

Online Supplementary Document

Waters et al. Global birth prevalence and mortality from inborn errors of metabolism.

J Glob Health 2018;8:021102

Appendix 1: Search terms used for literature search

A 1.1: Search terms used for literature search (MEDLINE)

#	Searches	Hits
1	exp vital statistics/ or exp incidence/	689447
2	(incidence* or prevalence* or morbidity or mortality).tw.	1296484
3	(disease adj3 burden).tw.	11981
4	exp "cost of illness"/	18825
5	exp quality-adjusted life years/	7483
6	QALY.tw.	4182
7	Disability adjusted life years.mp.	983
8	(initial adj2 burden).tw.	194
9	exp risk factors/	593406
10	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9	1990285
11	metabolism, inborn errors/ or exp amino acid metabolism, inborn errors/ or exp amino acid transport disorders, inborn/ or exp amyloidosis, familial/ or exp brain diseases, metabolic, inborn/ or exp carbohydrate metabolism, inborn errors/ or exp hyperbilirubinemia, hereditary/ or exp lipid metabolism, inborn errors/ or exp lysosomal storage diseases/ or exp metal metabolism, inborn errors/ or exp peroxisomal disorders/ or exp porphyrias/ or exp purine-pyrimidine metabolism, inborn errors/ or exp renal tubular transport, inborn errors/ or exp steroid metabolism, inborn errors/	144169
12	congenital metabolic disorders.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	77
13	inherited metabolic disorders.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	405
14	11 or 12 or 13	144323
15	10 and 14	12761
16	limit 15 to (yr="1980 -Current" and "all child (0 to 18 years)")	4872

A 1.2: Search terms used for literature search (EMBASE)

#	Searches	Hits
1	exp vital statistics/ or exp incidence/	282502
2	(incidence* or prevalence* or morbidity or mortality).tw.	1831362
3	(disease adj3 burden).tw.	19994
4	exp "cost of illness"/	15304
5	exp quality-adjusted life years/	13770
6	QALY.tw.	8215
7	Disability adjusted life years.mp.	1466
8	(initial adj2 burden).tw.	291
9	exp risk factors/	673443
10	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9	2393629
11	metabolism, inborn errors/ or exp amino acid metabolism, inborn errors/ or exp amino acid transport disorders, inborn/ or exp amyloidosis, familial/ or exp brain diseases, metabolic, inborn/ or exp carbohydrate metabolism, inborn errors/ or exp hyperbilirubinemia, hereditary/ or exp lipid metabolism, inborn errors/ or exp lysosomal storage diseases/ or exp metal metabolism, inborn errors/ or exp peroxisomal disorders/ or exp porphyrias/ or exp purine-pyrimidine metabolism, inborn errors/ or exp renal tubular transport, inborn errors/ or exp steroid metabolism, inborn errors/	1161746
12	congenital metabolic disorders.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	93
13	inherited metabolic disorders.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	659
14	11 or 12 or 13	1161948
15	10 and 14	261090
16	limit 15 to (yr="1980 -Current" and child <unspecified age>)	17130

A 1.3: Search terms used for literature search (Global Health)

#	Searches	Hits
1	exp vital statistics/ or exp incidence/	121400
2	(incidence* or prevalence* or morbidity or mortality).tw.	391951
3	(disease adj3 burden).tw.	6599
4	exp "cost of illness"/	0
5	exp quality-adjusted life years/	0
6	QALY.tw.	799
7	Disability adjusted life years.mp.	830
8	(initial adj2 burden).tw.	24
9	exp risk factors/	132753
10	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9	470049
11	congenital metabolic disorders.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	12
12	inherited metabolic disorders.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]	79
13	exp congenital metabolic anomalies/ or exp metabolic disorders/	82264
14	11 or 12 or 13	82288
15	10 and 14	29353
16	limit 15 to yr="1980 -Current"	29168
17	exp children/	185225
18	16 and 17	3034

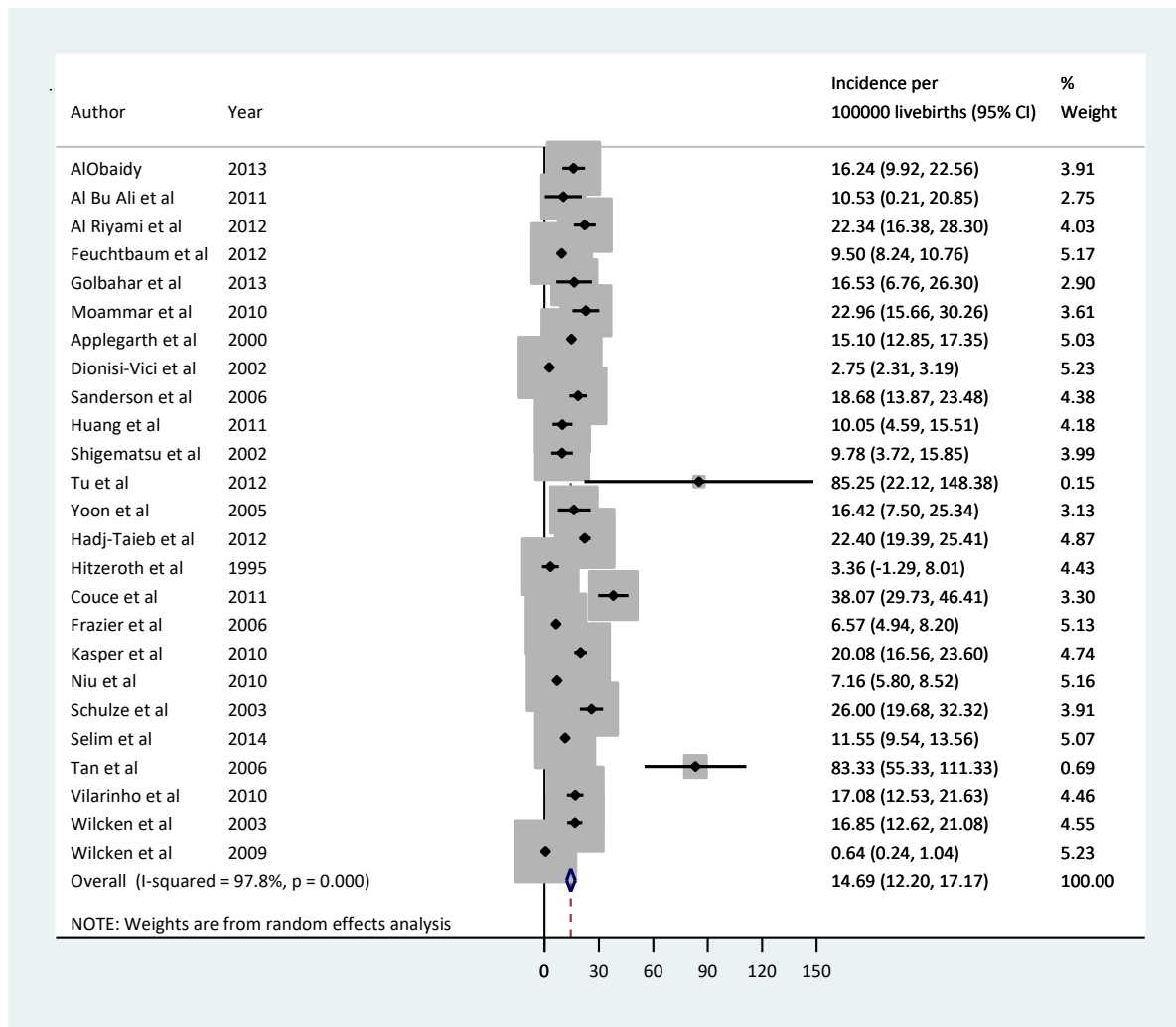
Appendix 2. Quality grading

For the quality grading, a modified Grading of Recommendations Assessment, Development and Evaluation (GRADE) guidelines was adapted. Studies were graded as follows:

