**Appendix 1: Final included studies for data extraction**

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| **ID Code** | **Title** | **Author** | **Year** | **location** | **Target**  **population** | **Sampling**  **Sample size** | **Type**  **Of**  **Study** | **Determinants**  **reported** | **Final Results** | **Explanation** |
| 1 | Prevalence and factors associated with abortion and unsafe abortion in Nepal: a nationwide cross-sectional study | Abinath Yogi | 2018 | Nepal Demographic and Health Survey | women with the most recent abortion | national survey | cross sectional | Buddhist religion (OR 2.15; 95% CI 1.04, 4.44) - literate (secondary level education OR 1.69; 95% CI 1.22, 2.34)-who knew about legal abortion (OR 1.88; 95% CI 1.41, 2.52)-who were aware of safe places for abortion services (OR 4.96; 95% CI 3.04, 8.09)-women in age group 25–34 years (OR 0.43; 95% CI 0.19, 0.97-e who were in the richest wealth quintile (OR 0.10; 95% CI 0.04, 0.25) | The five-year prevalence of abortion was 21.1% among women of reproductive age who ever had a terminated pregnancy and 16.0% of total abortions were unsafe | Education, religion, age, knowledge about legal abortion and safe places to undergo abortion were the major decisive factors associated with abortion. Young, poorest and uneducated women were more likely to undergo unsafe abortions. Therefore, intervention studies among these target groups are warranted. |
| 2 | Understanding Generational Differences in Early Fertility: Proximate and Social Determinants | Rachel E. Goldberg | 2018 | USA | US youth population | longitudinal data from Waves 1–4 of Add Health, a nationally representative study following a cohort of youth who were in grades 7–12 in 1994–1995. | cross sectional | Immigrant generation -Age -Parental education (ref: > high school)-Race/ethnicity-Married-Sexual onset (Age and Duration following onset) | Proximate determinants include sexual activity (timing of sexual onset and sexual frequency), contraceptive use, and whether a pregnancy is carried to term Social factors must operate through at least one of these proximate determinants to influence fertility |  |
| 3 | Adolescent motherhood in Bangladesh: Trends and determinants | Mohammad Mainul Islam | 2017 | Bangladesh | adolescent | 7 waves of Bangladesh Demographic and Health Survey (BDHS, 1993–2014) data but for multivariate analysis 4 waves of BDHS (2004–2014). | cross sectional | Lower spousal age gap and higher education were found to be associated with lower likelihood of adolescent motherhood both among teenage girls. Teenage girls in the poorest wealth quintile [OR 1.712 [1.350–2.173] were more likely to experience adolescent motherhood than the richest wealth quintile. Teenage girls who had no education were found to have 2.76 times higher odds of adolescent motherhood than their counterparts who had higher than secondary education. Concerning the time effect, the odds of adolescent motherhood among adult women was found to decline overtime. | Bangladesh adolescent motherhood is still highly prevalent though declining from 1993 to 2014 | , it was found that lower spousal age gap had lower odds of adolescent motherhood among adult women in terms of their age, education, employment status, wealth index, place of residence, region, religion, exposure to media, husband’s education and time (year of surveys). In addition, lower education was found to be associated with higher risk of adolescent motherhood among adult women. For example, adult women who had no education were 5.26 times more likely to become mothers before age 20 compared to those who had post- secondary education. |
| 4 | Women’s empowerment and fertility preferences in high fertility countries in Sub-Saharan Africa | Esso-Hanam Atake | 2019 | countries in Sub-Saharan Africa | married women |  | cross sectional |  | All below determinants improve the number of wanted children significantly:  .Economic empowerment index.  .Sociocultural empowerment( only in Niger)  .Familial empowerment  .Household wealth index  .Husband education  .Household size  .Islam and Christian religion in Burkina Faso |  |
| 5 | Determinants of teenage pregnancy in Degua Tembien District, Tigray, Northern Ethiopia: A community-based case-control study | Brhane G/kidan Ayele | 2018 | Degua Tembien District, Tigray, Northern Ethiopia | Female teenagers in Degua Tembien district constituted the source population | community-based case-control study | lower monthly income below ~$25 and ~$25–50 (adjusted odds ratio (AOR) = 23.96; 95% confidence interval (95%CI) 4.89–117.29 and AOR = 4.91; 95%CI 1.64–14.66, respectively); aged 18–19 years (AOR = 16.75; 95%CI 6.45–43.47); being married (AOR = 15.91; 95%CI 7.43–34.04); not communicating with parents on reproductive health issues (AOR = 6.52; 95%CI 3.12–13.64) and having a history of maternal teenage pregnancy (AOR = 4.14; 95%CI 1.84–9.33). | The factors associated with higher teenage pregnancy in our study were : lower family monthly income, being married, being in the 18–19 year age group, not communicating with parents on reproductive health issues and having a maternal history of teenage pregnancy. |  |  |
