Estimating the Cost of Preeclampsia in the Healthcare System

Cross-Sectional Study Using Data From SCOPE Study (Screening for Pregnancy End Points)

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Abstract—To estimate the cost of preeclampsia from the national health payer's perspective using secondary data from the SCOPE study (Screening for Pregnancy End Points). SCOPE is an international observational prospective study of healthy nulliparous women with singleton pregnancies. Using data from the Irish cohort recruited between November 2008 and February 2011, all women with preeclampsia and a 10% random sample of women without preeclampsia were selected. Additional health service use data were extracted from the consenting participants' medical records for maternity services which were not included in SCOPE. Unit costs were based on estimates from 3 existing Irish studies. Costs were extrapolated to a national level using a prevalence rate of 5% to 7% among nulliparous pregnancies. Within the cohort of 1774 women, 68 developed preeclampsia (3.8%) and 171 women were randomly selected as controls. Women with preeclampsia used higher levels of maternity services. The average cost of a pregnancy complicated by preeclampsia was €5243 per case compared with €2452 per case for an uncomplicated pregnancy. The national cost of preeclampsia is between €6.5 and €9.1 million per annum based on the 5% to 7% prevalence rate. Postpartum care was the largest contributor to these costs (€4.9–€6.9 million), followed by antepartum care (€0.9–€1.3 million) and peripartum care (€0.6–€0.7 million). Women with preeclampsia generate significantly higher maternity costs than women without preeclampsia. These cost estimates will allow policy-makers to efficiently allocate resources for this pregnancy-specific condition. Moreover, these estimates are useful for future research assessing the cost-effectiveness of preeclampsia screening and treatment. **(*Hypertension*. 2017;70:1243-1249. DOI: 10.1161/HYPERTENSIONAHA.117.09499.)**

Key Words: hypertension ■ medical records ■ pregnancy ■ prevalence ■ research

Preeclampsia is defined as a pregnancy-specific, multisystem disorder characterized by hypertension (>140/90 mm Hg) accompanied by new onset of proteinuria (>300 mg in 24 hours) after 20 weeks gestation.[1] Although the exact cause of preeclampsia is unknown, there are many established risk factors, nulliparity, obesity, preexisting hypertension, a prior history and family history of preeclampsia, existing autoimmune conditions, and extremes of maternal age.[2] The disorder is responsible for 70 000 maternal deaths and 500 000 infant deaths globally per annum.[3,4] In Ireland, preeclampsia affects an estimated 2% to 3% of all pregnancies and 5% to 7% of nulliparous pregnancies.[5]

Delivery is the only mode of treatment for preeclampsia, and previous international studies indicate a consequent higher rate of resource use among women with this pregnancy-related condition compared with women without the condition. Economic studies report preeclampsia accounts for 20% occupancy of antepartum hospital admissions, 25% of intensive care unit admissions, and 20% occupancy of neonatal intensive care unit (NICU) cots in the United Kingdom.[6] In the United States, Zhang et al[7] (2003) found that a cesarean section was indicated for more than half of women with preeclampsia and hospitalization costs for preeclampsia management were estimated at US$11 208 per woman on average.[8] Focusing primarily on intrapartum care and neonate outcomes, a Canadian study estimated that preeclampsia accounts for an additional cost of CaD$3.1 million annually to the health system.[9] Although previous studies assumed the perspective of the healthcare system, the range of maternity services included were limited and did not include all resources used directly by women with preeclampsia during pregnancy. Despite the rising incidence of preeclampsia and in context of overstretched healthcare budgets, there has been minimal research estimating the cost of preeclampsia based on actual resource use by women with preeclampsia during the antepartum, peripartum, and postpartum stages of maternity.

This article estimates the level of health services used during pregnancies complicated by preeclampsia compared with

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uncomplicated pregnancies. Unit costs are applied to value resource use to estimate the total cost of preeclampsia from the national healthcare provider's perspective.

