99 [0.95, 1.02]), whereas the IDR for foreign-born women was 1.04 [1.01, 1.12]). No difference in VPTB between counties that adopted it and those that didn't	No	N/A	STRONG

54	Stapleton	2013	Australia	Retrospective cohort study	Pregnant migrant women (forced migrant backgrounds)	202	A specialist, hospital-based, antenatal clinic for women from refugee backgrounds including psychosocial support, culturally appropriate and timely interpreting services, ongoing programme of staff training, and continuity of care provider	Standard antenatal care in same hospital (all women, including those who are not from migrant backgrounds)	Maternal and neonatal clinical outcomes: preterm birth, mode of birth, perineal trauma, breastfeeding on discharge	Preterm birth: 13% amongst all women compared to 8.4% amongst migrant women, difference 4.6%, (CI -1.2, 7.8). Mode of birth: Vaginal (non-instrumental) all women 58.2% vs 66.8% amongst migrant women, difference 8.6% (1.3, 15.4). Forceps: all women 2.3%, migrant women 0.5%, difference 1.8% (1.1, 2.5). Vacuum all women 10.2%, migrant women 6.8%, difference 3.4% (1.6, 6.5). Caesarean section (CS) all women 29.3%, migrant women 25.8%, difference 3.5% (3.6, 9.6). Elective CS all women 13.0% migrant women 10.0%, difference 3.0% (2.5, 6.9). Emergency CS all women 16.2%, migrant women 15.8%, difference 0.4% (5.8, 5.3). Breastfeeding on discharge: All women 83.5%, refugee women 82.8%, difference 0.7%	No	N/A	WEAK
64	Welder	2022	USA	Retrospective cohort study	Pregnant migrant women	374	Group 1: Free Medical Clinic (FMC) offering free antenatal care to migrant women	Group 2: Migrant pregnant women with Temporary Medicaid (offered 2 months of free antenatal care if less than a 5-year legal permanent residency status, undocumented status, or out-of-country resident status). Group 3: Migrant pregnant women with full Medicaid (free antenatal care throughout pregnancy)	Rates of gestational diabetes mellitus (GDM) screening, receipt of Tetanus Diphtheria Pertussis (TPD) vaccine, and screening for group B streptococcus. Gestational age at delivery, birthweight of infant, and Apgar scores	Amongst women in group 1, 100% received the TPD vaccine. Group 2 had 88.9% (p<0.0001) and Group 3 had 94.2% (p=0.00026). Amongst women in group 1, 100% received GDM screening, in group 2 91.4% (p<0.0001), and 94.2% in group 3 (p<0.001). Amongst women in group 1 99.5% received group B streptococcus screening, Group 2 67.2%, (p<0.00001), and Group 3 92% (p=0.00097). Gestational age at delivery group 1 38.7 weeks, group 2 38.8 weeks (p=0.896), group 3 38.1 weeks (p=0.362). Birthweight group 1 3401g, group 2 3308g (p=0.228), group 3 3260g (p=0.086). APGAR score at 1 minute group 1 7.7, group 2 7.8 (p=0.66), group 3 7.2 (p=0.017).	No	N/A	WEAK

65	Wherry	2017	USA	Retrospective cohort study	Undocumented pregnant migrants and US-born pregnant women living in the US between 1998 and 2013	1,632 state-year observations	States offering free antenatal care to migrants	States not offering free antenatal care to migrants	Antenatal care coverage, low birthweight, preterm birth	Antenatal care coverage increased the mean number of prenatal visits for immigrant women by 0.2 visits (a 1.9 percent increase relative to the baseline mean of 10.4 visits) (no significance testing). A significant decrease of 0.5 percentage points in the incidence of preterm births among immigrant women accessing free care. No change in low birthweight	No	N/A	WEAK

55	Yelland	2020	Australia	Interrupted time series	Women of migrant (including refugee, asylum-seeking, and other humanitarian migrants) background and Australian-born women giving birth over 3 years in a network of hospitals (network X and network Y)	42,142	Bridging the Gap' Initiative: this was a co-produced 'whole-of-system' approach implemented in 4 maternity hospitals and two community family clinics. Maternity intervention includes reformed data collection systems, multiagency model of group pregnancy care, professional interpreters. Interventions differed slightly between hospitals based on local needs and co-produced decisions (Network X and Y)	Interrupted time series was used to assess if the timing and number of antenatal clinical visits for refugee women compared with Australian-born women changed over 3 years of the intervention	Number of hospital-based antenatal visits, specifically women having seven or more visits as per Australian guidelines, gestation of pregnancy at first hospital-based antenatal visit (should be before 16 weeks)	Multivariable logistic regression analyses accounting for clustering by country of birth within the hospital network, and for parity and gestational diabetes, estimated a linear trend whereby the odds of attending seven or more visits increased by around 20% over each 6-month period (adjusted odds ratio [adjOR] 1.22 [95% confidence interval (CI) 1.09–1.36], p<0.001), no difference comparing the intervention to baseline period (adjOR 1.07 [95% CI 0.91–1.27], p=0.413). There was little difference between the proportion of Australian-born women and women of migrant background having seven or more visits over time, although it was higher for refugee women. At baseline, two-thirds of Australian-born women and women of migrant background had their first hospital-based antenatal visit at <16 weeks' gestation at hospital network X, and 52% of women at hospital network Y. This proportion decreased over the period of observation. In the latter reporting period from July to December 2016, 64% of Australian-born women and 57% of women of refugee background at hospital network X had their first antenatal visit at less than 16 weeks' gestation, although no statistically significant effects of time or intervention period were found. At hospital network Y, 42% of Australian-born women and 34% of women of refugee background had their first antenatal visit at <16 weeks' gestation	Yes	N/A	STRONG

56	Yuan	2019	UK	Controlled Clinical Trial	Newly-arrived Chinese undocumented mothers with infants aged less than 8 weeks	36	Oral health education programme provided through home visits and telephone calls at 5 timepoints during first postpartum year, Women were also given social/community referral support and toothbrushing equipment for their children. Programme delivered by a Chinese community health worker	Usual care	Mothers' tooth decay at 8 weeks, 6 months, and 12 months	There were no statistically significant differences in mothers' obvious decay experience between intervention and control groups at baseline (t = 0.43: p = 0.67), six months (t = 0.40: p = 0.69), and 12 months (t = 0.10: p = 0.92)	Yes	N/A	WEAK

Appendix 3: Quality Assessment Tool for Quantitative Studies Tool and the Risk of Bias in Non-Randomised Studies (ROBINS).

Study	A: Selection Bias		B: Study Design				C: Confounders		D: Blinding		E: Data Collection Methods		F: Withdrawals and Drop-Outs		G: Intervention Integrity			H: Analyses				Overall Rating	ROBINS Rating
	A1	A2	B1	B2	B3	B4	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	G3	H1	H2	H3	H4		
Ahrne 2023	2	3	7	N	N/A	N/A	1	3	1	1	3	3	2	2	3	3	2	4	4	1	1	WEAK	SERIOUS
Bang 2014	3	5	2	N	N/A	N/A	2	N/A	1	1	3	1	2	4	4	3	2	4	4	1	3	WEAK	MODERATE
Byrskog 2020	1	1	3	N	N/A	N/A	1	3	1	2	1	1	4	5	4	3	2	4	4	1	1	WEAK	MODERATE
Damsted Rasmussen 2023	1	4	1	Y	Y	Y	2	N/A	1	1	1	1	2	1	1	3	3	3	3	1	1	WEAK*	LOW
Drewry 2015	4	4	7	N	N/A	N/A	1	4	1	2	1	1	4	5	1	2	3	1	1	1	1	WEAK	MODERATE
Dube 2022	2	4	7	N	N/A	N/A	1	1	3	3	1	2	4	5	1	3	2	4	4	1	1	MODERATE	MODERATE
Dundek 2006	2	4	7	N	N/A	N/A	3	3	1	3	1	2	4	5	1	2	2	4	4	1	1	WEAK	NO INFORMATION GIVEN
EU Agency for Fundamental Rights 2015	1	4	7	N	N/A	N/A	2	N/A	3	2	1	2	4	5	3	2	3	2	2	1	2	MODERATE	NO INFORMATION GIVEN
Janssen 2009	2	2	3	N	N/A	N/A	3	N/A	3	3	1	3	2	3	1	3	2	4	4	1	1	WEAK	SERIOUS
Jin 2020	2	3	5	N	N/A	N/A	2	N/A	1	3	1	1	1	1	1	1	2	4	4	1	1	MODERATE	LOW
Kieffer 2013	2	1	1	Y	Y	Y	1	1	2	3	1	1	1	2	1	3	2	4	4	1	1	STRONG	LOW
Korenbrot 2000	1	1	7	N	N/A	N/A	2	1	1	2	1	3	4	5	1	2	3	4	4	1	1	MODERATE	MODERATE
Linares 2019	2	5	1	Y	N	N/A	1	1	2	1	1	2	1	2	1	2	2	4	4	1	1	WEAK	LOW