| 6 | Achieving fertility control through woman’s autonomy and access to maternal healthcare: Are we on track? In-depth analysis of PDHS-2012-13 | Sehar-un-Nisa Hassan1 , | 2015 | Pakistan | ever-married women of ages 15-49 years from PDHS, 2012-13 | 11,761 | cross sectional | socio-demographics, women’s autonomy, fertility control preferences and access to maternal healthcare. | The main purpose of this study was to determine whether women’s autonomous status and access to maternal health care will independently or after interaction predict women’s fertility control preferences. Findings from multivariate analysis showed that women’s younger age, having less than three number of children and independent or joint decision-making (indicators of high autonomy) remained the most significant predictors for access to better quality maternal healthcare and better fertility control preferences when other variables were controlled. Findings also revealed that quality of ante-natal healthcare accessed by women significantly influence women’s choice for ideal number of children independently and even after interaction with other variables. | Findings strongly suggest that joint decision-making in couples maximize access to better quality ante-natal and post-natal healthcare which lead to positive outcomes in fertility control.To achieve success in fertility control, programs should target young, less educated women living in rural areas of Sindh, Balochistan and Giglit Baltistan. It is recommended to conduct further analysis by including other variables from PDHS 2012-13 data such as media exposure, contraceptive use patterns, and experience of domestic abuse and women’s and men’s attitudes towards wife beating which may explain role of other factors in determining women’s fertility preferences. |
| 7 | Determinants of family planning use among married women in bale eco-region, Southeast Ethiopia: a community based study | Alemayehu Gonie | 2018 | Southeast Ethiopia | women | multistage sampling technique was employed- 567 | community-based cross-sectional study design (both quantitative and qualitative methods) | Spousal (husband’s) opposition (38.8%), religious beliefs (17.7%), concern and fear of side effects (14.8%), and distance of family planning service- AOR | Spousal (husband’s) opposition (38.8%), religious beliefs (17.7%), concern and fear of side effects (14.8%), and distance of family planning service (5.9%) were the reasons for not using contraceptive methods. | Having more than seven deliveriesand having birth interval less than 24 months between the last two childrenwere significantly associated with utilization of contraceptive methods. |
| 8 | Knowledge and utilization of sexual and reproductive healthcare services among Thai immigrant women in Sweden | Eva Åkerman | 2016 | Sweden | Migrants women from Thailand to Sweden between 2006 and 2011. | 804 women | cross-sectional study using a postal questionnaire | Age/ Married/cohabiting Education level/Immigration year/Participation in Swedish language School/Lacking cash reservesa/Trust in others Bonding vs. bridging trust/Dominant bonding trust  Dominant bridging trust /Bonding vs. bridging relationships Dominant bonding relationships/Dominant bridging relationships/Social participation | This study shows that the majority of Thai women had poor knowledge of where to turn when they needed sexual and reproductive healthcare services. Social capital, measured in terms of trust in others and bonding vs. bridging relationships, was of importance for such knowledge. The majority also had a low utilization of sexual and reproductive healthcare services. |  |
| 9 | Community influences on modern contraceptive use among young women in low and middle-income countries: a crosssectional multi-country analysis | Massy Mutumba | 2018 | 52 LMICs |  |  | : Grounded in the socio-ecological framework | Community mean age at marriage Community mean age at first birth  Community mean age at sexual debut Community mean ideal number of children  Community mean mass media exposure score  Community mean household decision-making autonomy score  Community mean attitudes towards intimate partner violence score  Community mean years of completed education  Community mean household wealth score | First, they highlight the potential mechanism through which community level factors may shape young women’s contraceptive use.Second, they underscore the need for tailoring and audience segmentation in family planning programs. As indicated, they findings suggest that community level factors may shape contraceptive use in younger and older women differently. Audience segmentation is an important health tool that allows programs to identify relatively homogenous sub-populations with similar characteristics and needs that can be targeted through tailored messages and programs that meet these needs. Lastly, these findings underscore the need for longitudinal studies to enhance our understanding how the dynamic interactions between space and time may shape contraceptive use during the transition to adulthood. |  |