Methods

Secondary data analysis of cross-sectional data from the Irish cohort of the SCOPE study (Screening for Pregnancy End Points). SCOPE is an international observational prospective cohort study of 5690 pregnant women conducted in Auckland (New Zealand), Adelaide (Australia), Manchester, London, and Leeds (United Kingdom), and Cork (Republic of Ireland).[10] The primary aim of SCOPE was to develop screening tests to predict preeclampsia, small for gestational age (SGA) infants and spontaneous preterm birth. Ethical approval was obtained from local ethics committees at each center, and all participants provided informed written consent.[10] For the purpose of this study, an amendment was sought from the Cork Research Ethics Committee and approval was granted to collect additional health service use data on those participants in Ireland who had consented to follow up and access to their medical records (Electronic Content Management 3(d) 19/05/15).

Participants

SCOPE participants were healthy, nulliparous women with singleton pregnancies recruited between November 2008 and February 2011 in Cork, Ireland (n=1774). Women accessing antepartum care through hospital antepartum clinics, obstetricians, general practitioners, or community midwives were recruited at 14 to 16 weeks of gestation. Those who agreed to participate were interviewed and examined by a research midwife at 14 to 16 and 19 to 21 weeks of gestation and underwent ultrasound examination at 19 to 21 weeks of gestation.

Exclusion criteria included preexisting risk factors for preeclampsia, delivery of an SGA infant, or spontaneous preterm birth because of underlying medical conditions (chronic hypertension requiring antihypertensive drugs, diabetes mellitus, renal disease, systemic lupus erythematosus, antiphospholipid syndrome, sickle cell disease, HIV), previous cervical knife cone biopsy, ≥3 terminations of pregnancy or ≥3 miscarriages, current ruptured membranes, known major fetal anomaly or abnormal karyotype, or an intervention that might modify the pregnancy outcome (eg, aspirin, cervical suture).[11]

Data

Data were collected on health, psychosocial, and economic characteristics of women at 14 to 16 and 19 to 21 weeks of gestation. Using the questionnaire at 15 weeks, data included age (in years) and tertiary education (yes or no). Socioeconomic status was measured using the New Zealand socioeconomic index (≥24 or <24) with a higher score indicating a higher socioeconomic status. Type of maternity care cover (public or private) was collected, and body mass index (BMI) was measured using WHO criteria (underweight BMI <18.5 kg/m^2, normal BMI ≥18.5–<25 kg/m^2, overweight BMI ≥25–<30 kg/m^2, and obese BMI ≥30 kg/m^2). Lifestyle factors were also collected, smoking (smoking at 14- to 16-week visit) and alcohol consumption (consuming alcohol at 14- to 16-week visit). During the peripartum stage, data were collected on pregnancy outcome data in terms of onset of delivery (induced onset and epidural) and mode of delivery (unassisted vaginal birth, assisted vaginal birth, prelabor cesarean section, or during labor cesarean section). Infant measurements were recorded by research midwives, usually within 72 hours of birth. At the postpartum stage, data were collected on NICU admissions (yes or no) and length of stay (in days). Stringent data monitoring included individually checking all data for each participant and using a customized software program to detect any systematic data entry errors. Full details of the data set have been described previously.[10]

Additional health service use data were extracted from the hospital administrative database and medical records for all women with preeclampsia and a 10% random sample of women in the SCOPE cohort without preeclampsia. Information extracted from medical records included the number of antepartum outpatient visits (number of visits), antepartum inpatient admissions (yes or no), length of stay for mothers with an inpatient admission (in days), number of admissions to the fetal assessment unit (day-care unit providing care to women with pregnancy complications) admissions, number of antepartum scans, administration of an epidural (yes or no), and episiotomy (yes or no). Mothers length of stay post-delivery (in days) and number of postpartum outpatient visits were extracted from the hospital database ≤12 months post-delivery.