Lutenbacher 2018	1	1	1	Y	Y	Y	1	3	2	3	1	1	1	1	1	2	2	4	4	1	3	WEAK	MODERATE
Malebranche 2020	2	4	7	N	N/A	N/A	2	N/A	1	2	1	1	4	5	1	2	2	4	4	1	1	MODERATE	LOW
McEnery 1986	2	1	2	N	N/A	N/A	1	3	1	1	1	2	1	3	3	2	3	4	4	1	2	WEAK	SERIOUS
O'Connell 2010	2	4	7	N	N/A	N/A	1	3	3	1	1	2	4	5	1	3	2	4	4	1	1	MODERATE	MODERATE
Reavy 2012	2	4	7	N	N/A	N/A	2	3	1	2	1	3	4	5	1	3	2	4	4	1	1	MODERATE	MODERATE
Riggs 2017	2	5	2	N	N/A	N/A	3	3	3	1	1	2	2	5	4	2	3	4	4	1	1	WEAK	MODERATE
Rodriguez 2020	1	4	7	N	N/A	N/A	3	N/A	3	2	1	1	4	5	4	3	2	4	4	1	1	MODERATE	SERIOUS
Rossiter 1994	2	1	2	N	N/A	N/A	1	3	3	1	1	2	1	1	1	2	2	4	4	1	1	WEAK	SERIOUS
Sana 2016	1	4	7	N	N/A	N/A	3	3	3	2	1	1	4	5	1	2	3	4	4	1	1	MODERATE	MODERATE
Schytt 2022	1	2	1	Y	Y	Y	1	3	3	3	1	2	1	1	1	2	2	4	4	1	1	WEAK	MODERATE
Stanhope 2021	1	4	7	N	N/A	N/A	2	N/A	3	2	1	3	4	5	1	3	2	4	4	1	1	STRONG	MODERATE
Stapleton 2013	2	4	7	N	N/A	N/A	1	3	1	2	1	2	4	1	1	2	2	4	4	1	1	WEAK	SERIOUS
Welder 2022	2	4	7	N	N/A	N/A	1	3	3	2	1	2	4	5	1	3	3	4	4	1	1	WEAK	MODERATE
Wherry 2017	1	4	7	N	N/A	N/A	3	3	1	2	1	2	4	5	4	2	3	4	4	1	1	WEAK	SERIOUS
Yelland 2020	1	4	6	N	N/A	N/A	1	1	2	2	1	1	4	1	1	3	2	4	4	1	1	STRONG	MODERATE
Yuan 2019	3	5	2	N	N/A	N/A	2	N/A	3	3	1	3	3	1	1	2	1	4	4	1	1	WEAK	MODERATE

Appendix 4: Effectiveness of intervention categories across all outcome measures

Intervention	Beneficial Outcomes / Total Outcomes	Proportion of Beneficial Outcomes (%)	95% CI† of the Proportion of Beneficial Outcomes	p-value
(1) Maternity Care Interventions				
Specialist in-person interpreting	20/28	74.1%	51.3% – 86.8%	0.036*
Trained peer / shared culture worker	13/17	76.5%	50.1% – 93.2%	0.049*
Specialist multidisciplinary team	12/16	75.0%	47.6 – 92.7%	0.077
Group antenatal care	8/10	80.0%	44.4 – 97.5%	0.109
Extended postpartum support	5/6	83.3%	35.9 – 99.6%	0.219
Continuity of midwifery care	6/8	75.0%	34.9% – 96.8%	0.289
Mental health support	5/8	62.5%	24.5% – 91.5%	0.727
Infant feeding support	2/2	100.0%	15.8 – 100.0%	0.500
Birth doula	2/4	50.0%	6.8% – 93.2%	1.000
(2) Public Health or Policy Interventions				
Maternal education	13/20	65.0%	40.8 – 84.6%	0.263
Social welfare assistance	10/14	71.4%	41.9% – 91.6%	0.180
Free healthcare	12/13	92.3%	64.0 – 99.8%	0.003*
Social / peer support	5/8	62.5%	24.5% – 91.5%	0.727
Staff education / process reform	2/3	66.7%	9.4% – 99.2%	0.238
Mobile perinatal care	3/3	100.0%	29.2% – 100.0%	0.250
Immigration law reforms	1/1	100.0%	2.5% - 100.0%	1.000

†: CI: Confidence Interval.
*: Statistically significant at p<0.05.

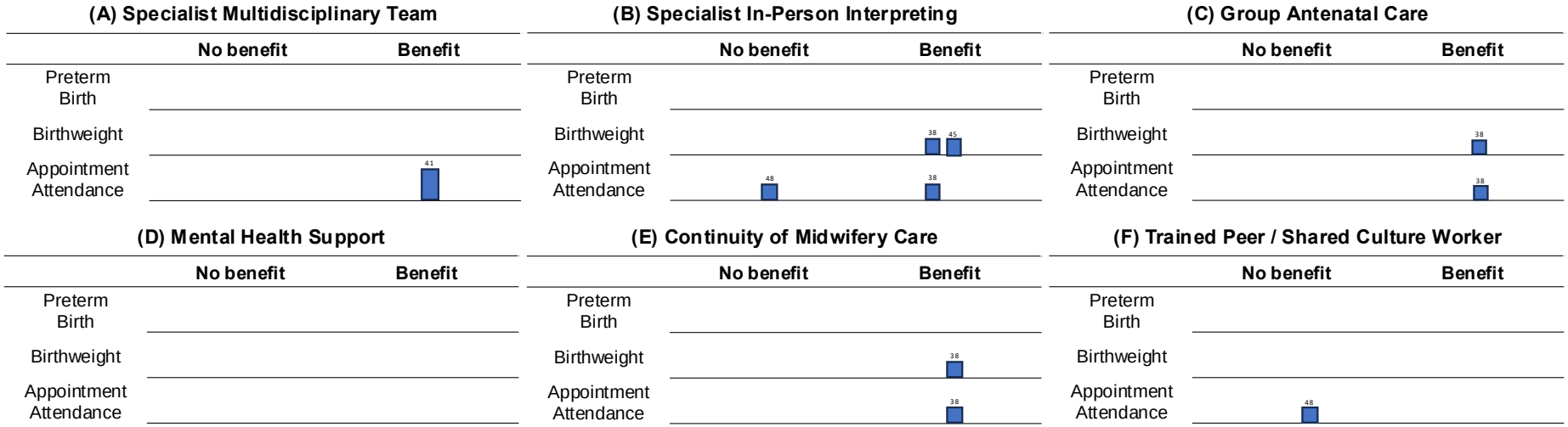
Appendix 5: Effectiveness of intervention categories across all outcome measures restricting to only interventional studies

Intervention	Beneficial Outcomes / Total Outcomes	Proportion of Beneficial Outcomes (%)	95% CI† of the Proportion of Beneficial Outcomes	p-value
(1) Maternity Care Interventions				
Specialist multidisciplinary team	N/A	N/A	N/A	N/A
Specialist in-person interpreting	11/16	68.8%	41.3 – 90.0%	0.210
Group antenatal care	3/3	100.0%	29.2 – 100.0%	0.250
Mental health support	1/1	100.0%	2.5% - 100.0%	1.000
Continuity of midwifery care	3/3	100.0%	29.2 – 100.0%	0.250
Extended postpartum support	5/6	83.3%	35.9 – 99.6%	0.219
Infant feeding support	2/2	100.0%	15.8 – 100.0%	0.500
Trained peer / shared culture worker	8/10	80.0%	44.4 – 97.5%	0.109
Birth doula	1/2	50.0%	1.3 – 98.7%	1.000
(2) Public Health or Policy Interventions				
Social welfare assistance	0/1	0.0%	0.0 – 97.5%	1.000
Free healthcare	N/A	N/A	N/A	N/A
Maternal education	4/9	44.4%	13.7 – 78.8%	1.000
Mobile perinatal care	N/A	N/A	N/A	N/A
Immigration law reforms	N/A	N/A	N/A	N/A
Staff education / process reform	0/1	0.0%	0.0 – 97.5%	1.000
Social / peer support	5/8	62.5%	24.5 – 91.5%	0.727

†: CI: Confidence Interval. *: Significant at p<0.05 level.