| 10 | Trends and Determinants of Antenatal Care Service Use in Ethiopia between 2000 and 2016 | Tensae Mekonnen | 2019 | Ethiopia/ The Federal Democratic Republic of Ethiopia has nine regional states, two city administrations, 611 weredas (districts) and 15,000 Kebeles. | reproductive age women with a live birth 12 months | 30,643 | data from the EDHS for the years 2000, 2005, 2011 and 2016 | Maternal age Marital status Currently  Mother’s education Household Wealth index Mother’s employment Partner education Partner occupation Health knowledge factors Frequency of reading newspaper or magazine Need factors Contraceptive use  Intention to become pregnant | Factors that significantly influenced the use of ANC in Ethiopia include urban residence, high and middle household wealth index, secondary and above level of education, history of contraceptive use before pregnancy and plans not to have any more children in the future. |  |
| 11 | Contextual determinants of induced abortion: a panel analysis | Mar Llorente-Marrón | 2016 | Espania |  | a sample of 22 countries in Europe for the 2001-2009 period. | econometric analysis with panel data | national income/ female employment, civil status, migration | The differences in the national development of the regulatory laws of induced abortion explain most of the results obtained. Some examples of the differences in such effects are: information dissemination programs within the regular processes of sexual and reproductive health care; restrictions for abortion of pregnancies over 12 weeks; sexual information programs for young women and immigrants; number and geographical distribution of family planning centers; and peculiar behaviors related to cultural and religious aspects. |  |
| 12 | Long acting reversible contraception(LARC) use and  associated factors among married women of  reproductive age in Nepal | Rajan Bhandari | 2019 | Nepal | All married women aged 15–49 who were either permanent residents of the selected households or visitors who stayed in the households the night before the survey were eligible to be interviewed by DHS. | two-stage stratified cluster sampling in rural areas and three-stage stratified cluster sampling technique in urban areas , 13,089 women aged 15–49 were identified for individual interview; interviews were completed with 12,862 women, yielding a response rate of 98% | cross sectional | Age/number of live children/Education of women Education of Husband/Religion/Ethnicity/Occupation of women/Occupation of Husband /Wealth index/Media access with FP message/Future desire of Children/Knowledge about fertility | younger age women, those with low parity, having uneducated husband and, being in the household with low wealth quintile were less likely to use LARC |  |
| 13 | Racism, African American Women, and Their Sexual and Reproductive Health: A Review of Historical and Contemporary Evidence and Implications for Health Equity | Cynthia Prather | 2018 | USA | African American Women | peer-reviewed sources and books published in English only | REVIEW | This overview of historical healthrelated experiences of African American women is a first step in describing how the historical impact of racism links past events to present sexual and reproductive health outcomes. |  |  |
| 14 | Socioeconomic Disadvantage as a Social Determinant of Teen Childbearing in the U.S. | Ana Penman-Aguilar | 2013 | USA | teen girls | Medline, ERIC, PsychLit, and Sociological Abstracts databases for articles published from January 1995 to November 2011. | systematic review | low socioeconomic status, underemployment, low income, low education levels, neighborhood disadvantage, neighborhood physical disorder, or neighborhood-level income inequality | This review suggests that unfavorable socioeconomic conditions experienced at the community and family levels contribute to the high teen birth rate in the U.S. |  |
| 16 | Inequality in fertility rate and modern contraceptive use among Ghanaian women from 1988–2008 | Asamoah | 2013 | Ghana | Ghanaian women | Ghana Demographic and Health Survey (GDHS) 1988, 1993, 1998, 2003 and 2008 | cross sectional survey | rural–urban residence/ education and income | Equality in use of modern contraceptives increased from 1988 to 2008. In contrast, inequality in fertility rate increased from 1988 to 2008. It was also found that rural–urban residence gap in the use of modern contraceptive methods had almost disappeared in 2008, while education and income related inequalities remained. |  |