Cost estimates from 3 Irish studies were applied to calculate the resources used by the women.[12–14] The first was an economic evaluation of the costs and benefits of different models of maternity care in Ireland.[13] The study developed a resource use inventory detailing all staff inputs and other resource use inputs during an uncomplicated pregnancy and childbirth. The inventory was valued using both microcosting and gross-costing techniques.[13] Unit costs for antepartum scans and antepartum visits were extracted from this study (Table 1). Unit costs for epidurals, unassisted and assisted vaginal births, cesarean sections, and episiotomies were obtained from an economic evaluation comparing the cost-effectiveness of 2 birth delivery methods.[12] The study collected primary cost data also using both microcosting and gross-costing techniques. Mother's cost-per-bed day, outpatient cost-per-day, and NICU costs were estimated using a document detailing standard unit costs for public hospital care in Ireland.[14]

Costs were extrapolated to examine the cost of preeclampsia at a national level. As 70% of preeclampsia cases occur in nulliparous pregnancies,[15] cost extrapolation was estimated based on the number of singleton nulliparous livebirths in Ireland. A 2016 report published by the Irish National Peripartum Reporting System reported 24 832 singleton nulliparous pregnancies in Ireland in 2014.[16] In accordance

Table 1. Unit Costs and Sources

Services	Cost per Unit
Antepartum services	
No. of antepartum outpatient visits*[13]	€19.60
Length of inpatient antepartum admissions stay*[14]	€379.22
No. of antepartum scans*[13]	€10.78
No. of FAU visits*†	€225
Peripartum services	
Epidural*[12]	€215.07
Induced onset‡[12]	€168.01
Spontaneous birth‡[12]	€207.64
Operative birth‡[12]	€245.48
Elective cesarean section‡[12]	€595
Emergency cesarean section‡[12]	€553.81
Episiotomy*[12]	€85.31
Postpartum services	
Mother's length of stay post-delivery*[14]	€379.22
Infant's length of stay*	See §
Infant admission to NICU‡[14]	Based on birthweight and length of stay
Infant's length of stay in NICU‡[14]	Length of stay×Ready Reckoner per diem cost
No. of outpatient hospital visits*[14]	€131.12

FAU indicates fetal assessment unit; and NICU, neonatal intensive care unit.
*Data extracted from medical records.
†See Discussion for cost description.
‡Data extracted from SCOPE study (Screening for Pregnancy End Points).
§Cost of infant's length of stay is covered under mother's maternity stay.

with the most recently available statistics on preeclampsia prevalence in the nulliparous population, a prevalence rate of 5% to 7% was selected.[5]

Resource use and costs were divided into the antepartum, peripartum, and postpartum stages of maternity care (Table 1). This research defines antepartum care as care received from the first point of antepartum contact in the hospital setting until the onset of delivery. Peripartum care includes the onset of delivery and delivery, whereas postpartum care is defined as maternity care received ≤12 months post-delivery. As the study assumed the perspective of the national healthcare provider, only direct costs to the government were considered. All costs included in the study are in 2016 euro prices.

Statistical Methods

Descriptive statistics were used to compare the sociodemographic profile of women with and without preeclampsia based on maternal age, education, lifestyle (smoking and alcohol), BMI, and maternity healthcare cover. To calculate costs for each study participant, the unit cost assigned to each resource was multiplied by the number of units used. These costs were summed to calculate total maternity cost for each woman.[10] Discounting was rendered unnecessary as analysis only covered the duration of a pregnancy and consequently the time horizon is not >1 year.[17] Sensitivity analysis was implemented using different assumptions around preeclampsia prevalence rates. Stata 13 was used to conduct the statistical analysis.

Results

Within the Irish SCOPE cohort (n=1774), there were 68 women with preeclampsia. This resulted in a 3.8% prevalence rate. One participant was excluded from the analysis because of lack of consent for follow-up (n=67). Of the 10% random sample of women selected from the remaining participants, 5 were excluded because of missing health service use data on the hospital administrative database (n=166).

Maternal Characteristics and Birth Outcomes

Maternal characteristics based on preeclampsia diagnosis are presented in Table 2. Women in the preeclampsia and nonpreeclampsia groups were similar with respect to age, education, maternity care cover, smoking, and alcohol levels. However, the prevalence of obesity was almost twice as high among the preeclampsia group (21% versus 12%).