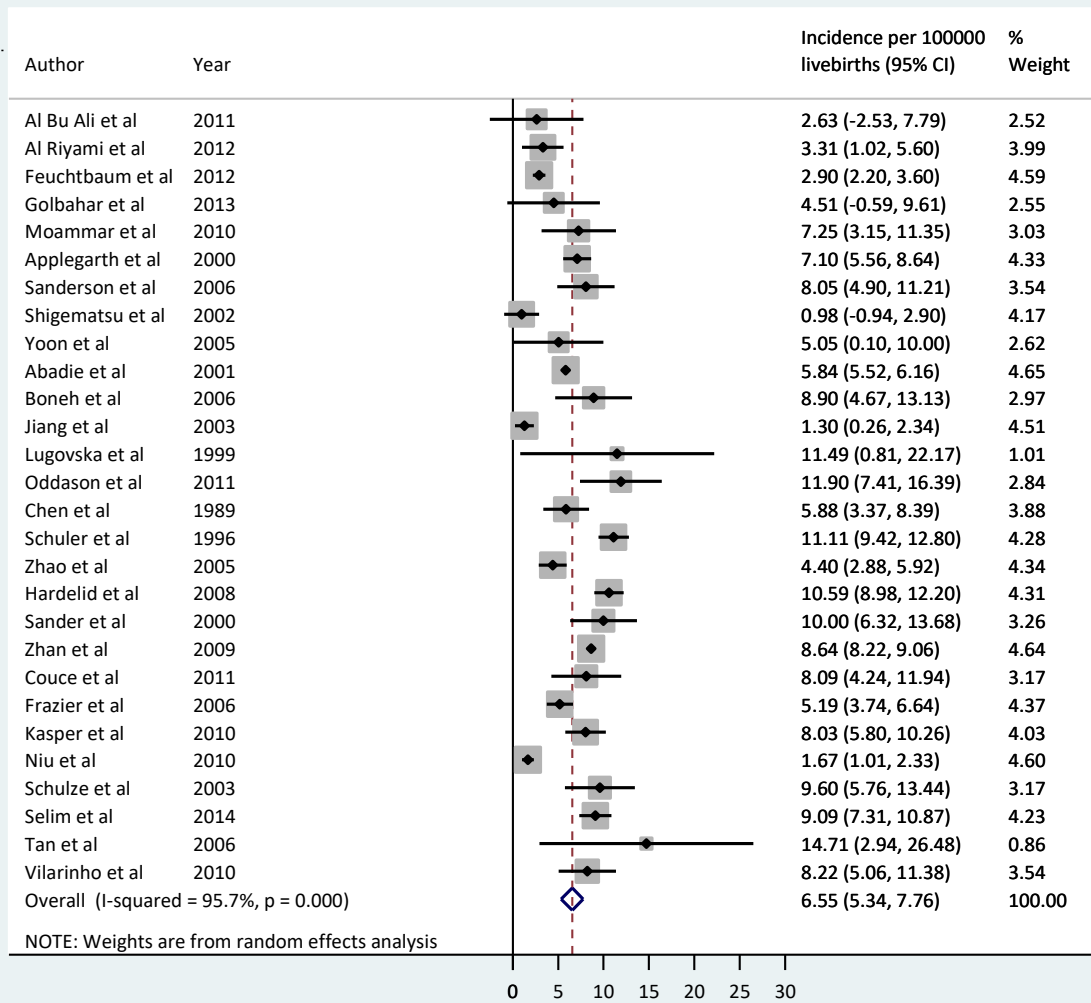
- o High quality: Studies with the entire four criteria, or any three including “study design”, highlighted above well represented;
- o Moderate quality: Studies with any three of the four criteria, or any two including “study design”, highlighted above well represented;
- o Low quality: Studies with any two of the four criteria, or “study design” only, highlighted above well represented; and
- o Very low quality: Studies with only one (excluding “study design”) or none of the four criteria highlighted above well represented.

Appendix 3: Meta-estimates of specific IEM

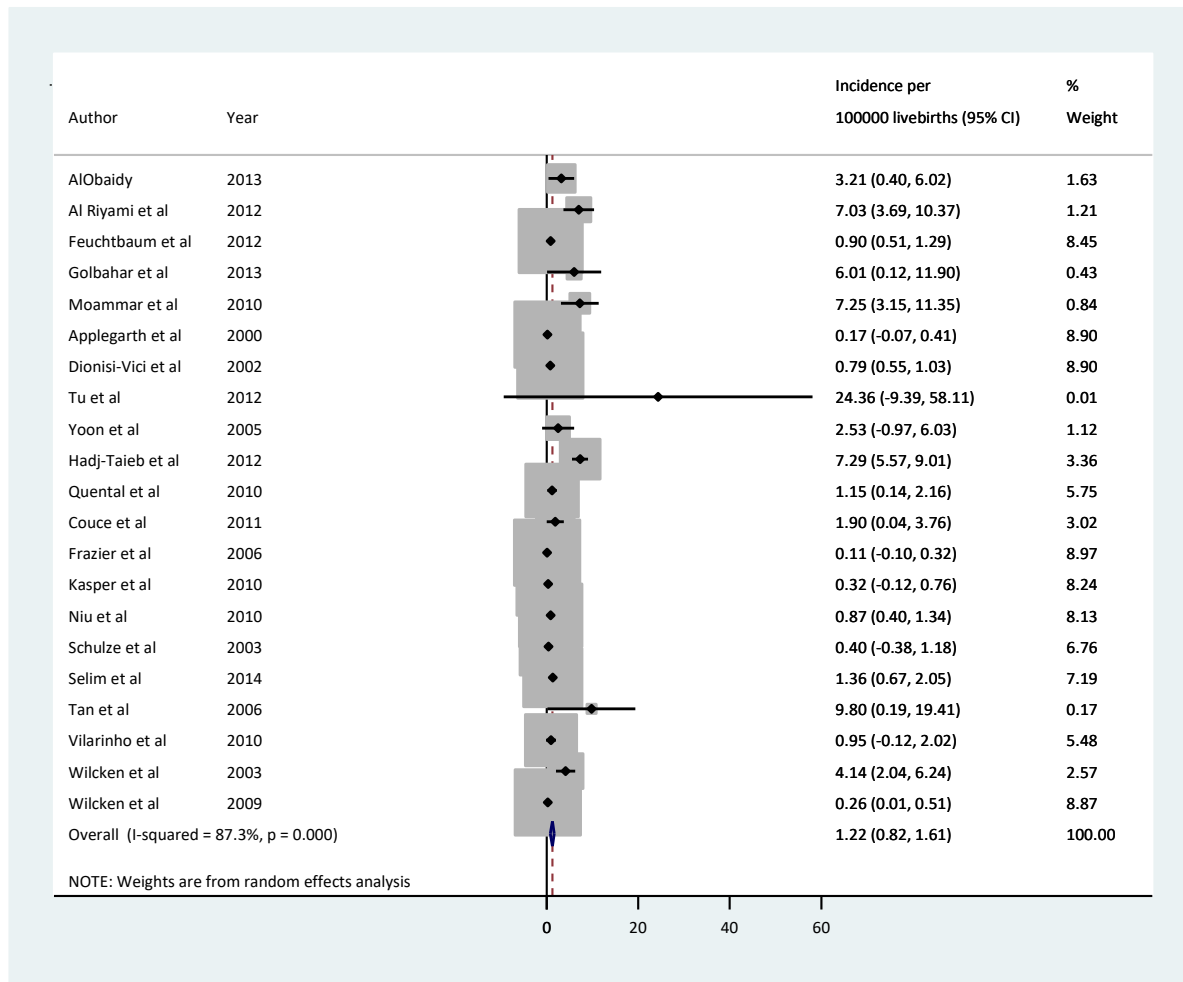
A 3.1. Meta-estimate of incidence of all amino acid disorders



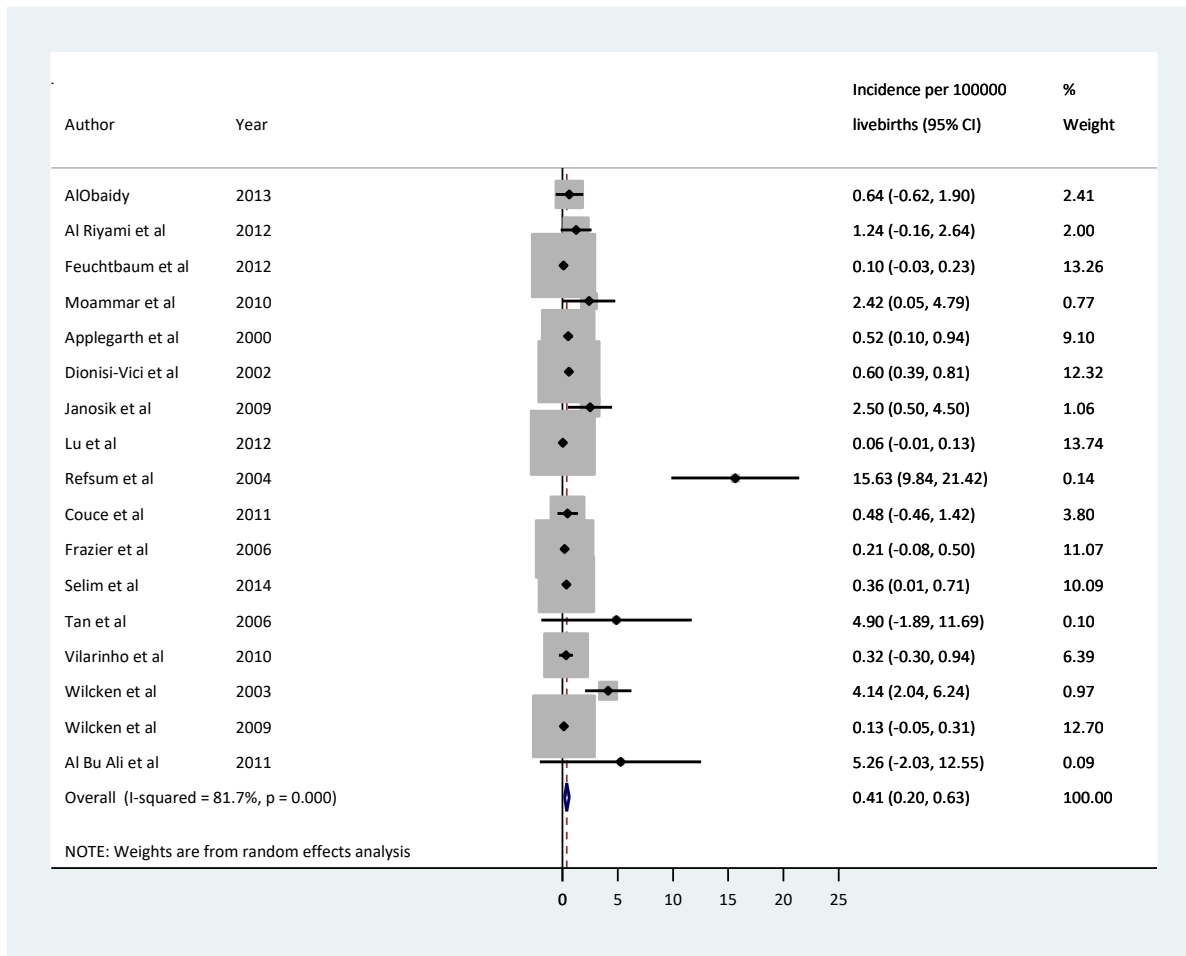
A 3.2. Meta-estimate of incidence of phenylketonuria



