

Supplementary table: Characteristics of studies that met inclusion criteria for incorporation in the review. For the NICE Checklist Assessments, a “++” rating indicates that the study has been designed to minimise the risk of bias; “+” indicates that the study may not have addressed all potential sources of bias for that type of design; and “-“ indicates that significant sources of bias persist in the study.

Primary author, year	Country	Population	Outcome focus	Sample size (n)	Design	Gender-related mortality or morbidity effect (if any reported)	Gender differential in care-seeking behaviour	Explanatory factors for differential care-seeking behaviour between genders	Evidence quality assessment
Ahmed, 2001	Bangladesh	Rural	Morbidity	1,511	Cross-sectional, community-based survey	Non-significant difference in reported morbidity between males and females in the study.	Care-seeking from trained providers for male morbidity was significantly higher than for females (OR* 2.04, 1.29-3.22, p<0.01). Average spend on treatment for males was statistically significantly greater than for females (p=0.00)	Not formally tested by gender, but the findings show that father's educational level (higher = more care-seeking), higher family income and antenatal care from trained personnel increased the odds of seeking care from trained providers for neonatal illness, irrespective of the gender of the child.	+
Begum, 2015	India	Urban	Morbidity	2,042	Cross-sectional, facility-based survey	Majority of those admitted in the early neonatal period were male, with proportions balancing out in the late neonatal period.	Not reported.	Not formally tested by gender.	-
Chowdhury, 2011	Bangladesh	Rural	Morbidity	365	Cross-sectional, community-based survey	Not reported.	Male neonates were significantly more likely to have been taken to medically-qualified care provider than females (p<0.01). AOR [§] of seeking care from medically qualified professional during fatal neonatal illness for females 0.48 (0.25-0.90, p=0.023) in regression modelling. Equivalent figure for any care provider is 0.43 for females (0.26-0.71, p=0.001).	Not formally tested by gender. Narrative suggests that general factors include little time that was available to seek care because of the sudden onset of symptoms, the lack of supportive family members, and cultural restrictions on the mobility of women in public, especially after delivery.	+

Halim, 2016	Bangladesh	Rural	Mortality	1,433	Cross-sectional, community-based survey	Mortality among females greater than males (59% vs 41%, $p=0.017$). Gender was also associated with care seeking among those who died in the neonatal period. For neonatal deaths among girls, parents were 13% less likely to have sought care compared to boys prior to death (RR ² 0.87, 95% CI 0.80–0.93).	For mothers with two to four previous births, being a girl baby, being small for gestational age or premature, and mothers whose babies had died of birth asphyxia were less likely to have accessed care before the baby died	Not formally tested by gender.	+
Hossain, 2006	Bangladesh	Rural	Mortality	7,534	Cross-sectional, community-based survey	Mortality rate ratio among females in the neonatal period slightly lower than males (0.92 versus 1.0 for males) but this difference in not statistically significant.	Not reported.	Not formally tested by gender. Analysis shows statistically significant associations between neonatal mortality (both genders) and birth order (higher risk for second child onwards) - but otherwise no significant associations in the neonatal period.	+
Howlader, 1999	Bangladesh	Mixed	Mortality	19,539	Cross-sectional, national survey	Mortality among male neonates statistically significantly higher than females (OR 0.27, $p<0.001$).	Not reported.	Not formally tested by gender. Antenatal visits from a doctor/nurse and immunisation were strongly associated with reduced risk of neonatal mortality in this study (both genders).	+
Kozuki, 2015	Asia and African countries	Mixed	Morbidity	Varied according to the study	Systematic review	Not reported.	Referral completion rates in studies from South Asia vary from 48-97% depending on the study concerned. Only one study (from Nepal) found statistically significantly different completion rates between genders. Referral rate and completion rate differences in the Nepal study (where there was a statistically significant difference) were greater in families where there were only female prior children in the family.	Not formally tested by gender.	-
Kshirsagar, 2013	India	Urban	Morbidity	191	Cross-sectional, facility-based survey	Not reported.	Rates of familial denial of treatment (65% vs 35%) and refusing admission (85 vs	Not formally tested by gender.	-

							15%) were higher among female neonates than males – but not testing to establish the statistical significance of this difference was carried out.		
Rahman, 2009	Bangladesh	Mixed	Mortality	3,759	Cross-sectional, national survey	Crude hazard ratio for mortality among boys was 0.924 in the neonatal period (not statistically significant). None of the adjusted estimates are significant.	Not reported.	Not formally tested by gender. General determinants of neonatal mortality (which may have influenced care-seeking behaviour) include maternal education; household size (smaller the household experienced higher NMRs); birth order (the lower the order, the lower the NMR). None of the health/health-seeking behavioural characteristics found to be significant.	+
Rosenstock, 2013	Nepal	Rural	Mortality	23,662	Secondary analysis of data gathered within a population-based, randomised controlled trial	There is an inversion in gender-related risk between early and late neonatal periods. There is a raised (but non-significant) relative risk of death among boys in the neonatal period when compared with girls in this cohort, but significantly greater risk for boys in the early neonatal period (RR 0-7 days - 1.20, 1.02-1.42), and then for girls in the late neonatal period (8-28 days, RR 0.70, 0.52-0.94).	Not reported.	Not formally tested by gender. Ethnicity and prior sibling composition probably the most important determinants of neonatal mortality (girls born to families with prior girls only at much increased risk of later neonatal mortality).	+

