Reproductive and maternal health encompass women’s health during reproductive years, from adolescence until pregnancy and childbirth. The continuum of care approach, which acknowledges the need for health services across the reproductive life span of women, is essential in order to improve reproductive and maternal health. The main aim for this thesis is to identify the epidemiological and economic impact of several health interventions to improve women’s health in different settings. We distinguish the content of this thesis into two main sections; the first section ‘reproductive health’ focuses on family planning, and the second section ‘maternal health’ on gestational hypertension and pre-eclampsia. The setting for the first section is low and middle income countries (L-MICs), as the unmet need for modern family planning is still an important issue in these countries. The latter section applies to high-income settings, in alignment with the development of a novel test for pre-eclampsia screening that is currently tested for clinical practice in several high-income countries (HICs). The main aim in the reproductive health section is to assess the cost-effectiveness of scaling up family planning interventions in L-MICs. The effort to scale up family planning programs to reduce the unmet need for contraception is still considered a priority in this setting. Our systematic review as described in Chapter 2, indicates that interventions to reduce the unmet need for family planning in L-MICs appear to be cost-effective, although this evidence is unfortunately only supported by a very limited number of economic evaluation studies with various outcome measures, which hinders comparability. Motivated by this, we analyzed the long-term cost-effectiveness of improved family planning interventions in two different L-MICs i.e. Indonesia and Uganda (Chapter 3), and employed a universal and standardized health outcome measure, to allow comparability across different interventions, countries and settings. Our decision model confirms the findings from the review, that reducing unmet need for family planning would be a cost-effective approach and potentially cost saving, even in countries with distinctive patterns in contraceptive prevalence, unmet need and cost-effectiveness thresholds. The results from this study, combined with evidence from previous cost-effectiveness studies in the review, provide support to scale up family planning interventions in L-MICs to eventually improve women’s health in general.

Within the maternal health section, pharmacoepidemiological and health economic aspects of gestational hypertension and pre-eclampsia were explored. Chapter 4 evaluates the association between antidepressant use during pregnancy and the risk of developing gestational hypertension. We
found that there is increased risk of developing gestational hypertension for women with prolonged use of antidepressants during the first 20 weeks of gestation. This finding along with other previous studies should be considered in the risk-benefit assessment of antidepressant medication during pregnancy.

Along with the development of a clinically robust predictive blood test using novel metabolomics and proteomics biomarkers to assess the risk for pre-eclampsia in nulliparous across Europe (IMPROvED), we investigated the health economics of pre-eclampsia in the latter chapters of the thesis. The comprehensive current picture of the cost-effectiveness of screening, diagnosis and treatment options of pre-eclampsia is presented in Chapter 5. It was found that novel predictive biomarkers for screening and diagnosis are promising and could allow cost-effective interventions to be implemented, even though uncertainties remain. In regards to treatment, the use of magnesium sulphate for seizure prevention and treatment of eclampsia was demonstrated to be cost-effective for severe cases but in non-severe cases, results were equivocal. In addition, it was suggested that delivery induction is less costly and more effective compared to expectant monitoring in women with term pre-eclampsia. However, due to the very limited number of studies on the cost-effectiveness of screening or any treatment options for pre-eclampsia, as well as diversity in interventions and outcome measures, a final conclusion is difficult to obtain. Chapter 6 describes the early cost-effectiveness analysis of screening for pre-eclampsia in four countries, i.e. The United Kingdom, The Netherlands, Ireland and Sweden. We conducted exploratory analyses where we assessed the minimum performance benchmark, for the test to be considered cost-effective. We also determined the potential drivers of the cost-effectiveness of the new screening test. The effectiveness of aspirin prophylactic, prevalence of pre-eclampsia, the accuracy of the new screening test and cost of regular antenatal care appear to be the most considerable driving factors for the cost-effectiveness. The methodology, parameters and design of this health economic model can be considered in the future economic evaluation, when accurate data for the test has become available.

In general, the analyses provided in this thesis could serve as inputs to a decision maker at any level to support evidence-based development of strategies and priority actions to improve reproductive and maternal healthcare in diverse settings. This thesis also emphasizes the need for further and more comprehensive research in the field of reproductive and maternal health as well as progressive advocacy on the importance of more quality and functional ties between reproductive and maternal healthcare services, globally.