Appendix 6: Evidence for effectiveness of (1) Maternity Care Interventions and (2) Public Health or Policy Interventions for migrant women by main outcome category – preterm birth, birthweight, appointment attendance for interventional studies only.
This harvest plot is a 'supermatrix' presenting thirteen interventions, and three outcomes. Each bar represents a single study and is annotated with the reference number (as per main text). Bar height indicates study quality: strong (tallest), moderate (medium), weak (shortest). Preterm birth was defined as infants born alive before 37 weeks of pregnancy are completed. Birthweight was defined as the body weight of an infant at its birth. Appointment attendance was defined as the number of antenatal and / or postnatal appointments a woman attended.

(1) Maternity Care Interventions



(2) Public Health or Policy Interventions

(A) Social Welfare Assistance

	No benefit	Benefit
Preterm Birth		
Birthweight		
Appointment Attendance		

(B) Free Healthcare

	No benefit	Benefit
Preterm Birth		
Birthweight		
Appointment Attendance		

(C) Maternal Education

	No benefit	Benefit
Preterm Birth		
Birthweight		45
Appointment Attendance		45

(D) Mobile Prenatal Care

	No benefit	Benefit
Preterm Birth		
Birthweight		
Appointment Attendance		

(E) Immigration Law Reforms

	No benefit	Benefit
Preterm Birth		
Birthweight		
Appointment Attendance		

(F) Staff Education / Process Reform

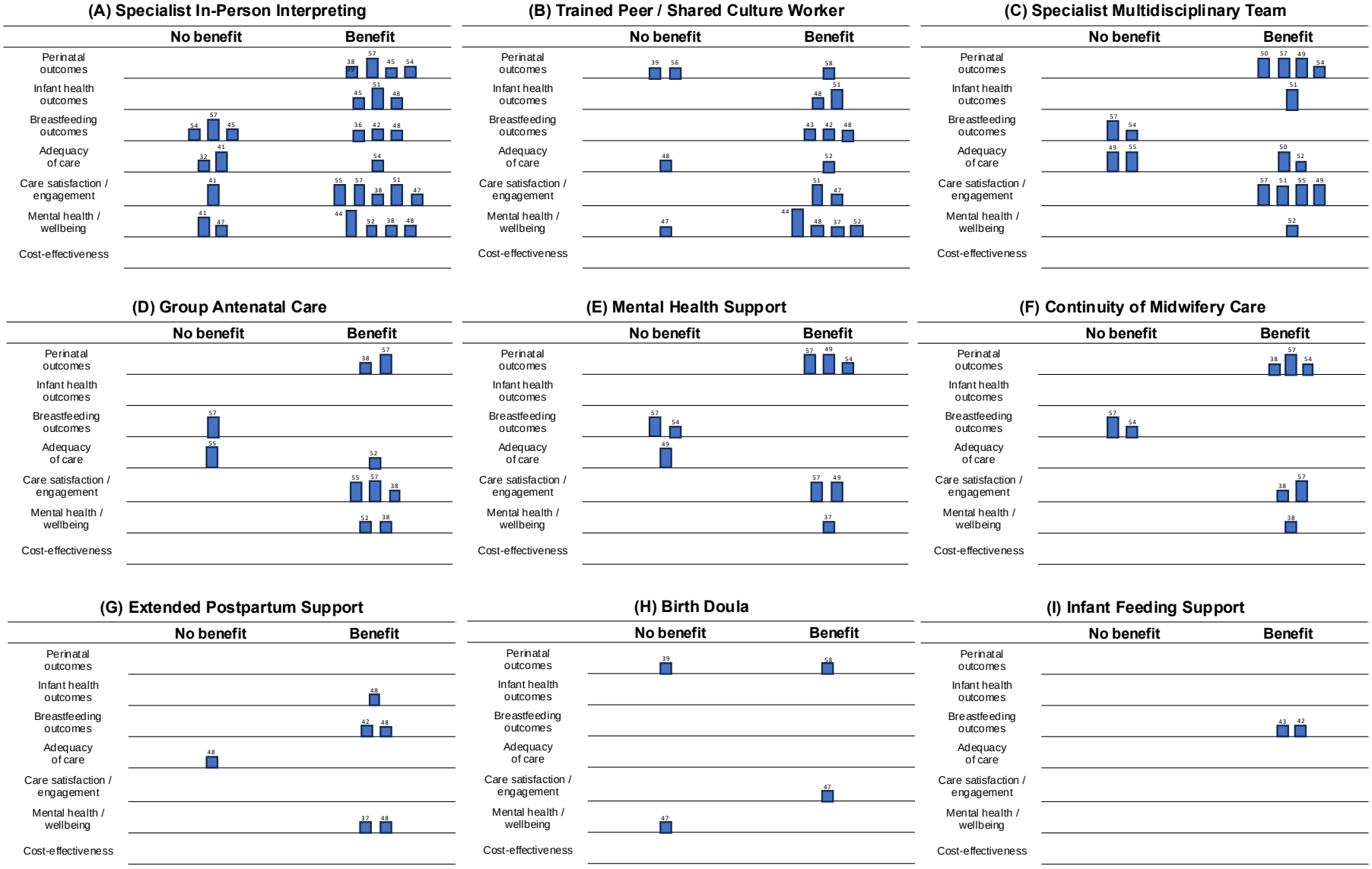
	No benefit	Benefit
Preterm Birth		
Birthweight		
Appointment Attendance		

(G) Social / Peer Support

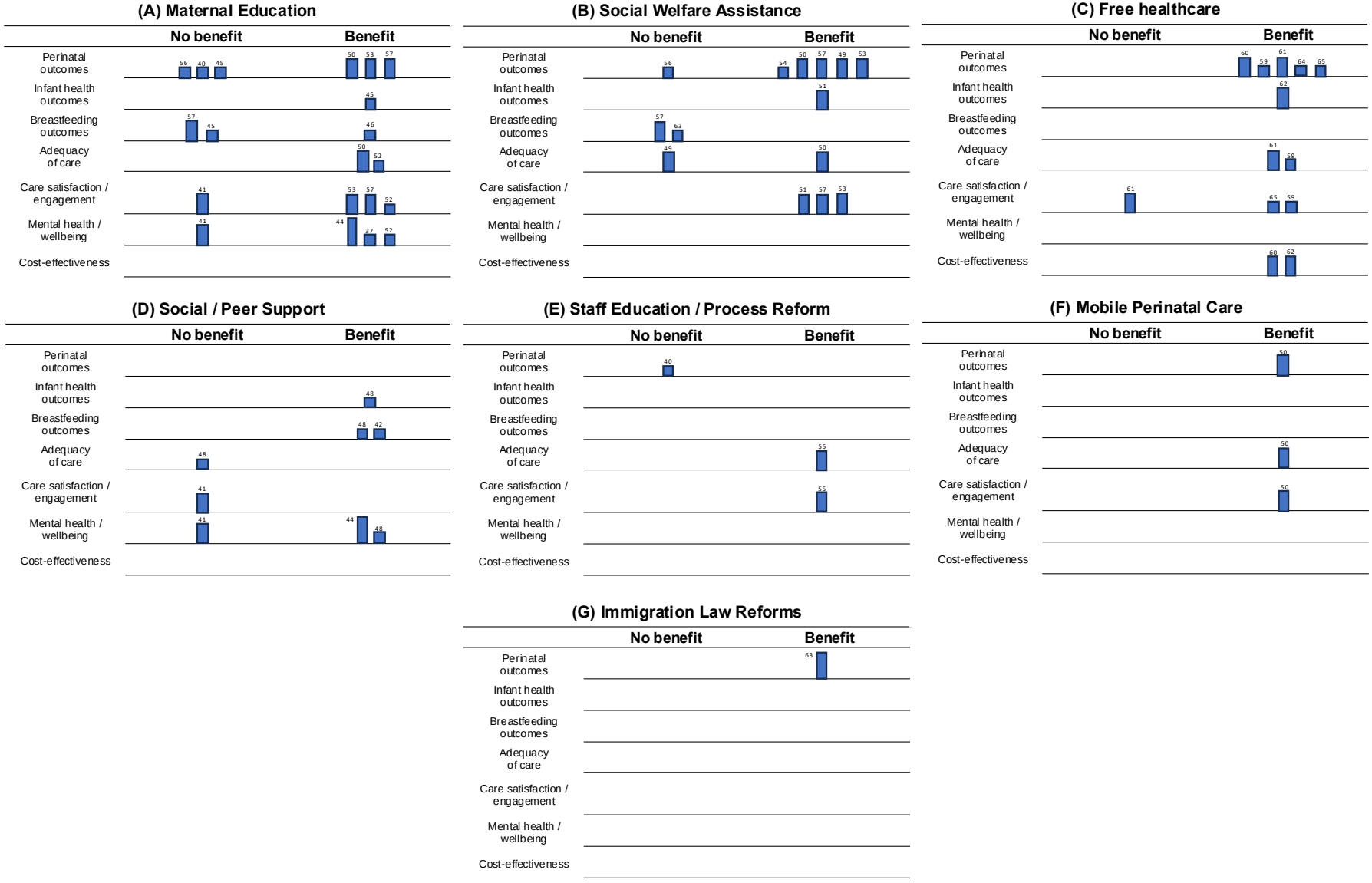
	No benefit	Benefit
Preterm Birth		
Birthweight		
Appointment Attendance	48	

Appendix 7: Evidence for effectiveness of (1) Maternity Care Interventions and (2) Public Health or Policy Interventions for any outcome presented in included studies. This harvest plot is a 'supermatrix' presenting sixteen interventions, and seven outcome categories. Each bar represents a single study and is annotated with the reference number (as per main text). Bar height indicates study quality: strong (tallest), moderate (medium), weak (shortest). Operational definitions of outcome categories are presented in Table 4.