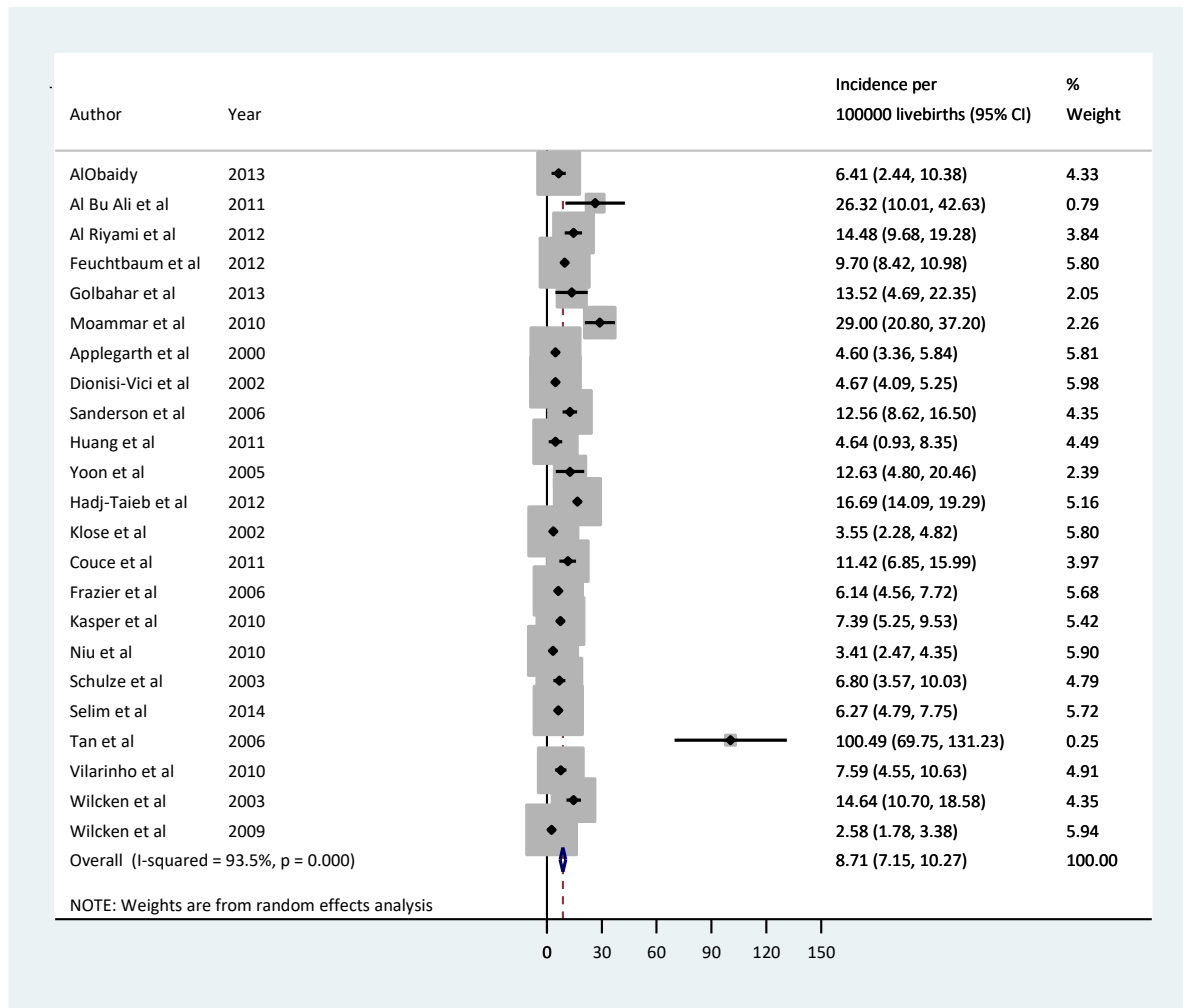
A 3.3. Meta-estimate of incidence of maple syrup urine disease



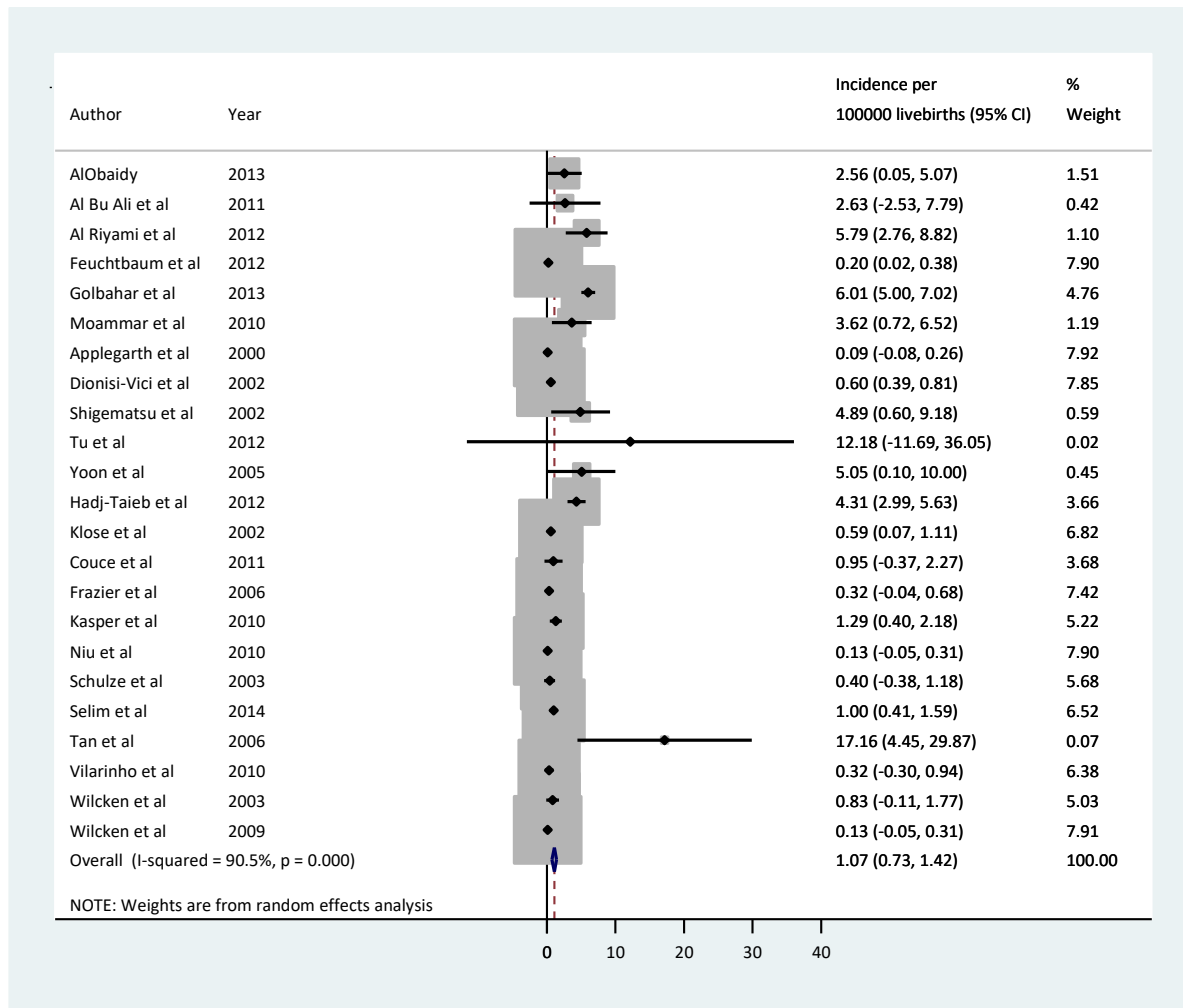
A 3.4. Meta-estimate of incidence of homocystinuria