| 17 | Determinants of change in fertility pattern among women in Uganda during the period 2006–2011 | Paulino Ariho | 2018 | Uganda | women aged 15–49 years | 2006 and 2011 Demographic and Health Survey data for Uganda.. The samples were obtained using a two-stage cluster sampling process beginning with the selection of clusters, or enumeration areas, followed by the selection of households from each cluster . | cross sectional survey | Age/ Education level/Place of residence/ Religion/ Wealth quintile/Sex of household head/Current working status/Exposure to family planning messages/ Source of modern family planning methods/Age at first sex/Family size preference Age at first marriage/ Contraceptive use | The key contributors to the change in fertility were; changes in age at first marriage, age of women, education level attained, ideal number of children, exposure to family Ariho et al. Fertility Research and Practice (2018) 4:4 Page 10 of 11 planning messages, age at sexual debut, place of residence, wealth index and contraceptive use. |  |
| 18 | Modelling the proximate determinants of fertility for Brazil: The advent of competing preferences | Coutinho, R. Z. | 2018 | Brazil | women | Brazilian Demographic and Health Survey (DHS) of 1986 and 1996 and from the Pesquisa Nacional de Demografia e Saude (PNDS) of 2006. sample sizes: 12612 and 15575. | cross-sectional, | The proximate determinants of fertility are the biological and behavioral factors through which social, economic and environmental variables, the so-called “indirect” or ‘distal’determinants, affect fertility |  |  |
| 20 | Women’s reproductive health decisionmaking: A multi-country analysis of demographic and health surveys in subSaharan Africa | Eugene Kofuor Maafo Darteh | 2018 | subSaharan Africa | women of reproductive age (15–49 years) | Demographic and Health Survey (DHS) conducted from January 1, 2010 and December 31, 2016 in 27 countries in sub-Sahara African.N = 210,536 | cross sectional | Residence/Age/ Wealth status/ Education/ Religion/ Occupation/ Partner’s education/ | Residence, age, level of education, religion, occupation and partner’s education were found to be associated with women’s decision-making about sexual intercourse, condom use and reproductive health decision-making index |  |
| 21 | Socio – economic determinants of abortion among women in Mozambique and Ghana: evidence from demographic and health survey | Kwamena Sekyi Dickson | 2018 | n Mozambique and Ghana | women in their reproductive ages (15–49) | data from the 2014 Ghana and 2011 Mozambique Demographic and Health Survey for the study | cross sectional | Age-Wealth status-Level of education -Religion- Birth history- Frequency of reading newspaper or magazine- Frequency of listening to radio- Frequency of watching television- Marital status- Residence- Occupation | the odds of pregnancy termination were high among women with primary education, those in the older age groups, women who were Christians and women who were employed. Similarly, higher odds of pregnancy termination were found among ever married women, those who less than four births or more and those who have had access to social media (radio and television). |  |
| 24 | Magnitude and trends of inequalities in antenatal care and delivery under skilled care among different socio-demographic groups in Ghana from 1988 – 2008 | Benedict O Asamoah | 2014 | Ghana | women in fertility age | Ghana Demographic and Health Surveys (DHS) 1988, 1993, 1998, 2003, and 2008 | cross sectional survey | rural–urban gap - education- income- parity- | The increased income-related inequalities seen in the use of antenatal care and skilled birth attendance |  |
| 25 | Socioeconomic variations in female fertility impairment: a study in a cohort of Portuguese mothers | Sofia Correia | 2014 | Portugal - Porto Metropolitan Region | Portuguese mothers | 8647 babies and 8495 mothers assembled between April 2005 and August 2006 | population-based cohort | Age- Education (years)-Single women -Monthly income- Occupational level- Employment status- Planned pregnancy- Previous pregnancies- Age at menarche- Age at first sexual intercourse- Regular menstrual cycles- Self-reported health status before pregnancy- Pre-pregnancy body mass index -Smoking status 3 months before pregnancy | education might be important in understanding female fertility impairment, particularly among first-time pregnant women. the association is not totally explained by other socio-demographic and lifestyle characteristics that have been previously found to be important to disclose this relation. |  |