In terms of birth outcomes, women with preeclampsia had a lower gestational age at birth compared with women without preeclampsia (38 versus 40 weeks). Infants born to women with preeclampsia had a lower average birthweight (3029 versus 3513 g) and were 3× as likely to be SGA infants compared with infants born to women without preeclampsia (27% versus 9%, respectively). A subanalysis confirmed that the proportion of SGA neonates was higher among obese women with preeclampsia, whereas the proportion of large for gestational age infants was lower among obese women with preeclampsia.

Resource Use

Table 3 presents statistics on resource use activity for women with and without a preeclampsia diagnosis. Women with preeclampsia received twice the amount of antepartum scans compared with women without preeclampsia (4 scans versus 2 scans) yet used less antepartum visits (6 visits versus 5 visits) compared with women without a diagnosis.

Table 2. Maternal Characteristics and Birth Outcomes by Preeclampsia Diagnosis

Maternal Characteristics and Birth Outcomes	No PE (n=166)	PE (n=67)	Overall Non-PE Cohort (n=1706)
Maternal age in years, mean (SD)	30 (4.2)	30 (4.4)	30 (4.5)
Tertiary education	145 (87.4)	59 (88.1)	1516 (88.9)
Socioeconomic index at lowest quintile	24 (14.5)	13 (19.4)	292 (17.1)
Maternity care cover			
Public	125 (75.3)	51 (76.1)	1282 (75.2)
Private	41 (24.7)	16 (23.9)	424 (24.9)
BMI at 14- to 16-wk visit			
≤18.5	2 (1.2)	0	22 (1.3)
>18.5–<25	94 (56.6)	28 (41.8)	1008 (59.1)
≥25–<30	51 (30.7)	25 (37.3)	469 (27.5)
≥30	19 (11.5)	14 (20.9)	207 (12.1)
Smoking at 14- to 16-wk visit	14 (8.43)	5 (7.46)	172 (10.1)
Alcohol at 14- to 16-wk visit	23 (13.86)	9 (13.43)	283 (16.6)
Gestational age in weeks, median (IQR)	40.1 (39.3–41)	38.8 (37.1–40.3)	40 (39.3–41)
Birthweight in grams, mean (SD)	3512.7 (544.4)	3028.8 (773.8)	3452 (557.2)
Birthweight by centile, n (%)			
SGA	15 (9.1)	18 (27.3)	172 (10.1)
AGA	130 (78.8)	45 (68.2)	1348 (79.0)
LGA	20 (12.1)	3 (4.6)	183 (10.7)

AGA indicates average for gestational age; BMI, body mass index; IQR, interquartile range; LGA, large for gestational age; PE, preeclampsia; and SGA, small for gestational age.

Table 3. Resource Use

Resource	No PE (n=166)	PE (n=67)	*P* Value*
Antepartum services			
Antepartum visit, mean (SD)	6.0 (1.8)	5.3 (2.2)	0.014
Antepartum admission (LOS)†, median (IQR)	2 (1–3.5)	3 (2–5)	0.224
Antepartum scans, median (IQR)	2 (1–3)	4 (2–5)	<0.001
FAU visits			
0	118 (94.4)	46 (90.2)	0.58
1	5 (4.0)	4 (7.8)	
2	1 (0.8)	1 (1.96)	
3	1 (0.8)	0	
Peripartum services			
Epidural, n (%)	55 (33.3)	14 (21.2)	0.07
Induced onset, n (%)	16 (9.6)	7 (10.5)	0.85
Unassisted vaginal birth, n (%)	54 (32.5)	27 (40.3)	0.26
Assisted vaginal birth, n (%)	70 (42.2)	10 (14.9)	<0.001
Prelabor cesarean section, n (%)	12 (7.2)	18 (26.9)	<0.001
Labor cesarean section, n (%)	30 (18.1)	12 (17.9)	0.98
Episiotomy, n (%)	61 (37.0)	10 (14.9)	0.001
Postpartum services			
Maternal length of stay, median (IQR)	3 (2–4)	4 (3–4)	0.001
No. of days			
0–1	6 (3.6)	4 (6.0)	<0.001
2–3	111 (67.3)	23 (34.4)	
>3	48 (29.1)	40 (59.7)	
NICU admission, n(%)	16 (9.6)	19 (28.4)	<0.001
Days in NICU, median (IQR)	3 (2–6)	6 (2–20)	0.22
Postpartum outpatient visit			
0–1	156 (94.6)	60 (90.9)	0.58
2–3	4 (2.42)	3 (4.6)	
>3	5 (3.03)	3 (4.6)	