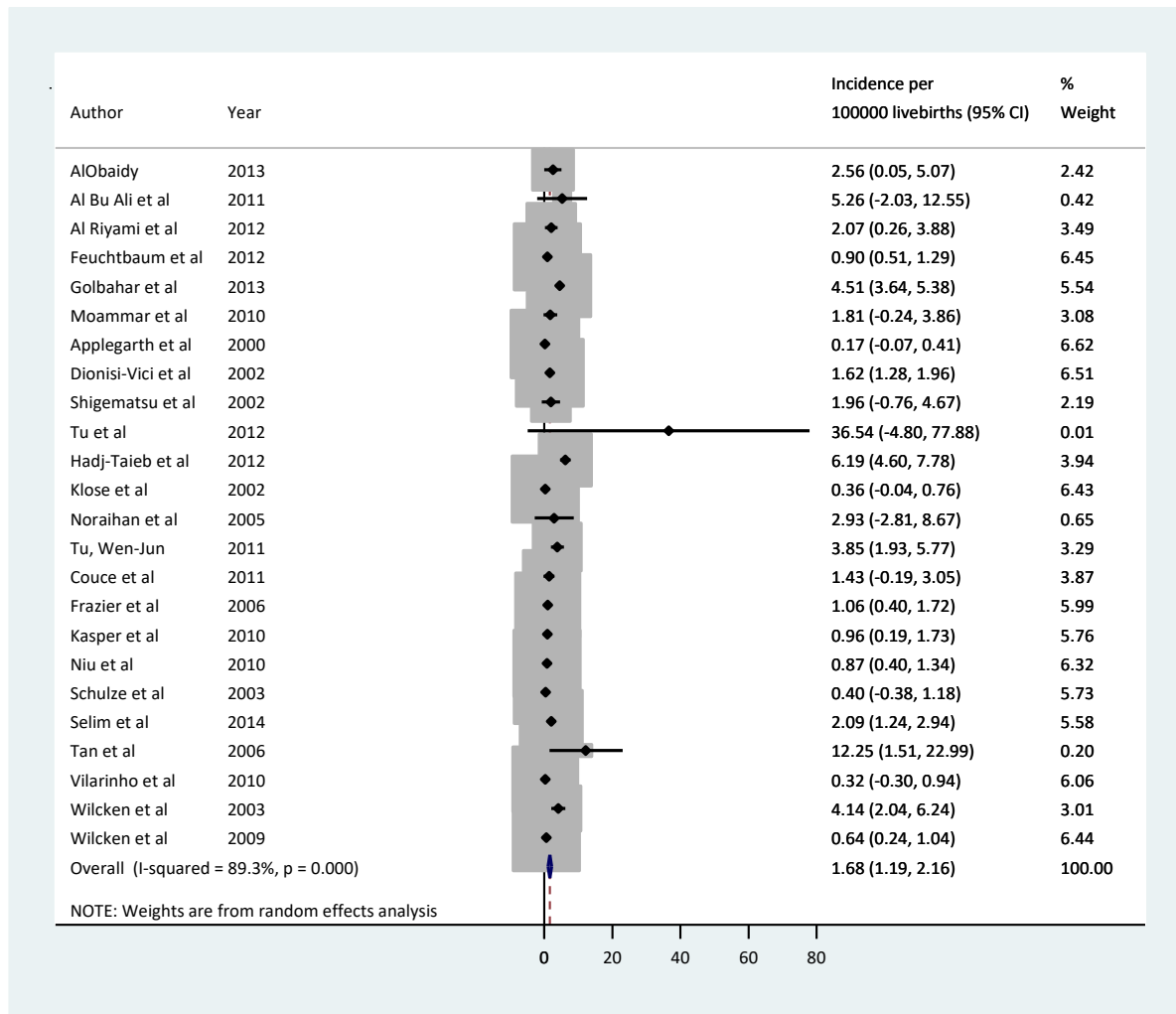
A 3.5. Meta-estimate of incidence of all organic acidurias



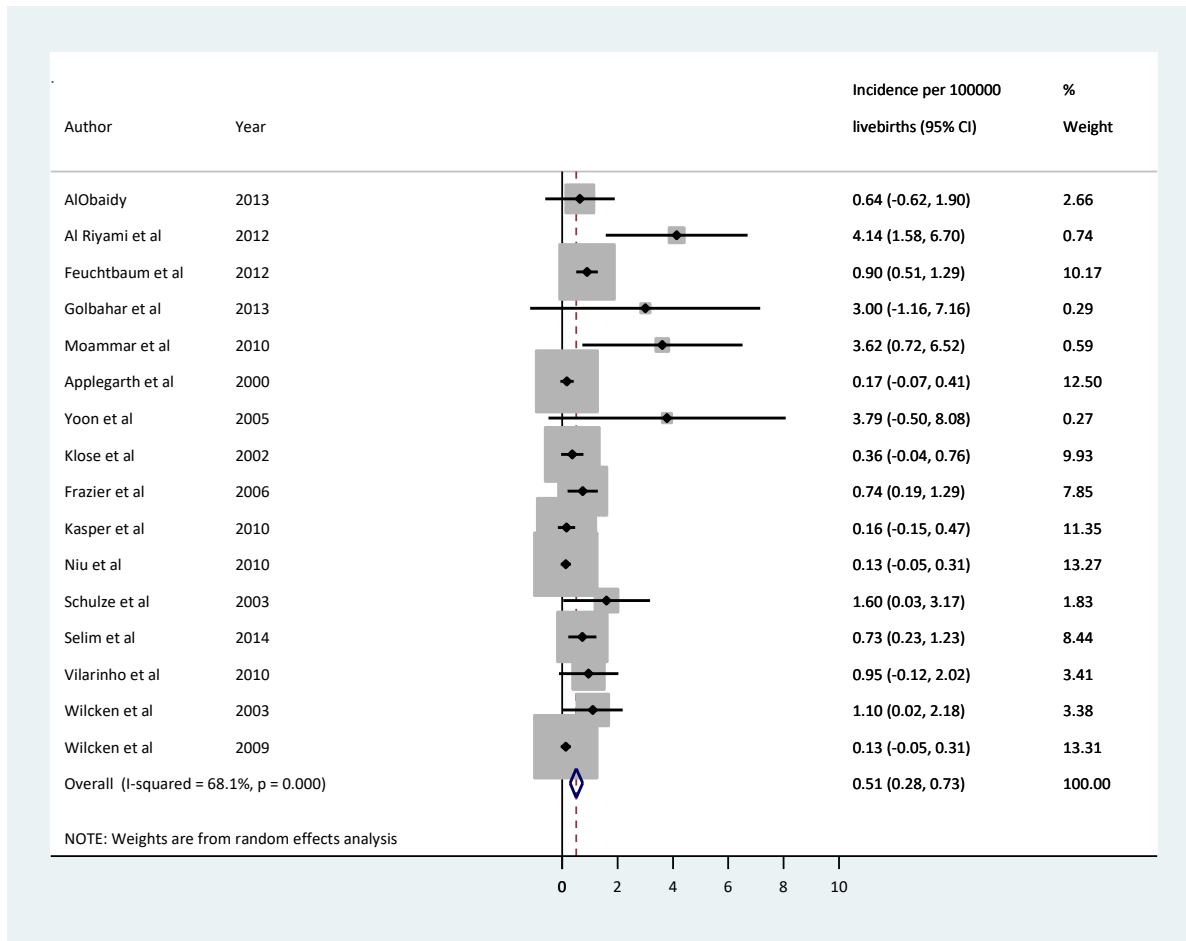
A 3.6. Meta-estimate of incidence of propionic aciduria



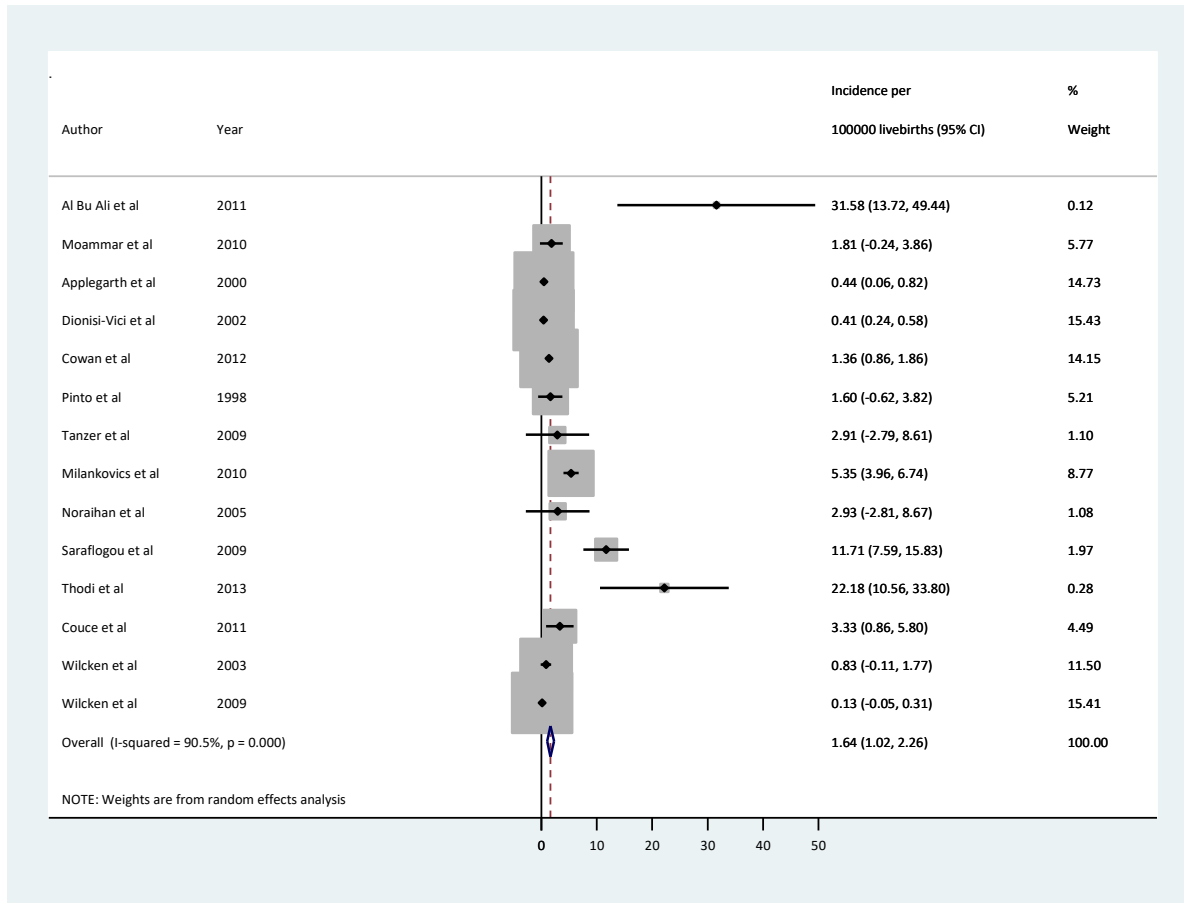
A 3.7. Meta-estimate of incidence of methyl malonic aciduria