Rosenstock, 2015	Nepal	Rural	Morbidity	18,985	Secondary analysis of data gathered within a population-based, RCT ^{&}	Not reported.	Odds of seeking care in the neonatal period for boys significantly greater than for girls (OR 1.75, 1.65-1.86) - but referral rates switch between early and late neonatal period so that boys are less likely to be referred in early (0.91,0.86-0.96) but more likely in the late neonatal period (1.12,1.06-1.20). Odds of seeking care for boys greater for some kinds of illness than others e.g. infection, and cases of greater perceived severity. Number of times care sought for boys also greater than girls (OR for girls 0.41,0.31-0.52). Care provider also matters: medical care significantly more often sought for boys than girls throughout the neonatal period (early neonatal period: Odds Ratio (OR) = 1.82 [95 % CI: 1.68 – 1.98], late neonatal period: OR = 1.83 [95 % CI: 1.72 – 1.95]).	Boys more likely to be referred for infection/fever and jaundice than girls. Odds of care seeking and referral for unwell boys in families where there are only prior-born girls much higher than otherwise.	+
Saini, 2012	India	Urban	Morbidity	360	Cross-sectional, community-based survey	Not reported.	Reported gender-difference in illness rates, which are higher in males than females. Parents spent more overall on seeking care for females than males but this differences was not statistically significant.	Not formally tested by gender.	-

Shah, 2014	Bangladesh	Rural	Morbidity	27,460 mother-baby pairs	Cross-sectional, community-based survey nested within a RCT	Not reported.	Statistically significant evidence of gender differential in care seeking for pre-term neonates in this study: AOR for females 0.73 (0.66-0.80, $p < 0.05$). Care seeking from qualified providers also less likely than unqualified for females controlling for other factors - but in any event, less likely for females from either source of care (0.68, 0.58-0.80 from unqualified providers; 0.52, 0.41-0.66 from qualified)	Not formally tested by gender. Discussion alludes to importance of son preference in Bangladesh, and father's dominant position in the household in making decisions on seeking care outside the home - but these have not been tested in the regression modelling.	+
Shah, 2015	Nepal	Rural and urban	Mortality	198 in total (99 cases, 99 controls)	Case-control study	Majority of neonates included were male (54%). No significant association in this analysis between sex and increased risk of mortality.	Not reported.	Not formally tested by gender. Some factors emerge as associated with mortality overall: maternal education, economic status, extremes of age in the mother, LBW and application of disinfectants to the chord after delivery (among other factors) are all associated with reduced risk of death in the neonatal period (both genders)	+
Shakya, 2001	Nepal	Mixed	Mortality	8,429	Cross-sectional, national survey	Risk of neonatal death significantly greater for males in this study (OR 1.59, $p < 0.05$). This is the only result reported in the paper which has any relevance to the discussion on determinants of gender differentials in mortality/morbidity.	Not reported.	Not formally tested by gender.	+
Srivastava, 2008	India	Urban	Morbidity	150	Cross-sectional, facility-based survey	Not reported.	Crude OR of care-seeking from qualified health professionals for male neonates was statistically significantly greater than for females (3.81, 1.05-13.94, $p = 0.04$).	Some variables explored (across all neonates rather than gender specifically) but none found to be statistically significant - these included: paternal education level, birth order, birth weight, whether or not antenatal care had been received and so on.	-

Willis, 2009	India	Rural	Morbidity	255	Secondary analysis of data gathered within a population-based RCT	Not reported.	While the overall use of healthcare providers was similar across gender, the average expenditure for healthcare during the neonatal period was nearly four-fold higher in households with males (Rs 243.3±537.2) compared to females (Rs 65.7±100.7) (p=0.07). Households with female newborns used cheaper public care providers whereas those with males preferred to use private unqualified providers perceived to deliver more satisfactory care.	Perception of illness was significantly lower in incidence (AOR 0.56, 0.33-0.94) among households with female versus male newborns. There was a non-significant difference in recognition of first newborn illness (slightly higher among females than males). Female newborns were perceived to have higher incidence of fever, but lower incidence of all other acute presentations.	+
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* OR = odds ratio

[§] AOR = adjusted odds ratio

& RCT = randomised controlled trial

[£] RR = relative risk