(1) Maternity Care Interventions



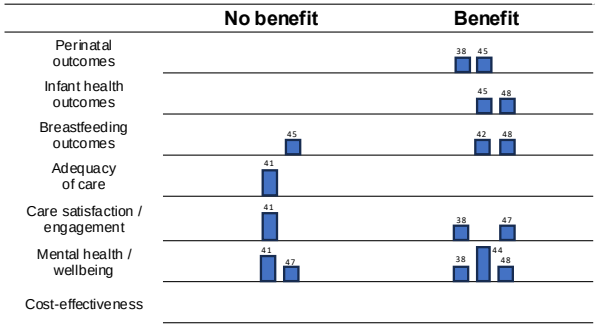
(2) Public Health or Policy Interventions



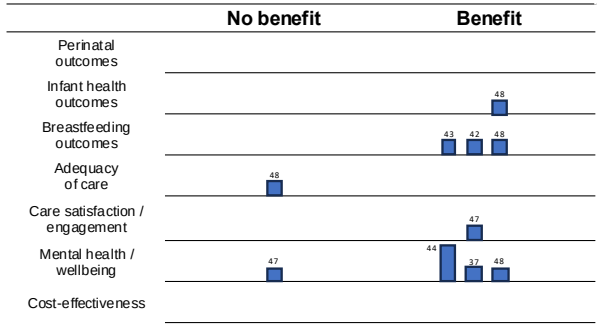
Appendix 8: Evidence for effectiveness of (1) Maternity Care Interventions and (2) Public Health or Policy Interventions for any outcome presented in included studies for interventional studies only. This harvest plot is a 'supermatrix' presenting sixteen interventions, and seven outcome categories. Each bar represents a single study and is annotated with the reference number (as per main text). Bar height indicates study quality: strong (tallest), moderate (medium), weak (shortest). Operational definitions of outcome categories are presented in Table 4.

(1) Maternity Care Interventions

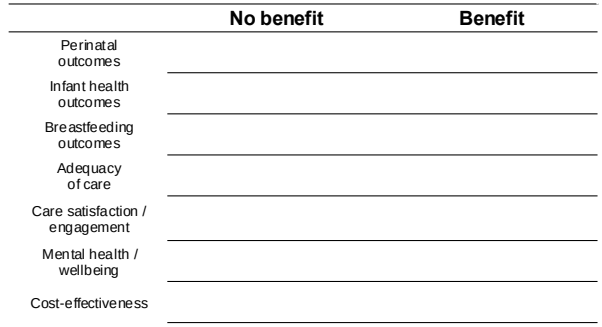
(A) Specialist In-Person Interpreting



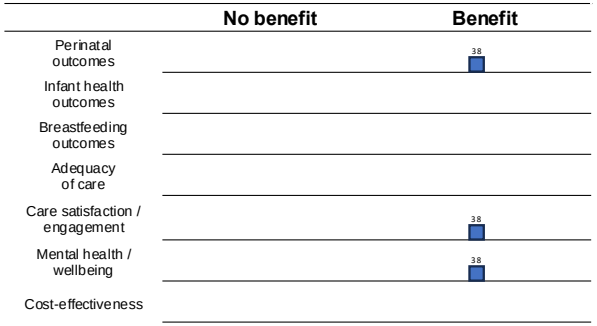
(B) Trained Peer / Shared Culture Worker