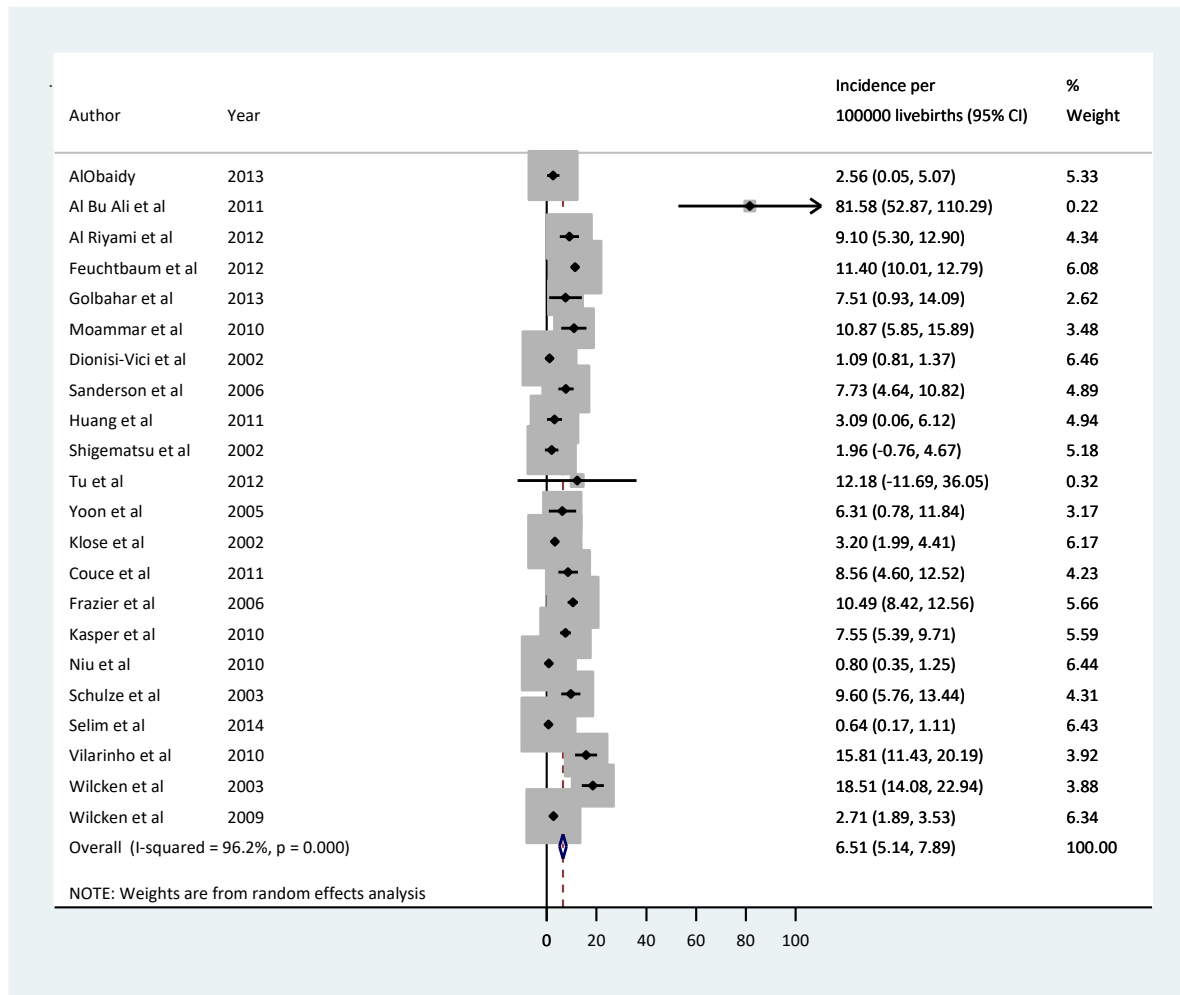
A 3.8. Meta-estimate of incidence of isovaleric aciduria



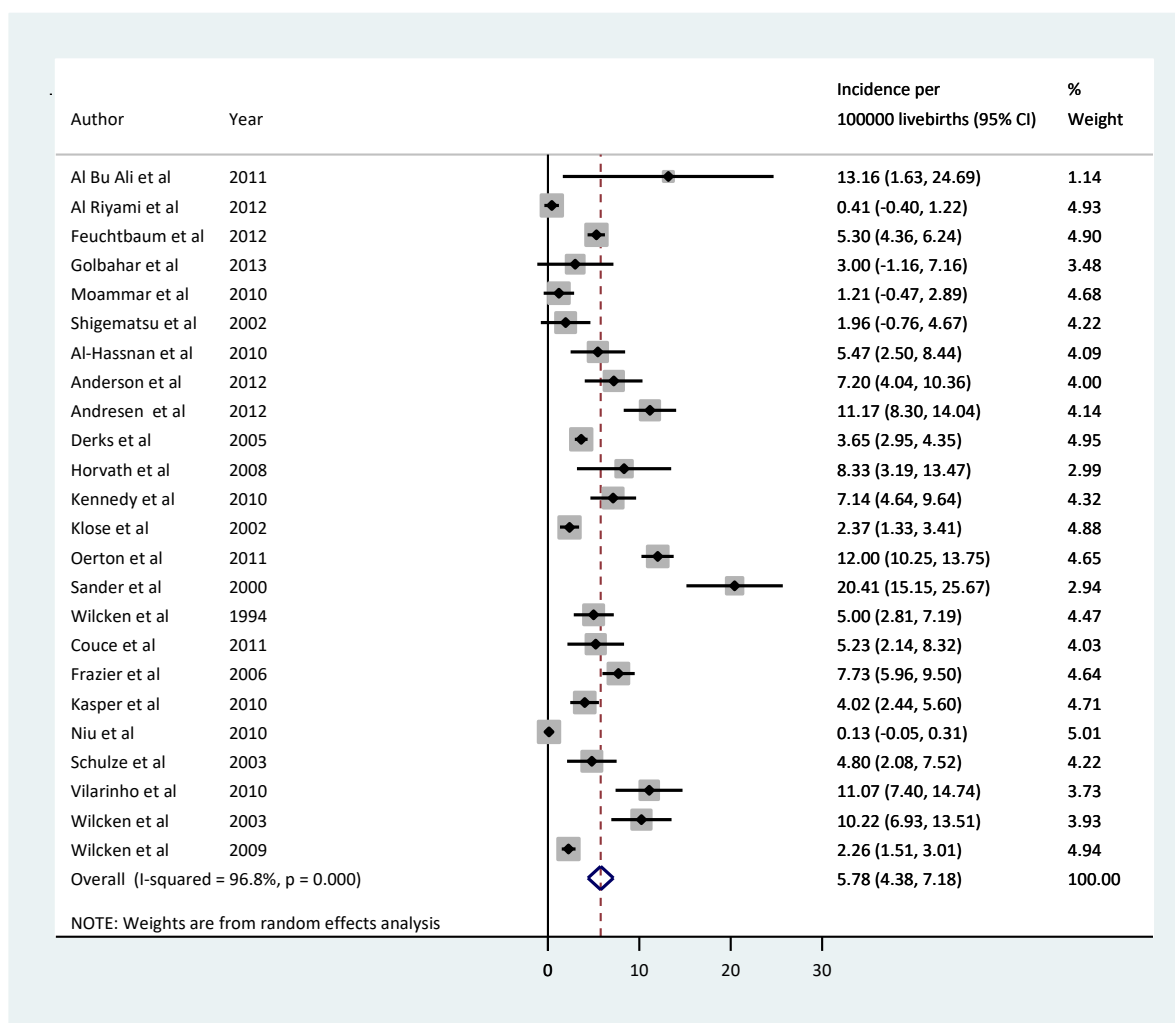
A 3.9. Meta-estimate of incidence of biotinidase deficiency



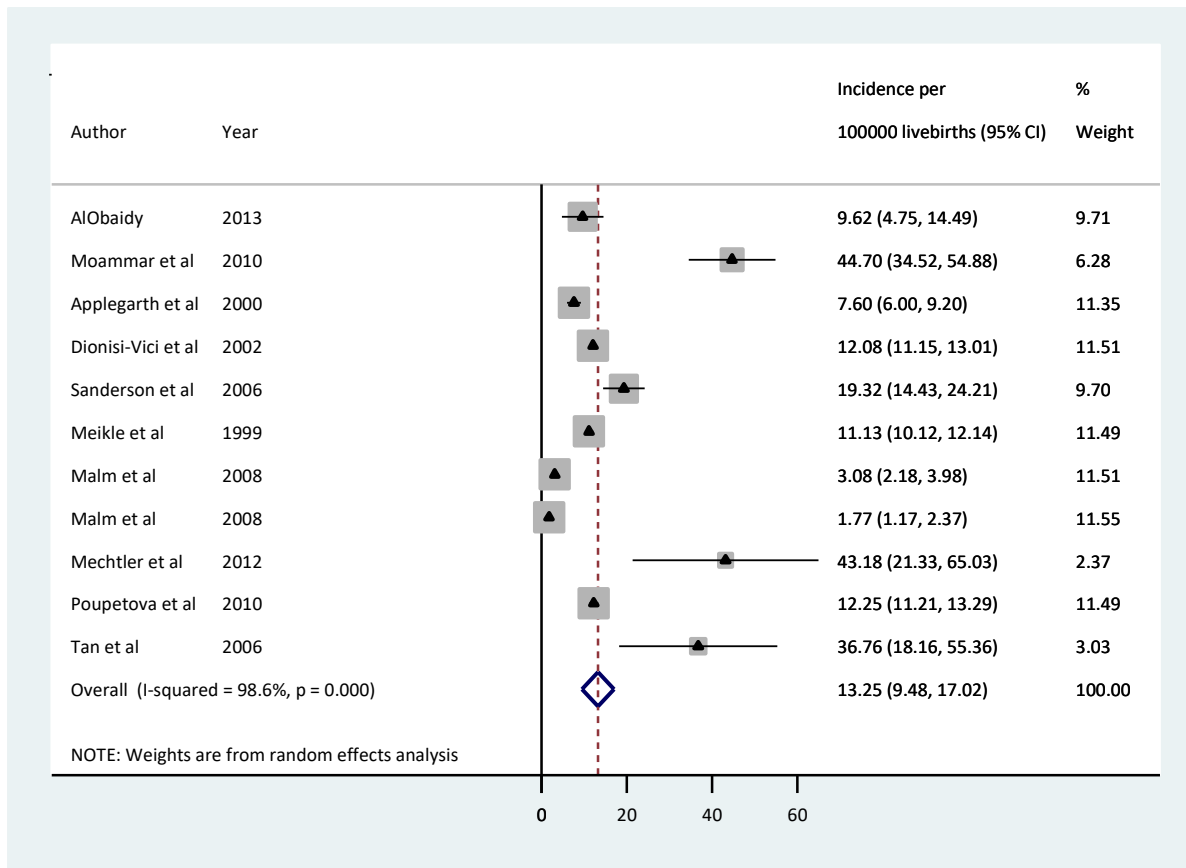
A 3.10. Meta-estimate of incidence of all fatty acid disorders