| 26 | Reproductive health service use and social determinants among the floating population: a quantitative comparative study in Guangzhou City | Huan Liu | 2014 | P.R.C: Guangzhou City | floating population | 453 members of the FP and 794 members of the residential population (RP) aged 18 to 50 years | cross sectional survey | Personal monthly income (RMB)- Educational level- Occupation- Age- Marital status- Minimum living guarantee enjoyment- Social insurance- Commercial insurance- SES- Average annual household income | a need still exists to help the FP with low SES to improve their RH knowledge and skills through access to public RH services |  |
| 27 | Analysis of economic determinants of fertility in Iran: a multilevel approach | Maryam Moeeni | 2014 | I.R.Iran | monogamous married couples | data sources: 1) the 2010 HEIS, 2) the 2010 IrMIDHS, 3) the National Census of Population and Housing, and 4) the Iran statistical year books provided by Statistical Center of Iran. 13952 households containing living within thirty provinces. | cross sectional survey | Number of children in each household- Age \_ Years at risk of fertility  Literate  Both spouses are literate Employed  Gender composition of children Income deciles | t three groups of determinants influence fertility behavior of Iranian households. The first group consists of economic factors either at the micro or at the macro levels. Especially the findings reveal that: 1) preferences of parents has shifted towards fewer but more qualified children, which confirms the Becker’s theory of “quality and quantity of children”, and 2) economic conditions at the macro level such as house rent prices and value added in manufacturing establishments are related to the number of children. Second, distribution of intra-household bargaining power has a strong influence  Moeeni et al. 142 International Journal of Health Policy and Management, 2014, 3(3), 135–144 on fertility in Iran. Spouses exercise their power, measured through extra-household indices of gender gap to achieve their desired number of children. As gender gap indices at provincial level increase, wives’ power in household decisionmaking falls, resulting in larger number of children which implies that Iranian women have stronger preference for fewer children than their husbands. Finally, although there is no difference between the number of children among urban and rural households, the findings yield a support for the effective role of the other demographic determinants such as literacy, social norms of household size, and religion in fertility behavior of Iranian households. |  |
| 28 | Inequity in India: the case of maternal and reproductive health | Linda Sanneving | 2013 | India |  | 7,071 articles-peer-reviewed, published literature was conducted using the electronic databases, PubMed and Popline- | systematic review | Economic status, gender, education, social status (registered caste or tribe), and age (adolescents). | This review shows that there is an overlap in how economic status; gender and social status interact when influencing use of and access to maternal and reproductive health care. |  |
| 29 | Inequities in utilization of reproductive and maternal health services in Ethiopia | Firew Tekle Bobo | 2017 | Ethiopia | women in reprodutive age | Data from Ethiopia demographic health survey 2014 | cross sectional survey | Wealth index- Levels of education- Urban/rural- Use of modern contraceptive methods- Antenatal care by skilled provider- Skilled birth attendance- Birth at health facility- Postnatal care | Equity of reproductive and maternal health services were assessed in terms of four socio-economic determinants; wealth quintile, maternal education, administrative region and place of residence. Strategically targeting social determinants of health with special emphasis to women education and economic empowerment will significantly contribute for altering the current situation favourably. |  |
| 30 | Use of modern contraceptives among married women in Vietnam: a multilevel analysis using the Multiple Indicator Cluster Survey (2011) and the Vietnam Population and Housing Census (2009) | Lan Thi Hoang Vu | 2016 | Vietnam | married women in Vietnam | Data from different national surveys (Vietnam Population and Housing Census, Vietnam Living Standard Survey, and Multiple Indicator Cluster Survey)N=8,341 | Cross sectional | Ethnicity Residence Age  Education  Having any living son  Number of living children 3 Use of contraceptive |  |  |
| 31 | Evaluating the social determinants of teenage pregnancy: a temporal analysis using a UK obstetric database from 1950 to 2010 | Stephen J McCall | 2014 | united kingdom | women aged less than 20 years | data from the Aberdeen Maternity Neonatal Databank (AMND) | a population-based study | Social Class based on Occupation Marital status Ethnicity Smoking status Scottish Index of Multiple Deprivation model | Teenage pregnancy is known to have a strong association with deprivation |  |