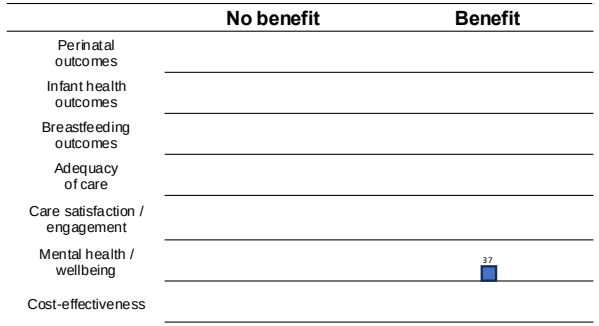
(C) Specialist Multidisciplinary Team



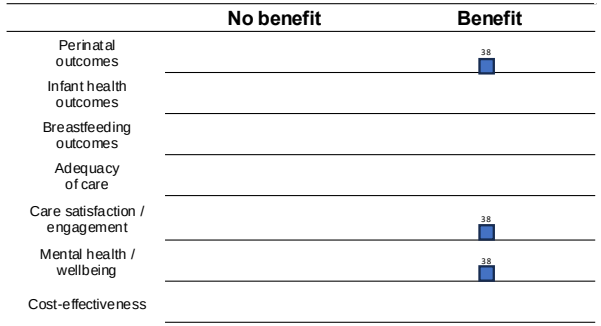
(D) Group Antenatal Care



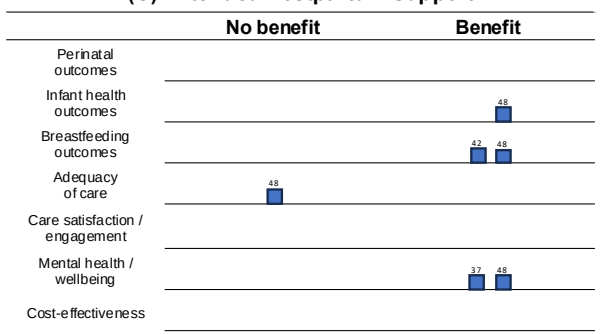
(E) Mental Health Support



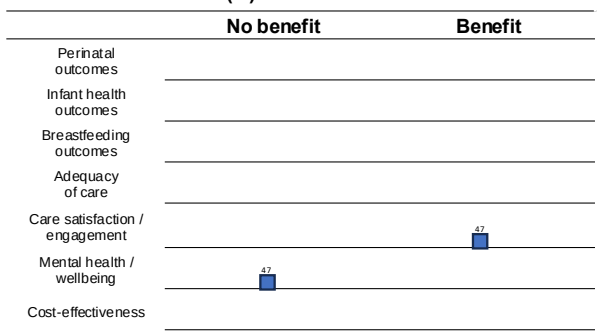
(F) Continuity of Midwifery Care



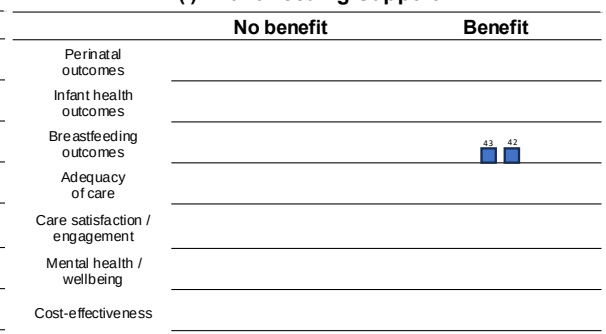
(G) Extended Postpartum Support



(H) Birth Doula

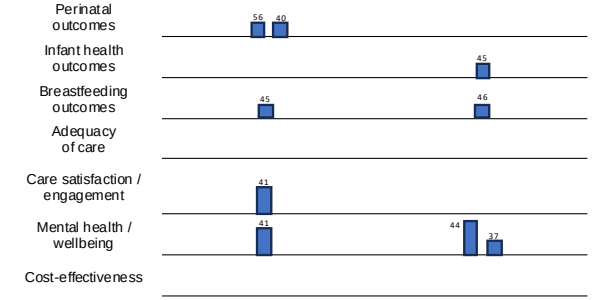


(I) Infant Feeding Support

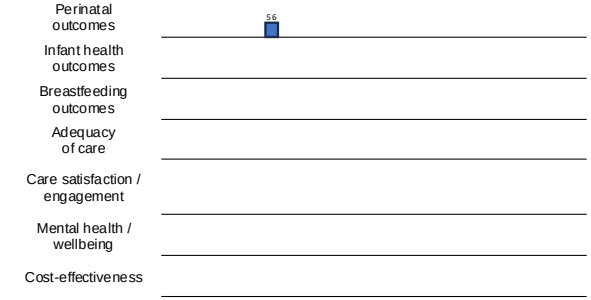


(2) Public Health or Policy Interventions

(A) Maternal Education

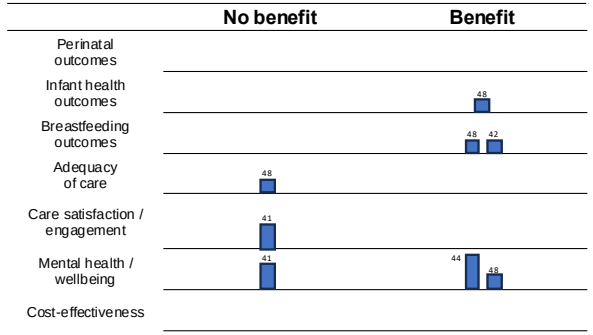


(B) Social Welfare Assistance

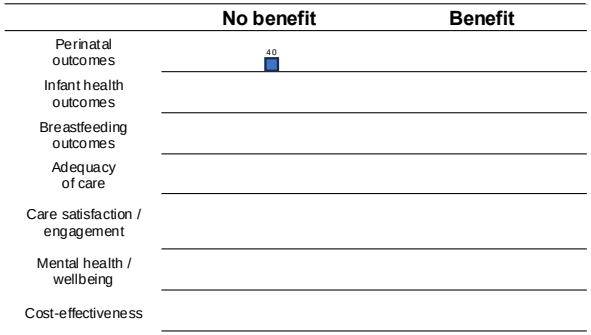


(C) Free healthcare

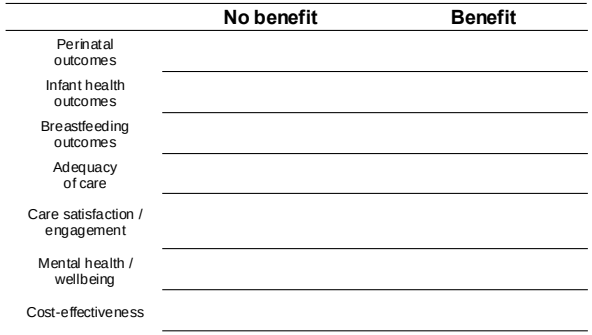
(D) Social / Peer Support



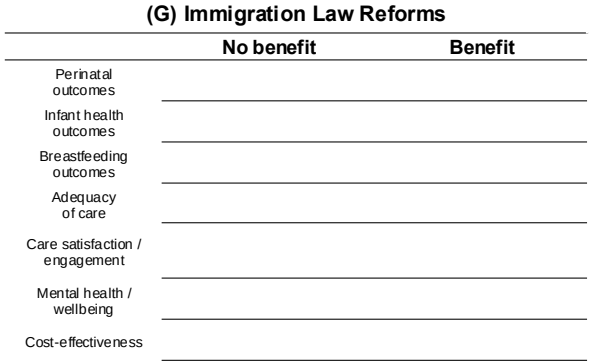
(E) Staff Education / Process Reform



(F) Mobile Perinatal Care



(G) Immigration Law Reforms



Appendix 9: Narrative synthesis of findings for all outcomes for all interventions

Specialist Multidisciplinary Team

Main outcomes:

Seven studies included a specialist multidisciplinary team intervention and assessed the impact on either preterm birth, birthweight, or number of antenatal or postnatal appointments attended (Figure 2).[4,10,15-19] There was evidence of benefit on preterm birth, birthweight, and appointment attendance. All were multi-component interventions and studies were of moderate quality aside from two which were weak quality.[17,18] All were retrospective cohort studies, aside from one which was an interrupted time series design.[19] Three involved service users in design or delivery,[10,18,19] whilst the remainder didn't. Only one study offered a specialist multidisciplinary team that continued throughout the antenatal, intrapartum, and postpartum period.[4] Only one study used an individual continuity of care model, their midwife was also available via telephone 24/7.[4] One provided specialised antenatal care via a mobile van.[16]

All outcomes:

For any outcome measure the same seven studies as above were included (Figure 3).[4,10,15-19] There was evidence of benefit on perinatal outcomes, infant health outcomes, care satisfaction / engagement, and mental health / wellbeing. There was no evidence of benefit on breastfeeding outcomes, and mixed evidence for adequacy of care. No studies assessed cost-effectiveness. The study that explored the impact of a specialist multidisciplinary team throughout the perinatal period demonstrated benefit in improving perinatal outcomes, including on rates of spontaneous onset of labour, vaginal birth, birthweight, and preterm birth rates.[4] The intervention group were more likely to attend their first antenatal visit before 14 weeks compared to the control group, but no evidence

of benefit was found for breastfeeding outcomes. This was a moderate quality retrospective cohort study.

Specialist In-Person Interpreting

Main outcomes:

Eight studies included specialist in-person interpreting (Figure 2).[4,5,10,13,17-20] There was most evidence of benefit on appointment attendance, followed jointly by preterm birth and birthweight. All were multi-component interventions, three were moderate quality,[4,10,19] whilst the remainder were weak. One was a RCT,[5] and one a controlled clinical trial;[13] the remainder were non-interventional studies. Five involved service users in design or delivery, whilst three did not.[4,13,17] The RCT involved trained peer mentors who spoke the same language as the participants, and who provided monthly home visits during pregnancy and up to six months postpartum.[5] This was compared to a control group receiving only printed educational materials. The intervention group were more likely to attend antenatal care early in pregnancy compared to controls. However, this was a weak quality study with differences between the groups at baseline which were not adequately accounted for in analysis. The controlled clinical trial provided a 12-week antenatal education programme to Pakistani immigrant mothers, this was compared to routine care.[13] There were improvements in birthweight in the 'educated' group compared to controls. This was a weak quality study with differences between the groups at baseline which were not adequately accounted for in analysis.

All outcomes:

When assessing all outcomes, eight studies were included (Figure 3).[5,10,11,18-22] There was evidence of benefit on perinatal outcomes, infant health outcomes, care satisfaction /

engagement, and mental health / wellbeing. There was mixed evidence on breastfeeding, and no evidence for benefit on adequacy of care. One study was strong quality,[21] four moderate,[4,7,10,19] and the remainder weak. Four were RCTs,[5,11,21,22] one a quasi-experimental trial,[20] one an interrupted time series,[19] and the remainder retrospective cohort studies. Eight involved service users in design or delivery.[5,10,11,18-22]. One of the RCTs which provided monthly visits from peer mentors is discussed above.[5] Additional outcomes included improvements in depressive symptoms, breastfeeding rates, and in placing the infant on the back to sleep compared to controls. Another RCT involved a 14-session healthy eating and exercise education curriculum with in-person interpreting during pregnancy and early postpartum.[21] The control group was a 16-week parenting education programme. Those attending the eating and exercise programme had a decrease in depressive symptoms compared to controls. It was of strong quality. Another RCT offered peer counselling from a trained peer who spoke the same language, and support from a lactation specialist in pregnancy and up to six months postpartum.[22] The control group was usual care. The intervention group had higher rates of breastfeeding compared to controls. The study was of weak quality as the method of randomisation wasn't adequately described. The final RCT provided a trained community-based birth doula (CBD) who spoke the same language as the participants, and compared this to standard labour care.[11] Those receiving CBD care were more satisfied with overall care, but had no differences in depressive symptoms compared to controls. No perinatal outcomes were assessed. The RCT was weak quality due to differences between the groups at baseline.