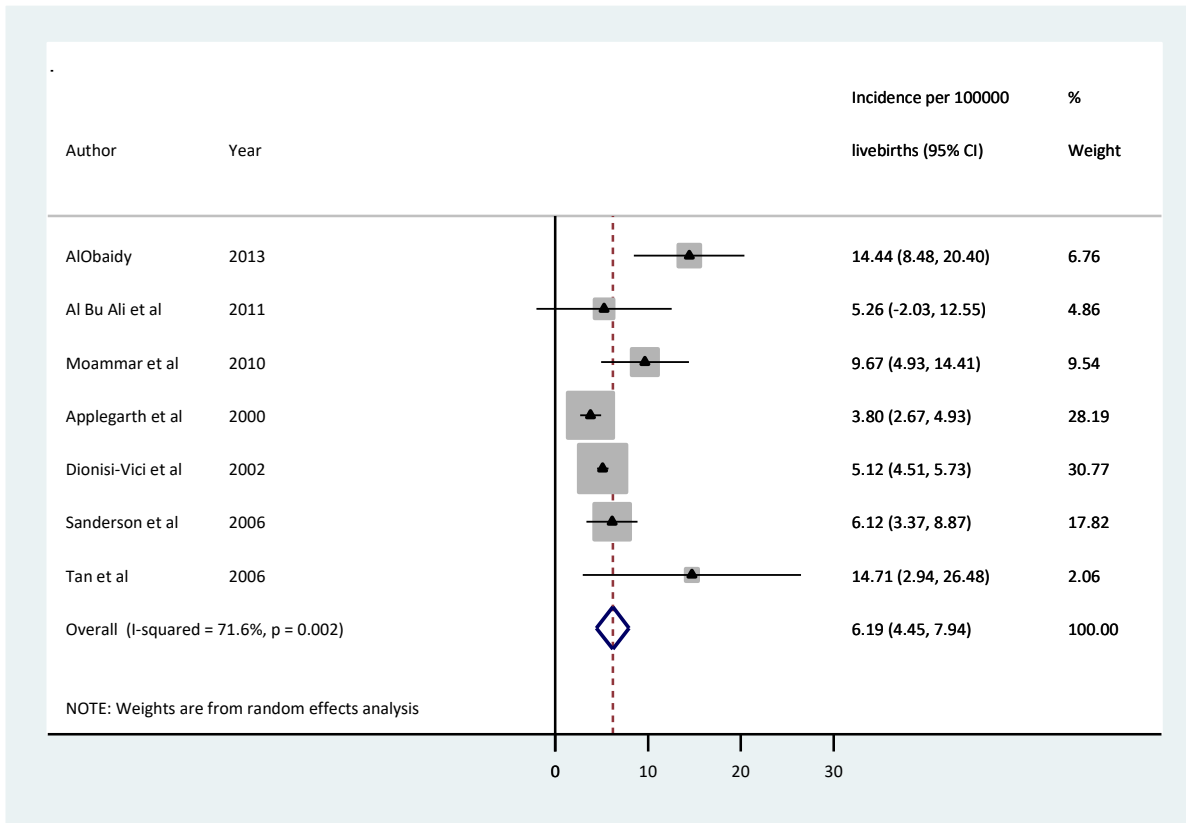
A 3.11. Meta-estimate of incidence of medium chain acyl coenzyme A dehydrogenase (MCAD) deficiency



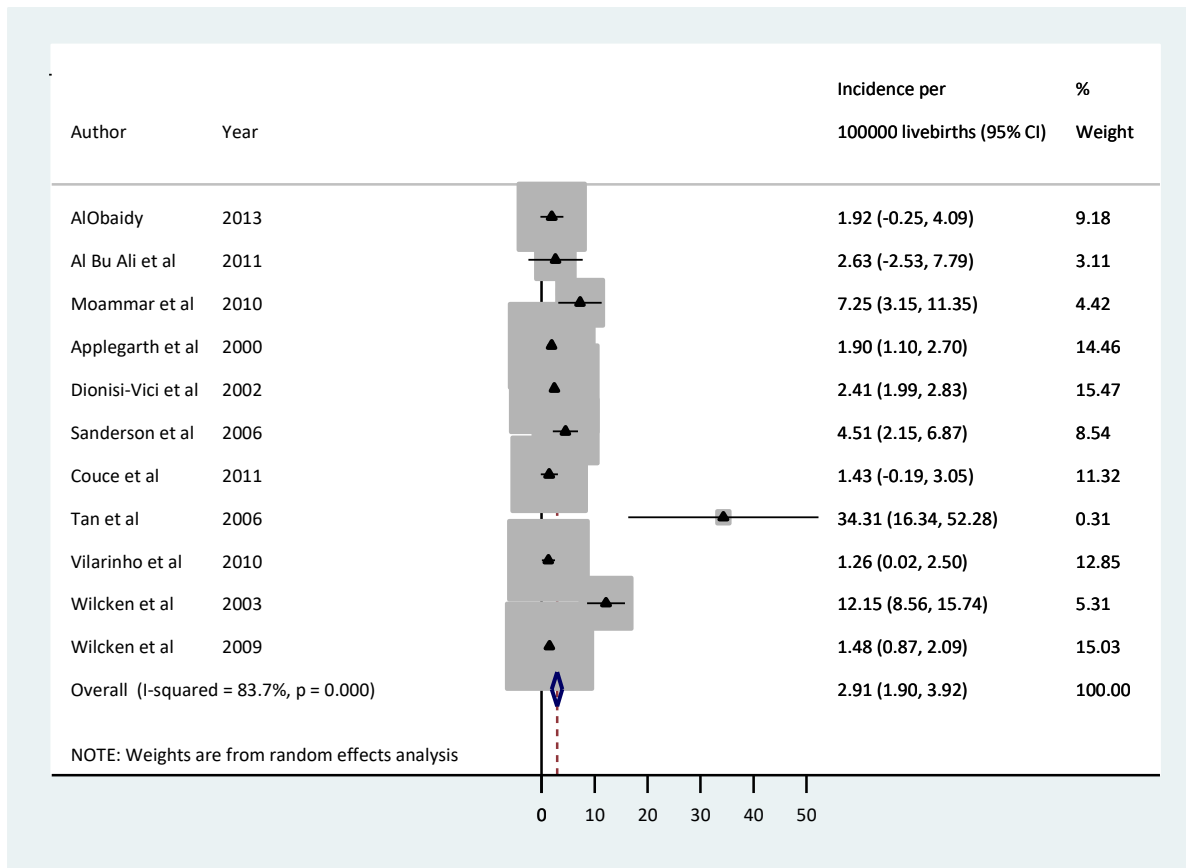
A 3.12. Meta-estimate of incidence of all lysosomal storage disorders