FAU indicates fetal assessment unit; IQR, interquartile range; LOS, length of stay; NICU, neonatal intensive care unit; and PE, preeclampsia.

*P values are comparisons between groups with χ^2 or Student t test.

†For those with an admission.

Among women with preeclampsia, mode of delivery was 40% unassisted vaginal, 15% assisted vaginal delivery, 27% prelabor cesarean section, and 18% cesarean section during labor. In uncomplicated pregnancies, mode of delivery was 33% unassisted, 42% assisted, 7% prelabor cesarean section, and 18% cesarean section during labor. Because of higher levels of vaginal births among women without preeclampsia (75%) compared with women with preeclampsia (55%), episiotomy rates were higher among women without preeclampsia (37% versus 15%).

In the postpartum period, women with preeclampsia incurred a longer hospital stay with 60% staying longer than the national average (3 days)[16] compared with 30% of women without a diagnosis. The average length of stay for women with preeclampsia was 4 days compared with women without preeclampsia who had an average 3-day postpartum stay. A higher proportion of infants born to mothers with preeclampsia were admitted to the NICU (28% versus 10%) and these infants spent twice as long in the unit compared with infants born as a result of an uncomplicated pregnancy (6 versus 3 days).

Cost Estimates

On the basis of resource use for each observation, the estimated average antepartum cost (including antepartum visits, antepartum admissions, length of stay, antepartum scans, and fetal assessment unit admissions) for a woman with preeclampsia is €793 compared with €350 for an uncomplicated pregnancy (Table 4). Peripartum care (including the onset and mode of delivery) is estimated to cost €455 for a pregnancy complicated by preeclampsia and €433 for an uncomplicated pregnancy. Finally, postpartum care (including mothers' length of stay, infants' NICU admission, length of stay in the unit and number of mothers' outpatient visits ≤12 months post-delivery) costs €3995 for a woman with preeclampsia compared with €1669 for a woman without the condition. Aggregating antepartum, peripartum, and postpartum costs for each woman in the sample, a pregnancy complicated by preeclampsia is estimated to cost an average €5243 per case compared with an uncomplicated pregnancy which is estimated to cost an average €2452 per case.

Extrapolation of Costs

Using the aforementioned costs and a national preeclampsia prevalence rate of 5% to 7% in nulliparous pregnancies (Table 5), pregnancies complicated by preeclampsia cost the national healthcare provider between €6.5 and €9.1 million annually. At the antepartum stage, preeclampsia costs between €0.9 and €1.3 million annually; at the peripartum stage, the conditions cost €0.5 to €0.7 million annually, whereas at the postpartum stage, pregnancies complicated by preeclampsia cost the healthcare system €4.9 to €6.9 million annually.

Discussion

In this article, we estimated that preeclampsia costs the Irish health system between €6.5 and €9.1 million per annum and that women with preeclampsia use more health services during their pregnancies (antepartum scans, cesarean sections, longer hospital stays for mother, and increased number of admissions and longer NICU stays compared with women without the condition). The average cost of a pregnancy complicated by preeclampsia is €5243 per case, whereas for women without preeclampsia, the average maternity cost is €2452 per case.