Social Welfare Assistance

Main outcomes:

Six studies included social welfare assistance (Figure 2).[4,10,15-17,23] All outcome groups showed evidence of benefit, but most evidence was for appointment attendance. All studies offered support in the antenatal period, whilst three also offered support postnatally.[10,16,23] Five were of moderate quality, one was weak.[17] Only one involved service users in design or delivery,[10] and all were retrospective cohort studies. Four studies offered social welfare support through a specialist multidisciplinary maternity care team model, which included social workers or patient navigators to help with access to support services.[4,10,15,17] In addition, one offered free baby clothing and supplies.[10] One offered support with social welfare services referral via a mobile antenatal care van[16] and the final through assessing the impact of a government programme to support pregnant women and mothers with food supplements.[23]

All outcomes:

When considering all outcomes, seven studies were included (the six studies above and one other) (Figure 3). [4,10,15-17,23,24] There was evidence of benefit on perinatal and infant health outcomes, and care satisfaction / engagement. There was no evidence of benefit on breastfeeding outcomes, and mixed evidence for adequacy of care. No studies assessed impact on mental health / wellbeing or cost-effectiveness. All studies offered support antenatally, four also offered support postnatally.[4,16,23,24] Two involved service users in design or delivery,[10,24] the remainder didn't. Five were moderate quality, two were weak.[17,24] All were retrospective cohort studies aside from one which was a controlled clinical trial.[24] The controlled clinical trial involved a postnatal oral health education programme delivered by a community health worker which included social welfare referrals if required; this was compared to usual care.[24] The only outcome which was assessed was maternal tooth decay which showed no difference for both groups. This was a weak study due to self-selected participants.

Free Healthcare

Main outcomes:

Five studies assessed the impact of free healthcare provision (Figure 2).[14,25-28] All outcomes showed evidence of benefit. All studies were conducted in the US aside from one which was based on data relating to Germany, Greece, and Sweden.[14] Four explored free access to antenatal care,[14,25,27,28] whilst one assessed the impact of access to free maternity care in general.[26] One was an economic analysis using modelled data,[14] whilst the remainder were retrospective cohort studies. None involved service users in design or delivery. Three were weak quality,[25,27,28] two were moderate.[14,26] The modelled economic model was conducted by the EU Agency for Fundamental Rights which explored the cost and impact of excluding undocumented migrants from routine healthcare services[14]. This study compared free access to antenatal care with no access to free antenatal care based on modelled data from Germany, Greece, and Sweden. The cost of free antenatal care may be half as expensive as treating the consequences of low birthweight without free antenatal care; this was a moderate quality study.

All outcomes:

When considering all outcomes, six studies were included (Figure 3).[12,14,25-28] There was evidence of benefit on perinatal and infant health outcomes, adequacy of care, care satisfaction / engagement, and cost-effectiveness. No studies assessed the impact on breastfeeding or mental health / wellbeing outcomes. This section includes the five studies above as well as one other which was an economic analysis using modelled data which was of moderate quality and which did not involve service users in design or delivery.[12] This additional economic analysis study explored the impact of offering free antenatal care to undocumented migrants across 32 US states and compared this to offering free delivery

care only.[12] At a willingness-to-pay threshold of $100,000 per QALY, antenatal care coverage was cost effective in 99% of strategies.

Trained Peer / Shared Culture Worker

Main outcomes:

Three studies involved a trained peer / shared culture worker (Figure 2).[5,10,18] The only outcome assessed was appointment attendance, and there was evidence of benefit. One study was an RCT,[5] two were retrospective cohort studies.[10,18] All three used co-production methods, one was moderate quality,[10] and two weak.[5,10] The RCT involved trained peer mentors who spoke the same language as the participants, and who provided monthly home visits during pregnancy and up to six months postpartum.[5] This was compared to a control group receiving only printed educational materials. There was no improvement in attending antenatal care before or at 13 weeks gestation in the experimental group compared to controls.[5] However, this was a weak quality study with differences between the groups at baseline which were not adequately accounted for in analysis, and the RCT did not adhere to CONSORT guidance.

All outcomes:

Amongst all outcomes, eleven studies included a trained peer / shared culture worker (Figure 3).[1,3,5,6,8,10,11,18,21,22,24] There was evidence of benefit on infant health outcomes, breastfeeding outcomes, care satisfaction / engagement, and mental health / wellbeing. However, there was mixed evidence for adequacy of care, and evidence of no benefit for perinatal outcomes. No studies assessed cost-effectiveness. Four were RCTs,[5,11,21,22] two controlled clinical trials,[6,24] one a cohort analytic study,[8] and the remainder retrospective cohort studies. One study was strong quality,[21] one moderate,[10] and the remainder weak.

The most assessed outcome was mental health / wellbeing, follow by breastfeeding outcomes and perinatal outcomes. The RCT included in the main outcomes for a peer / shared culture worker had additional outcomes; the experimental group had higher rates of placing the infant on the back to sleep, better improvement in depressive symptoms, and higher rates of exclusive breastfeeding compared to controls.[5] Another RCT offered peer counselling from a trained peer who spoke the same language, and support from a lactation specialist in pregnancy and up to six months postpartum.[22] The control group was usual care. The experimental group had higher rates of exclusive breastfeeding compared to controls. The study adhered to CONSORT guidance but was of weak quality as the method of randomisation wasn't adequately described, and the participants were not representative of the general population. Another RCT is fully described in the specialist in-person interpreting section, and involved a 14-session healthy eating and exercise education curriculum during pregnancy and early postpartum delivered by trained community health workers.[21] Those attending the eating and exercise programme had a decrease in depressive symptoms compared to controls. The final RCT is fully described in the specialist in-person interpreting section, and provided a trained community-based birth doula (CBD).[11] Those in the intervention group were satisfied with overall care, but had no differences in depressive symptoms compared to controls.

Maternal Education

Main outcomes:

Five studies included education classes or materials for mothers (Figure 2).[4,13,16,18,23] There was evidence of benefit on all outcomes. One study used co-production methods.[18] Three were moderate quality, two were weak.[13,18] One was a controlled clinical trial,[13] the remainder were retrospective cohort studies. The controlled clinical trial provided a 12-

week antenatal education programme to Pakistani immigrant mothers, this was compared to routine care.[13] The education programme included fertility, pregnancy, childbirth, and child-rearing by a health visitor, midwife, or nutritionist. There were improvements in birthweight in the 'educated' group compared to controls. This was a weak quality study with differences between the groups at baseline which were not adequately accounted for in analysis, as well as unblinded outcome assessors. The four retrospective studies offered education on nutrition; birth and postnatal baby care; and general antenatal care education which was not explained in detail.

All outcomes:

When assessing all outcomes, eleven studies included a maternal education component (Figure 3).[2,4,6,7,9,13,16,18,21,23,24] There was evidence of benefit on perinatal outcomes, infant health outcomes, adequacy of care, care satisfaction / engagement, and mental health / wellbeing. There was no evidence for breastfeeding outcomes, and no studies assessed cost-effectiveness. Five studies involved co-production methods,[2,6,18,21,24] the remainder didn't. One was strong quality,[21] four moderate,[4,7,16,23] the remainder weak. One was an RCT,[21] one a cluster RCT,[2] four controlled clinical trials,[6,9,13,24] one a cohort study (one group pre- and post-),[7] and three retrospective cohort studies.[4,16,23,24] Four interventions focused only on education; one was a 14-session health eating and exercise education programme delivered antenatally an early postpartum to Latina migrants in the US,[21] one was an antenatal education programme delivered to Pakistani mothers in the UK,[13] one an antenatal education programme for Vietnamese migrants in Australia,[9] and the final a postpartum oral health education programme delivered to undocumented Chinese migrants in Northern Ireland.[24] The 14-session healthy eating and exercise education curriculum is an RCT and was delivered by trained community health workers; it is fully described in the specialist in-person interpreting section.[21] The experimental group showed a decrease in depressive symptoms compared to controls. The cluster RCT

offered health education materials for migrant pregnant women on warning signs of pregnancy complications in six languages in maternity departments across Denmark (alongside other interventions), and outcomes were compared pre- and post-implementation.[2] The intervention increased the risk of a composite perinatal mortality and morbidity outcome, mostly driven by differences in admission to neonatal intensive care, however there were small differences in absolute numbers. This was classified as a 'weak' quality study, however non-blinding of assessors and participants is to be expected given the study design.

Group Antenatal Care

Main Outcomes:

Four studies included group antenatal care interventions (Figure 2).[4,18-20] The most assessed outcome was appointment attendance, but all three outcomes (preterm birth, birthweight, and attendance) showed evidence of benefit. Two studies were of weak quality,[18,20] two moderate. Two were retrospective cohort studies, one a quasi-experimental trial with an intervention and historical control group,[20] and one an interrupted time series.[19] Only one did not involve service users.[4] Two incorporated a designated midwife throughout the antenatal period,[4,20] and one continued this until birth.[4] The quasi-experimental study offered seven one-hour group antenatal care (gANC) sessions alongside seven 15-30 minute individual appointments with a designated midwife; this was compared to usual care.[20] Those in gANC had higher rates of postnatal visits and higher birthweights compared to standard care. However, this was a weak quality study as participants were drawn from a single clinic and less than 60% of those approached for recruitment agreed.