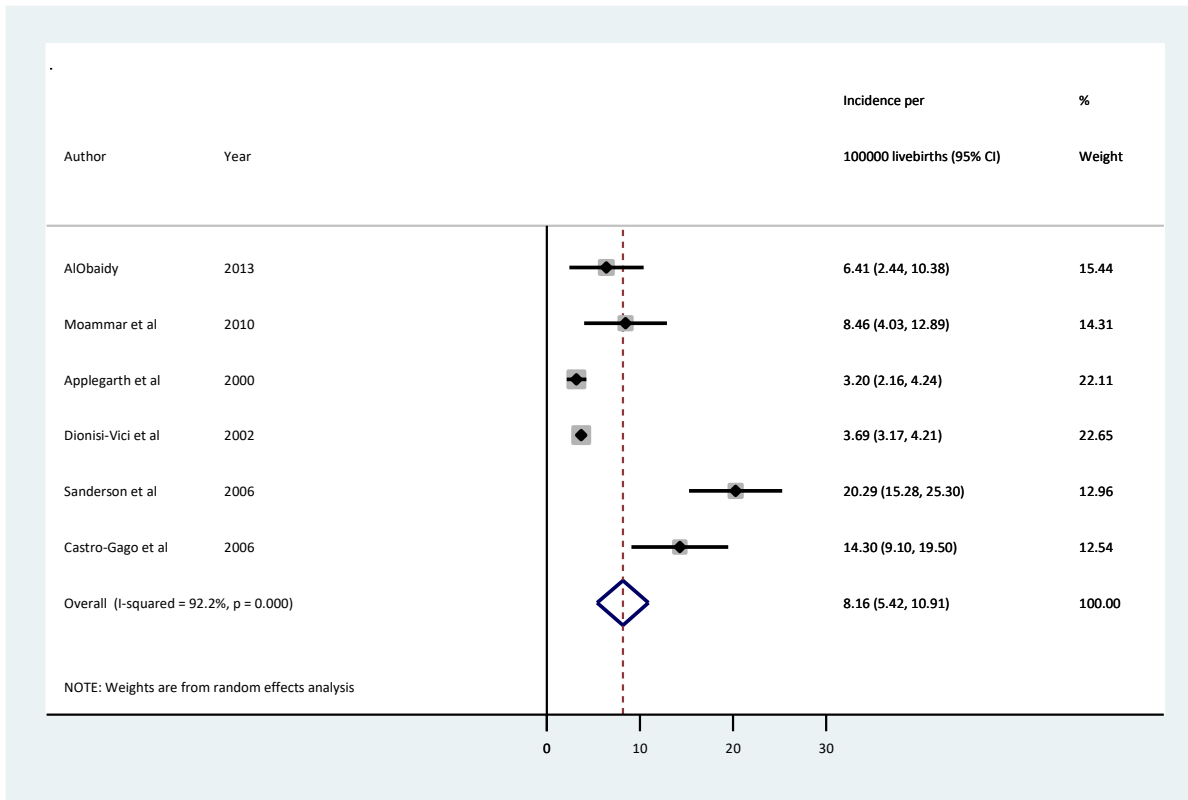
A 3.13. Meta-estimate of incidence of all carbohydrate metabolism disorders



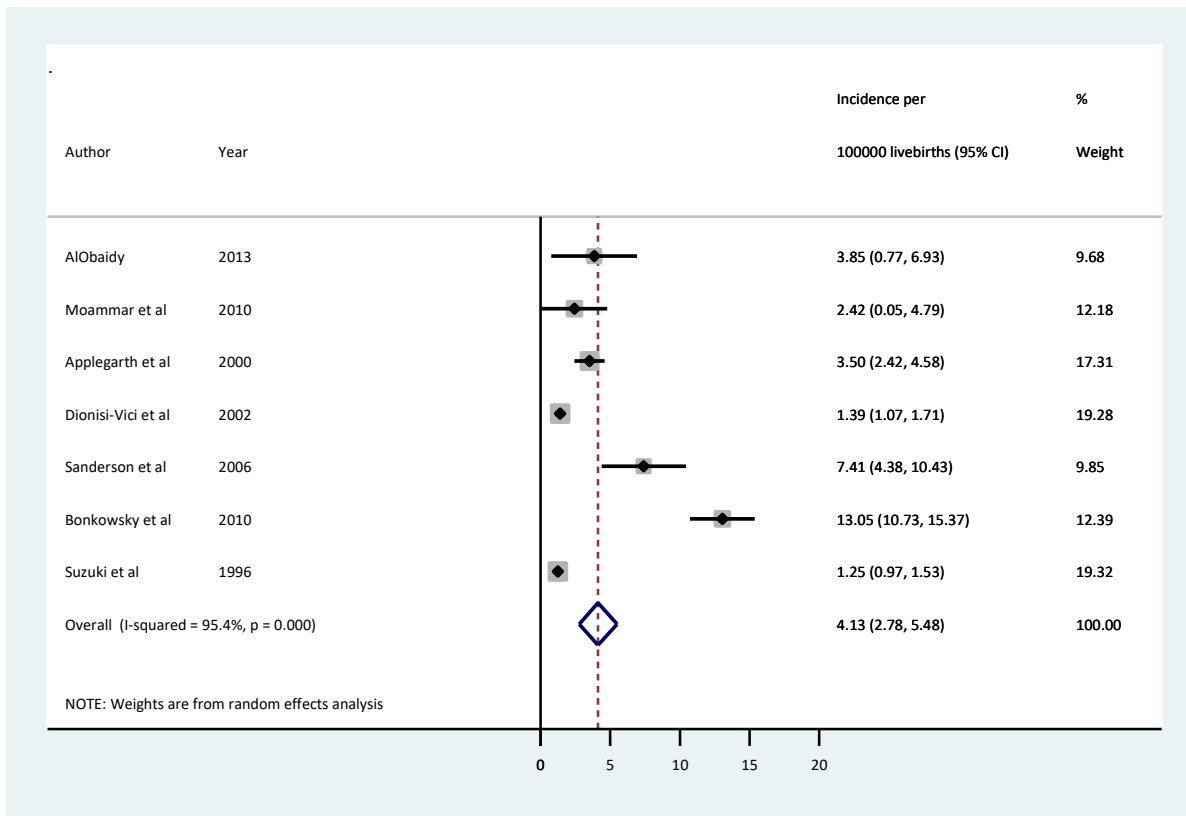
A 3.14. Meta-estimate of incidence of all urea cycle disorders



A 3.15. Meta-estimate of incidence of all mitochondrial disorders



A 3.16. Meta-estimate of incidence of all peroxisomal disorders



Appendix 4: characteristics of studies included for analysis of specific IEM categories

A 4.1. Studies reporting estimates for amino acid disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
Al Bu Ali et al[1]	2011	Saudi Arabia, Al Ahsa	Urban-Rural	Apr 2006 - Apr 2009	38001	1	2.63	9
Huang et al[2]	2012	China, Zhejiang Province	Urban-Rural	Jan 2008 - Jan 2011		11		
Al Riyami et al[3]	2012	Oman, Al Khoudh	Urban-Rural	May 1998 - Jul 2008	241757	8	3.31	
Feuchtbaum et al[4]	2012	USA, California	Urban	Jul 2005 - Jul 2010	2282138	66	2.9	
Golbahar et al[5]	2013	Bahrain	Urban-Rural	Jan 2008 - Dec 2011	66565	3	4.51	
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	12	7.25	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	86	7.10	
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	25	8.05153	
Nagaraja et al[9]	2010	India, Southern states	Urban-Rural	Jan 2007 - Dec 2009		19		
Shigematsu et al[10]	2002	Japan, Fukui	Urban-Rural	Apr 1997 - Jul 2001	102200	1	0.978474	137
Yoon et al[11]	2005	South Korea, Seoul	Urban	Apr 2001 - Mar 2004	79179	4	5.05	
Abadie et al[12]	2001	France, National	Urban-Rural	1980-1997	21500000	1426	5.84	5
Boneh et al[13]	2006	Australia, Victoria	Urban	Nov 2001- Oct 2004	190835	17	8.9	
Jiang et al[14]	2003	China, Guangdong	Urban-Rural	2001-2002	461805	14	1.3	
Lugovska et al[15]	1999	Latvia	Urban-Rural	1980-1998	38684	51	11.49	
Oddason et al[16]	2011	Iceland, National	Urban-Rural	1972-2008	226891	27	11.9	
Chen et al[17]	1989	China, Shanghai	Urban	Oct 1981- Dec 1988	358767	21	5.88	3
Schuler et al[18]	1996	Hungary, Budapest	Urban	Jan 1975 - Dec 1994	1500000	160	11.11	
Zhao et al[19]	2005	China, Zhejiang province	Urban-Rural	Jan 2002- Jan 2003	726998	32	4.40	
Hardelid et al[20]	2008	England, South East	Urban	Jan 1994-Dec 2004	1576419	167	10.59	
Sander et al[21]	2001	Germany	Urban	Jul 1989 - Dec 1999	283408	28	10	
Zhan et al[22]	2009	China, Hangzhou	Urban-Rural	Jan 1985 - Dec 2007	19000000	1638	8.64	2
Couce et al[23]	2011	Spain, Galicia	Urban	Jul 2000 - Jul 2010	210165	17	8.09	
Frazier et al[24]	2006	USA, North Carolina	Urban	Jul 1997- Jul 2005	944078	49	5.19	

Kasper et al[25]	2010	Austria, National	Urban-Rural	Apr 2002 - Dec 2009	622489	50	8.03	1
Niu et al[26]	2010	Taiwan	Urban-Rural	Mar 2000 - Jun 2009	1495132	25	1.67	
Schulze et al[27]	2003	Germany	Urban-Rural	Apr 1998 - Sep 2001	250000	24	9.60	
Selim et al[28]	2014	Egypt	Urban-Rural	Jun 2008 - Jun 2013	1100000	100	9.09	
Tan et al[29]	2006	Singapore	Urban	Jan 1992 -Jan 2005	40800	6	14.71	
Vilarinho et al[30]	2010	Portugal, national	Urban-Rural	Jan 2005 - Jan 2009	316243	26	8.22	