The study shows that postpartum costs are the highest contributors to overall maternity costs for women with preeclampsia. NICU costs generate the largest proportion of these postpartum costs. As preeclampsia is associated with SGA infants and preterm births,[10] it is crucial that admission and extensive stays in NICUs are carefully accounted for in

Table 4. Cost Estimates

Cost	Non-PE (Mean)	95% CI	PE (Mean)	95% CI	Differences Between Mean Costs	*P* Value*
Antepartum	€350	€219–€480	€793	€524–€1063	€443	0.0012
Peripartum	€433	€406–€459	€455	€410–€499	€22	0.40
Postpartum	€1669	€1184–€2154	€3995	€2388–€5602	€2326	<0.001
Total†	€2452	€1947–€2957	€5243	€3596–€6890	€2791	<0.001

CI indicates confidence interval; and PE, preeclampsia.

**P* values are comparisons between groups with χ^2 or Student *t* test.

†Total maternity cost is a combination of antepartum, peripartum, and postpartum costs. All costs consist of maternal costs only, except for postpartum costs which include maternal and neonate costs, in terms of an neonatal intensive care unit (NICU) admission. As stated in Table 1, the cost of the infant's length of stay is included under the mother's length of stay. Total average cost including maternal costs (excluding NICU admission cost) is (non-PE: mean=€1970; 95% CI, €1808–€2133; PE: mean=€2785; 95% CI, €2476–€3093; *P*=<0.001). NICU admission costs are based on birthweight and length of stay in NICU. Because of outliers in length of stay in the NICU, there is consequently a large range in NICU costs. This is shown when estimating average NICU costs in isolation. Total average NICU admission (Table 2 for descriptive statistics) costs are as follows: non-PE: mean=€4998; 95% CI, €176–€9821; PE: mean=€8670; 95% CI, €4286–€13054; *P*=0.2416.

resource and budget allocation for pregnancies complicated by preeclampsia. Women without preeclampsia had higher rates of antepartum outpatient visits than women with the condition. As women with preeclampsia are more likely to be admitted to hospital and deliver pre-term, the uncomplicated group are more likely to receive more standard antenatal care.

Despite a large difference in cesarean section rates for women with and without preeclampsia (44.8% and 25.3%, respectively), peripartum costs for women with and without the condition are similar (€455 versus €433). Although this comparable peripartum cost for women with and without preeclampsia is unexpected, a plausible reason for this may be because of high rates of prelabor cesarean sections and similar unit costs for both prelabor cesarean sections and emergency cesarean sections, €595 and €553.81, respectively.

This study has many strengths. The SCOPE database consists of low-risk nulliparous women. Preeclampsia predominantly occurs in the nulliparous population; therefore, we are confident that our study sample is representative of the target population and have used appropriate prevalence rates for the extrapolation of costs.

In this article, we quantify preeclampsia costs based on resources used directly by women with preeclampsia and apply unit costs to value this resource use. Other attempts to estimate the cost of preeclampsia in national healthcare systems have done so using population-based resource use data and the application of average healthcare costs. The results of these studies need to be interpreted with caution as resource use is not measured based on services used directly by women with the condition at each stage of pregnancy. Moreover, as these studies used average costs rather than unit costs, any changes in the treatment or management of preeclampsia which may affect overall cost will not be reflected in their cost estimates. In contrast, our article is to the best of our knowledge, one of the first papers that estimates the cost of preeclampsia based on actual resource use valued using unit costs rather than average costs. This provides a cost-per-pregnancy case and allows us to estimate the cost of preeclampsia at a national level to allow policy-makers to ensure adequate budget allocations for this condition.

Table 5. Extrapolation of Costs

Prevalence	Stage	No Preeclampsia	Preeclampsia	Excess Cost of Preeclampsia
5% (n=1242 births)	Antepartum	€434 700	€984 906	€550 206
	Peripartum	€537 613	€564 928	€27 315
	Postpartum	€2 072 898	€4 961 790	€2 888 892
	Total	€3 045 211	€6 511 624	€3 466 413
6% (n=1490 births)	Antepartum	€521 500	€1 181 570	€660 070
	Peripartum	€645 135	€677 914	€32 779
	Postpartum	€2 486 810	€5 952 550	€3 465 740
	Total	€3 653 445	€7 812 034	€4 158 589
7% (n=1738 births)	Antepartum	€608 300	€1 378 234	€769 934
	Peripartum	€752 658	€790 899	€38 231
	Postpartum	€2 900 722	€6 943 310	€4 042 588
	Total	€4 261 680	€9 112 443	€4 850 753