All outcomes:

When considering all outcomes, the same four studies as above were assessed (Figure 3).[4,18-20] The most assessed outcome was care satisfaction / engagement, and no studies assessed cost-effectiveness. There was evidence of benefit on perinatal outcomes, care satisfaction / engagement, and mental health / wellbeing. There was no evidence of benefit on breastfeeding outcomes or adequacy of care. The quasi-experimental study described above also showed evidence of benefit in reducing depressive symptoms for women attending gANC compared to controls.[20]

Mental Health Support

Main outcomes:

Three studies included some form of mental health support (Figure 2).[4,15,17] The most assessed outcome was appointment attendance, and there was evidence of benefit for all the main outcomes. Two studies embedded psychological support workers within a specialist multi-disciplinary team model of antenatal care, and one had a social worker in specialist group antenatal care who referred to psychological therapies if required,[4] None offered group psychological support sessions, but individuals were referred for individual support if the maternity team felt it was appropriate. Two were of moderate quality, one was weak.[17] None used co-production methods. Two were retrospective cohort studies, one was a quasi-experimental trial.[4]

All outcomes:

When considering any outcomes, four studies were assessed.[4,6,15,17] The additional study consisted of a postpartum home-visiting nursing programme with a mental health focus up to three months postpartum.[6] It was of weak quality but did use co-production methods.[6]

The most assessed outcome group was perinatal outcomes; the main improvements in perinatal outcomes were in preterm birth[4,15,17] and birthweight.[4] There was evidence of benefit on perinatal outcomes and care satisfaction / engagement, but no evidence of benefit on breastfeeding outcomes or adequacy of care. Only one study assessed the impact of mental health support on mental health; there was evidence of improvement in symptoms of maternal postpartum depression up to three months postpartum.[6] Infant health outcomes and cost-effectiveness were not assessed. Amongst the studies that assessed care satisfaction / engagement the main improvements were on attending five or more antenatal appointments[4], and adequacy of care assessed using a validated index.[15]

Designated Midwife

Main outcomes:

Three studies included a designated midwife;[4,17,20] all were during the antenatal period, aside from one which also included the peripartum period (Figure 2).[4] All studies showed improvements in the main outcomes of interest. No studies extended designated midwife support into the postpartum period. Two studies were weak quality, one was moderate.[4] Two were retrospective cohort studies, one was a quasi-experimental trial,[20] and only one included co-production methods.[20] The quasi-experimental study is discussed in detail above (see group antenatal care section).[20] The study that extended the designated midwife support into the peripartum period demonstrated that those in the experimental group had lower rates of preterm birth and low birthweight compared to usual care.[4] This was a moderate quality study, but women were recruited from one tertiary hospital.

All outcomes:

When considering all outcomes, the three studies above were included (Figure 3).[4,17,20] The most assessed outcomes were perinatal outcomes and care satisfaction /

engagement. There was evidence of benefit on perinatal outcomes, care satisfaction / engagement, and mental health / wellbeing. However, there was no evidence for improvement in breastfeeding outcomes, and infant health outcomes and cost-effectiveness were not assessed. Additional outcomes for the study that extended the designated midwife support into the peripartum period were higher rates of spontaneous onset of labour, vaginal birth, and lower rates of epidural use compared to usual care.[4]

Extended Postpartum Support

Main outcomes:

No studies assessed the impact of extended postpartum support on postnatal appointment attendance. The impact on preterm birth and birthweight were not assessed given this was a postpartum intervention.

All outcomes:

When considering all outcomes, three studies assessed the impact of extended postpartum support (Figure 3).[5,6,22] There was evidence of benefit on breastfeeding outcomes, mental health / wellbeing, and infant health outcomes. There was no evidence for benefit in adequacy of care, and no studies assessed care satisfaction / engagement or cost-effectiveness. Two studies were RCTs[5,22] and one was a controlled clinical trial.[6] All three included a co-production approach, and all three were of weak quality. One RCT offered peer counselling from a trained peer who spoke the same language, and support from a lactation specialist in pregnancy and up to six months postpartum.[22] The control group was usual care. The experimental group had higher rates of exclusive breastfeeding compared to controls. The study adhered to CONSORT guidance but was of weak quality as the method of randomisation wasn't adequately described, and the participants were

not representative of the general population. The other RCT involved trained peer mentors who spoke the same language as the participants, and who provided monthly home visits during pregnancy and up to six months postpartum.[5] This was compared to a control group receiving only printed educational materials. The experimental group had higher rates of placing the infant on the back to sleep, better improvement in depressive symptoms, and higher rates of exclusive breastfeeding compared to controls. However, this was a weak quality study with differences between the groups at baseline which were not adequately accounted for in analysis, and the RCT did not adhere to CONSORT guidance. The controlled clinical trial comprised of a 3-month postpartum nursing home visiting programme with emotional support and parenting education, this was compared to usual care.[6] At three months postpartum, the intervention group had improved depression screening scores when compared to the control group. This was a weak quality study owing to self-selection at recruitment, and scant information on some study methods.

Postpartum Infant Feeding Support

Main outcomes:

No studies assessed the impact of postpartum infant feeding support on postnatal appointment attendance. The impact on preterm birth and birthweight were not assessed given this was a postpartum intervention.

All outcomes:

When assessing all outcomes, two studies offered postpartum infant feeding support (Figure 3).[8,22] The only outcome assessed was breastfeeding outcomes, and there was evidence of benefit. Both studies were weak quality, and both involved service users. One was an RCT,[22] and the other a cohort analytic study.[8] The RCT offered peer counselling

from a trained peer who spoke the same language, and support from a lactation specialist in pregnancy and up to six months postpartum.[22] The control group was usual care. The experimental group had higher rates of exclusive breastfeeding compared to controls (see extended postpartum support section for detail on this RCT). The cohort analytic study trialled a postpartum Chinese language infant feeding hotline and the comparison was women not using the hotline.[8] At two months postpartum 44% of women using the hotline were exclusively breastfeeding compared to 16% amongst those not using the hotline. This was a weak quality study as less than 60% of participants completed the study.

Birth Doula

Main outcomes:

No studies assessed the impact of a birth doula on postnatal appointment attendance. The impact on preterm birth and birthweight were not assessed given this was an intrapartum intervention.

All outcomes:

When considering all outcomes, three studies included a birth doula intervention (Figure 3).[1,3,11] Evidence of benefit was seen in care satisfaction / engagement. There was mixed evidence for perinatal outcomes and no evidence of benefit on mental health / wellbeing. All studies were of weak quality, and all included a co-production approach. One was a RCT,[11] the other two retrospective cohort studies, and all studies employed community-based doulas, i.e. they trained those from the same community or cultural background to be doulas. The RCT is described in detail in the specialist in-person interpreting section and involved a trained community-based doula.[11] Those in the intervention group were

satisfied with overall care, but had no differences in depressive symptoms compared to controls.

Mobile Perinatal Care Van

Main outcomes:

One study offered a mobile maternity care van which offered antenatal and postnatal care in local communities and compared this to usual care (Figure 2).[16] There was evidence of benefit on all outcomes; specifically, that mobile clinic attenders began antenatal care earlier then controls, had higher birthweight infants, and were at reduced risk of preterm birth. This retrospective cohort study didn't include co-production methods and was of moderate quality. This was a moderate quality study as participants were those already attending the clinic, and not recruited from the general population.

All outcomes:

When considering outcomes, the same study was included (Figure 3).[16] There was evidence of benefit on perinatal outcomes, adequacy of care, and care satisfaction / engagement. Additional outcomes to those presented above were better adequacy of maternity care as measured by the Kessner Index[29] for clinic attenders compared to controls.

Immigration Law Reform

Main outcomes:

One study explored the impact of changes to immigration law on perinatal outcomes (Figure 2).[30] This was a retrospective cohort study based in the US exploring local level

enforcement of the 287(g) programme which enables local police departments to receive funding for increased immigration enforcement across 50 states. The study didn't include co-production methods and was of strong quality. The comparison was between enacting and non-enacting states. States who did not enact the reforms showed lower rates of preterm birth compared to those that did. No other outcomes were assessed.

All outcomes:

When assessing all outcomes, the same study was included (Figure 3).[30] No additional outcomes were included in this study.

Staff Education / Process Reform

Main outcomes:

One study included a reformed data collection system and protocol for maternity care of migrant women implemented in four maternity hospitals and two community family clinics (Figure 2).[19] This interrupted time series was used to assess if the number of antenatal clinical visits for refugee women compared with Australian-born women changed over 3 years of the intervention. Over time, there was evidence that refugee women attended more appointments compared to Australian-born women. This was a co-produced study that was of strong quality.