A 4.2. Studies reporting estimates for organic acid disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
AlObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	10	6.41	1
Al Bu Ali et al[1]	2011	Saudi Arabia, Al Ahsa	Urban-Rural	Apr 2006 - Apr 2009	38001	10	26.32	
Huang et al[2]	2012	China, Zhejiang Province	Urban-Rural	Jan 2008 - Jan 2011		26		5
Al Riyami et al[3]	2012	Oman, Al Khoudh	Urban-Rural	May 1998 - Jul 2008	241757	35	14.48	
Feuchtbaum et al[4]	2012	USA, California	Urban	Jul 2005 - Jul 2010	2282138	221	9.7	
Golbahar et al[5]	2013	Bahrain	Urban-Rural	Jan 2008 - Dec 2011	66565	9	13.52	
Kamate et al[32]	2010	India, Karnataka	Urban-Rural	Aug 2007 - Sept 2008		4		2
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	48	29.00	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	36	4.60	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	249	4.67	58
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	39	12.55966	
Nagaraja et al[9]	2010	India, Southern states	Urban-Rural	Jan 2007 - Dec 2009		47		
Han et al[34]	2007	China, Shanghai	Urban	Jan 2002 - Oct 2006		107		
Huang et al[35]	2011	China, Zhejiang province	Urban-Rural	Jan 2008 - Jan 2011	129415	6	4.64	
Yoon et al[11]	2005	South Korea, Seoul	Urban	Apr 2001 - Mar 2004	79179	10	12.63	
Hadj-Taieb et al[36]	2012	Tunisia, Tunis	Urban	Jan 1987- Dec 2009	946404	158	16.69	
Klose et al[37]	2002	Germany	Urban-Rural	Jan 1999- Dec 2000	844575	30	3.55	3
Couce et al[23]	2011	Spain, Galicia	Urban	Jul 2000 - Jul 2010	210165	24	11.42	3
Frazier et al[24]	2006	USA, North Carolina	Urban	Jul 1997- Jul 2005	944078	58	6.14	3
Kasper et al[25]	2010	Austria, National	Urban-Rural	Apr 2002 - Dec 2009	622489	46	7.39	
Niu et al[26]	2010	Taiwan	Urban-Rural	Mar 2000 - Jun 2009	1495132	51	3.41	
Schulze et al[27]	2003	Germany	Urban-Rural	Apr 1998 - Sep 2001	250000	17	6.80	
Selim et al[28]	2014	Egypt	Urban-Rural	Jun 2008 - Jun 2013	1100000	69	6.27	
Tan et al[29]	2006	Singapore	Urban	Jan 1992 -Jan 2005	40800	41	100.49	
Vilarinho et al[30]	2010	Portugal, national	Urban-Rural	Jan 2005 - Jan 2009	316243	24	7.59	
Wilcken et al[38]	2003	Australia, New South Wales / Sydney	Urban	April 1998 - Mar 2002	362000	53	14.64	

Wilcken et al[39]	2009	Australia, national	Urban-Rural	Jan 1994 - Jan2002	1551200	40	2.58	
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A 4.3. Studies reporting estimates for fatty acid disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
AlObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	4	2.56	3
Al Bu Ali et al[1]	2011	Saudi Arabia, Al Ahsa	Urban-Rural	Apr 2006 - Apr 2009	38001	31	81.58	
Huang et al[2]	2012	China, Zhejiang Province	Urban-Rural	Jan 2008 - Jan 2011		9		
Al Riyami et al[3]	2012	Oman, Al Khoudh	Urban-Rural	May 1998 - Jul 2008	241757	22	9.10	
Feuchtbaum et al[4]	2012	USA, California	Urban	Jul 2005 - Jul 2010	2282138	260	11.4	
Golbahar et al[5]	2013	Bahrain	Urban-Rural	Jan 2008 - Dec 2011	66565	5	7.51	
Kamate et al[32]	2010	India, Karnataka	Urban-Rural	Aug 2007 - Sept 2008		6		2
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	18	10.87	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	58	1.09	
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	24	7.72917	
Nagaraja et al[9]	2010	India, Southern states	Urban-Rural	Jan 2007 - Dec 2009		5		
Han et al[34]	2007	China, Shanghai	Urban	Jan 2002 - Oct 2006		13		
Huang et al[35]	2011	China, Zhejiang province	Urban-Rural	Jan 2008 - Jan 2011	129415	4	3.09	
Shigematsu et al[10]	2002	Japan, Fukui	Urban-Rural	Apr 1997 - Jul 2001	102200	2	1.956947	
Tu et al [40]	2012	China, Beijing	Urban	Jan - Dec 2009	8211	1	12.18	
Yoon et al[11]	2005	South Korea, Seoul	Urban	Apr 2001 - Mar 2004	79179	5	6.31	
Klose et al[37]	2002	Germany	Urban-Rural	Jan 1999- Dec 2000	844575	27	3.20	5
Couce et al[23]	2011	Spain, Galicia	Urban	Jul 2000 - Jul 2010	210165	18	8.56	1
Frazier et al[24]	2006	USA, North Carolina	Urban	Jul 1997- Jul 2005	944078	99	10.49	2
Kasper et al[25]	2010	Austria, National	Urban-Rural	Apr 2002 - Dec 2009	622489	47	7.55	
Niu et al[26]	2010	Taiwan	Urban-Rural	Mar 2000 - Jun 2009	1495132	12	0.80	
Schulze et al[27]	2003	Germany	Urban-Rural	Apr 1998 - Sep 2001	250000	24	9.60	2
Selim et al[28]	2014	Egypt	Urban-Rural	Jun 2008 - Jun 2013	1100000	7	0.64	
Vilarinho et al[30]	2010	Portugal, national	Urban-Rural	Jan 2005 - Jan 2009	316243	50	15.81	
Wilcken et al[38]	2003	Australia, New South Wales / Sydney	Urban	April 1998 - Mar 2002	362000	67	18.51	
Wilcken et al[39]	2009	Australia, national	Urban-Rural	Jan 1994 - Jan2002	1551200	42	2.71	6

A 4.4. Studies reporting estimates for lysosomal disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
AlObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	15	9.62	8
Goel et al[41]	2010	Australia, Victoria	Urban	Jan 1997 - Jan 2007				21
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	74	44.70	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	70	7.60	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	645	12.08	
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	60	19.32367	
Meikle et al[42]	1999	Australia, national	Urban	Jan 1980 - Dec 1996	4222323	470	11.13	
Malm et al[43]	2008	Norway	Urban - Rural	1975-2004	1461039	45	3.08	
Malm et al[43]	2008	Denmark	Urban - Rural	1975-2004	1864407	33	1.77	
Mechtler et al[44]	2012	Austria	Urban - Rural	Jan-Dec 2010	34736	15	43.18	
Poupetova et al[45]	2010	Czech Rep	Urban	1975-2008	4326531	530	12.25	
Tan et al[29]	2006	Singapore	Urban	Jan 1992 -Jan 2005	40800	15	36.76	

A 4.4. Studies reporting estimates for carbohydrate metabolism disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
AlObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	16	14.44	4
Al Bu Ali et al[1]	2011	Saudi Arabia, Al Ahsa	Urban-Rural	Apr 2006 - Apr 2009	38001	2	5.26	
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	16	9.67	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	40	3.80	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	273	5.12	2
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	19	6.118828	
Tan et al[29]	2006	Singapore	Urban	Jan 1992 -Jan 2005	40800	6	14.71	

A 4.5. Studies reporting estimates for urea cycle disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	incidence/100000 livebirths	Deaths in birth cohort
AIObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	3	1.92	
Al Bu Ali et al[1]	2011	Saudi Arabia, Al Ahsa	Urban-Rural	Apr 2006 - Apr 2009	38001	1	2.63	
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	12	7.25	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	18	1.90	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	129	2.41	
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	14	4.51	
Ibarra- Gonzalez et al[46]	2014	Mexico, Mexico city	Urban	Jan 2007 - Dec 2012		2		2
Couce et al[23]	2011	Spain, Galicia	Urban	Jul 2000 - Jul 2010	210165	3	1.43	
Tan et al[29]	2006	Singapore	Urban	Jan 1992 -Jan 2005	40800	14	34.31	
Vilarinho et al[30]	2010	Portugal, national	Urban-Rural	Jan 2005 - Jan 2009	316243	4	1.26	
Wilcken et al[38]	2003	Australia, New South Wales / Sydney	Urban	April 1998 - Mar 2002	362000	44	12.15	
Wilcken et al[39]	2009	Australia, national	Urban-Rural	Jan 1994 - Jan2002	1551200	23	1.48	

A 4.6. Studies reporting estimates for mitochondrial disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
AIObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	10	6.41	6
Goel et al[41]	2010	Australia, Victoria	Urban	Jan 1997 - Jan 2007				29
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	14	8.46	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	13	3.20	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	197	3.69	76
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	63	20.28809	
Castro-Gago et al[47]	2006	Spain, North West	Urban-Rural	Jan 1990- Dec 1999	203054	29	14.3	16

A 4.7. Studies reporting estimates for peroxisomal disorders

Author	Year	Location	Setting	Period of study	Total live births	Cases in cohort	Birth prevalence /100000 LB	Deaths in birth cohort
AlObaidy[31]	2013	Libya, Tripoli	Urban	Jan 2001 - Dec 2012	156006	6	3.85	3
Goel et al[41]	2010	Australia, Victoria	Urban	Jan 1997 - Jan 2007				6
Moammar et al[6]	2010	Saudi Arabia, Dhahran Eastern Province	Urban-Rural	Jan 1983 - Jan 2008	165530	4	2.42	
Applegarth et al[7]	2000	Canada, British Columbia	Urban	Jan 1969- Jan 1996	1142912	20	3.50	
Dionisi-Vici et al[33]	2002	Italy, national survey	Urban-Rural	Jan 1985 - Dec 1997	5336730	74	1.39	
Sanderson et al[8]	2006	UK, West Midlands	Urban	Jan 1999 - Dec 2003	310510	23	7.407407	
Bonkowsky et al[48]	2010	USA, Utah	Urban	Jan 1999 - Dec 2007	934886	122	13.05	42
Suzuki et al[49]	1996	Japan	Urban-Rural		6000000	75	1.25	
Tan et al[29]	2006	Singapore	Urban	Jan 1992 -Jan 2005		3	7.35	

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