The data used to inform costs were derived from data collected using microcosting and gross-costing techniques.[12–14] The cost estimates used are the most up-to-date cost information on antepartum, peripartum, and postpartum care[12–14] and are assumed to represent the cost accruing to the healthcare provider for preeclampsia cases in Ireland. Accurate up-to-date preeclampsia cost estimates are essential given the rising incidence of preeclampsia, reflecting older and more obese mothers and in context of already overstretched healthcare budgets. These estimates can be used to guide policy-makers and the government about resource and budget allocations for preeclampsia in the future. In addition to estimating the cost of pregnancy complicated by preeclampsia, the article provides the most up-to-date estimate for an uncomplicated pregnancy in Ireland because of the inclusion of the comparator group.

The use of patient-level data compared with population-based estimates strengthens the results for use in future preeclampsia studies. A study comparing the use of patient-level data to average population profiled within a type 2 diabetes mellitus simulation model reports different costs when using both sources of data. Economic evaluations of treatments based on population-based data can lead to biased results. Patient-level data enable accurate simulation of patient characteristics and treatment effects more so than population-based estimates.[18]

There are some limitations to the study. As stated, SCOPE consists of low-risk nulliparous women with singleton pregnancies. Although singleton nulliparous women are representative of the target population, we acknowledge that the study does not include multiparous women and likely underrepresents more complex pregnancies underestimating the cost of preeclampsia.

The fetal assessment unit is a day-care unit that provides care to women with pregnancy complications. Sourcing a unit cost for an admission to the fetal assessment unit proved to be difficult as the services provided differ depending on the pregnancy complication. Even if it were possible to source a unit cost based on the service received in the fetal assessment unit, the variable collected in SCOPE was categorical in nature measuring the number of fetal assessment unit admissions. Consequently, we could not calculate the cost of each admission based on the resources used during each admission. Because of the lack of cost data and limited nature of the variable, we applied the average out-of-pocket cost a privately insured patient pays to receive this service (Table 4). Although this may not capture the full government cost for a fetal assessment unit admission, it is assumed that the cost reflects a proportion of the cost.

It is also acknowledged that this study does not consider nonhealth direct costs, indirect costs (productivity losses), or informal care costs incurred by the patient or society as a whole. Although the study explicitly estimated the cost of preeclampsia to the healthcare provider and maternity care costs are assumed to be the biggest contributor to these costs, future studies should incorporate nonhealth direct costs, indirect costs, and informal care costs to include a broader perspective beyond that of the national healthcare provider. As this research assumed the perspective of the national healthcare provider, only direct costs to the government were included.

Perspectives

We present what we think is the most comprehensive up-to-date estimate on the cost of preeclampsia to the health system. The results are important for Irish and international healthcare systems but particularly in the Irish healthcare system where the budget is consistently overrun. Resource use monitoring and subsequent allocation of scarce resources need to be controlled and monitored. The results of our study will be useful to future research that seeks to estimate the cost-effectiveness of preeclampsia screening, treatment, and interventions.

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Disclosures

None.

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Novelty and Significance

What Is New?

- This study represents the most comprehensive up-to-date cost of preeclampsia in the Irish healthcare system. Resource use is measured and valued based on healthcare services used directly by women with preeclampsia during the antepartum, peripartum, and postpartum stages of maternity.

What Is Relevant?

- Despite the rising incidence of preeclampsia and in context of overstretched healthcare budgets, there has been minimal research estimating the cost of preeclampsia based on actual resource use by women with preeclampsia. The cost estimates from this study are useful for future research assessing the cost-effectiveness of preeclampsia screening and treatment.

Summary

The average cost of a pregnancy complicated by preeclampsia was €5243 per case compared with an uncomplicated pregnancy which was €2452. At a national level, we estimate that preeclampsia costs the Irish health system between €6.5 and €9.1 million per annum.