All outcomes:

When considering all outcomes, two studies were assessed (Figure 3).[2,19] There was benefit on care satisfaction / engagement, and adequacy of care, but not on perinatal outcomes. There was one additional outcome for the interrupted time series study above which showed that refugee women began antenatal care earlier than Australian-born

women.[19] One was a cluster RCT[2] and the other the interrupted time series study described above.[19] Both used co-production methods, and one was of weak quality[2] and the other strong.[19] The cluster RCT is fully described in the maternal education section, but provided a 6-hour training session for midwives in intercultural communication and cultural competence with two follow-up dialogue meetings.[2] The intervention increased the risk of a composite perinatal mortality and morbidity outcome, mostly driven by differences in admission to neonatal intensive care, however there were small differences in absolute numbers.

Social / Peer Support

Main outcomes:

One study included social or peer support (Figure 2).[5] Women receiving home visits and those receiving printed education materials had no differences in appointment attendance. Preterm birth and birthweight was not assessed. This RCT included co-production methods but was of weak quality. It is fully described in the specialist in-person interpreting section, but provided trained peer mentors who conducted monthly home visits during pregnancy and up to six months postpartum to provide social and practical support, this was compared to women receiving printed educational materials.

All outcomes:

When considering all outcomes, four studies were included (Figure 3).[5,7,21,22] There was evidence of benefit on infant health outcomes, breastfeeding outcomes, and mental/health wellbeing. There was no evidence of benefit on adequacy of care or care satisfaction / engagement. None assessed the impact on perinatal outcomes or cost-effectiveness. Three studies were RCTs,[5,21,22] and one a cohort study (one group pre- and post-).[7] Three

included co-production methods, one didn't.[7] One was of strong quality,[21] one moderate,[7] and two weak.[5,22] One RCT offered a 14-session healthy eating and exercise education curriculum delivered by trained peer workers, including individual, home visiting, and group sessions.[21] It is fully described in the specialist in-person interpreting section. Those attending the eating and exercise programme has a decrease in depressive symptoms compared to controls. Another RCT offered peer counselling from a trained peer including telephone, hospital-based, and home-based appointments up to six months postpartum.[22] It is fully described in the extended postpartum support section. The experimental group had higher rates of exclusive breastfeeding compared to controls. The final RCT involved trained peer mentors who provided monthly home visits during pregnancy and up to six months postpartum.[5] It is more fully described in the specialist in-person interpreting section. The experimental group were more likely to attend antenatal care early in pregnancy, place the infant to sleep on the back, and have fewer depressive symptoms compared to controls. However, there were no differences in appointment attendance between groups.

Appendix 10: Effectiveness of intervention categories across the main outcomes measures (preterm birth, birthweight, and antenatal and postnatal appointment attendance) including only strong and moderate quality studies and studies that involved service users.

Intervention	Beneficial Outcomes / Total Outcomes	Proportion of Beneficial Outcomes (%)	95% CI† of the Proportion of Beneficial Outcomes	p-value
STRONG AND MODERATE QUALITY STUDIES				
(1) Maternity Care Interventions				
Specialist multidisciplinary team	9/9	100.0%	66.4 – 100.0%	0.004*
Specialist in-person interpreting	4/4	100.0%	40.8 – 100.0%	0.125
Group antenatal care	3/3	100.0%	29.2 – 100.0%	0.250
Mental health support	6/6	100.0%	54.1 – 100.0%	0.031*
Continuity of midwifery care	3/3	100.0%	29.2 – 100.0%	0.250
Extended postpartum support	3/3	100.0%	29.2 – 100.0%	0.250
Infant feeding support	N/A	N/A	N/A	N/A
Trained peer / shared culture worker	1/1	100.0%	2.5 – 100.0%	1.000
Birth doula	N/A	N/A	N/A	N/A
(2) Public Health or Policy Interventions				
Social welfare assistance	12/12	100.0%	73.5% – 100.0%	<0.001*
Free healthcare	3/4	75.0%	19.4 – 99.4%	0.625
Maternal education	9/9	100.0%	66.4 – 100.0%	0.004*
Mobile perinatal care	3/3	100.0%	29.2 – 100.0%	0.250
Immigration law reforms	N/A	N/A	N/A	N/A
Staff education / process reform	N/A	N/A	N/A	N/A
Social / peer support	N/A	N/A	N/A	N/A
STUDIES THAT INVOLVED SERVICE USERS				
(1) Maternity Care Interventions				
Specialist multidisciplinary team	3/3	100.0%	29.2 – 100.0%	0.250
Specialist in-person interpreting	6/7	85.7%	42.1 – 99.6%	0.125
Group antenatal care	5/5	100.0%	47.8 – 100.0%	0.0625
Mental health support	N/A	N/A	N/A	N/A
Continuity of midwifery care	2/2	100.0%	15.8 – 100.0%	0.500
Extended postpartum support	N/A	N/A	N/A	N/A
Infant feeding support	N/A	N/A	N/A	N/A
Trained peer / shared culture worker	2/3	66.7%	9.4 – 99.2%	1.000
Birth doula	N/A	N/A	N/A	N/A
(2) Public Health or Policy Interventions				
Social welfare assistance	2/2	100.0%	15.8 – 100.0%	0.500
Free healthcare	N/A	N/A	N/A	N/A
Maternal education	1/1	100.0%	2.5 – 100.0%	1.000
Mobile perinatal care	N/A	N/A	N/A	N/A

Immigration law reforms	N/A	N/A	N/A	N/A
Staff education / process reform	1/1	100.0%	2.5 – 100.0%	1.000
Social / peer support	0/1	0.0%	0.0 – 97.5%	1.000
†: CI: Confidence Interval. *: Significant at p<0.05 level.				

Appendix 11: Effectiveness of intervention categories across all outcomes measures including only strong and moderate quality studies and studies that involved service users.

Intervention	Beneficial Outcomes / Total Outcomes	Proportion of Beneficial Outcomes (%)	95% CI† of the Proportion of Beneficial Outcomes	p-value
STRONG AND MODERATE QUALITY STUDIES				
(1) Maternity Care Interventions				
Specialist multidisciplinary team	8/11	72.7%	39.0 –94.0%	0.227
Specialist in-person interpreting	2/2	100.0%	15.8 – 100.0%	0.500
Group antenatal care	2/3	66.7%	9.4 – 99.2%	1.00
Mental health support	4/6	66.7%	22.3 – 95.7%	0.688
Continuity of midwifery care	2/3	66.7%	9.4 – 99.2%	1.000
Extended postpartum support	N/A	N/A	N/A	N/A
Infant feeding support	N/A	N/A	N/A	N/A
Trained peer / shared culture worker	2/2	100.0%	15.8 – 100.0%	0.500
Birth doula	N/A	N/A	N/A	N/A
(2) Public Health or Policy Interventions				
Social welfare assistance	7/8	87.5%	47.3% – 99.7%	0.070
Free healthcare	7/8	87.5%	47.3% – 99.7%	0.070
Maternal education	6/9	66.7%	29.9 –92.5%	0.508
Mobile perinatal care	2/2	100.0%	15.8 – 100.0%	0.500
Immigration law reforms	N/A	N/A	N/A	N/A
Staff education / process reform	N/A	N/A	N/A	N/A
Social / peer support	0/2	0.0%	0.0 – 84.2%	0.500
STUDIES THAT INVOLVED SERVICE USERS				
(1) Maternity Care Interventions				
Specialist multidisciplinary team	5/6	83.3%	35.9 – 99.6%	0.219
Specialist in-person interpreting	13/17	76.5%	50.1 – 93.2%	0.049*
Group antenatal care	6/7	85.7%	42.1 – 99.6%	0.125
Mental health support	1/1	100.0%	2.5 – 100.0%	1.000
Designated midwife	3/3	100.0%	29.2 – 100.0%	0.250
Extended postpartum support	4/5	80.0%	28.4 – 99.5%	0.375
Infant feeding support	2/2	100.0%	15.8 – 100.0%	0.500
Trained peer / shared culture worker	12/16	75.0%	47.6 – 92.7%	0.077
Birth doula	2/4	50.0%	6.8 – 93.2%	1.000
(2) Public Health or Policy Interventions				

Social welfare assistance	2/3	66.7%	9.4 – 99.2%	1.000
Free healthcare	N/A	N/A	N/A	N/A
Maternal education	5/7			
Mobile perinatal care	N/A	N/A	N/A	N/A
Immigration law reforms	N/A	N/A	N/A	N/A
Staff education / process reform	2/3	66.7%	9.4 – 99.2%	1.000
Social / peer support	5/6	83.3%	35.9 – 99.6%	0.218
†: CI: Confidence Interval. *: Significant at p<0.05 level.				

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