

# How Costly is the First Prenatal Clinic Visit? Analysis of Out-of-Pocket Expenditure in Rural Sri Lanka - A Country With Free Maternal Health Care

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## Research Article

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# Abstract

**Background:** This study aimed to determine the magnitude of and factors associated with out-of-pocket expenditure (OOPE) during the first prenatal clinic visit among pregnant women in Anuradhapura district, Sri Lanka, which provides free maternal healthcare.

**Methods:** The study design was a cross-sectional study, and the study setting was 22 Medical Officers of Health areas in Anuradhapura District, Sri Lanka. Data of 1,389 pregnant women were analyzed using descriptive statistics and non-parametric tests.

**Results:** The mean OOPE of the first prenatal clinic visit was USD 8.12, which accounted for 2.9% and 4.5% of the household income and expenditure, respectively. Pregnant women who used only government-free health services had an OOPE of USD 3.49. A significant correlation was recorded between household expenditure ( $r_s=0.095$ ,  $p=0.002$ ) and the number of pregnancies ( $r_s=-0.155$ ,  $p<0.001$ ) with OOPE.

**Conclusion:** Despite having free maternal services, the OOPE of the first prenatal clinic visit is high in rural Sri Lanka. One-fifth of pregnant women utilize private health services, and pregnant women who used only government-free maternal health services also spend a direct medical cost.

## Background

The concept of out-of-pocket expenditure (OOPE) on health care refers to the payments made by individuals and families for medical services during a specified period (1). The World Bank defines OOPE as 'any direct payout by households, including gratuities and in-kind payments, to health care providers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups' (2, 3). OOPE is considered a vital issue in the global health agenda, as it impedes enhancing the population health most effectively under the society's available resources and competing needs (4).

OOPE exerts its negative consequences at the individual, family, community, and national levels (5). Poverty, indebtedness, and unbearable household budget (4, 6, 7), changing the household consumption behavior (8), misuse of health care resources, reducing demand for health care (5, 9–15), barriers to accessing health care facilities (6, 9, 16, 17) are some of the implications (5). The existence of substantial OOPE in countries with free health care policies (6, 8, 9, 16, 18) and failures to achieve global health-related goals, Universal Health Coverage and the Sustainable Development Goals (SDGs)-goal 3, and Good Health and Wellbeing also need to be understood (19, 20).

The influence of OOPE is further highlighted in the sub-sectors of essential health care, such as in the provision of maternal health services (21, 22). Generally, OOPE in maternal health is referred to all the direct monetary expenditures incurred by a woman or her family during the pregnancy (18, 23). The OOPE in maternal health can divide into *direct medical expenses* and *direct non-medical expenses*.

Direct medical OOPE includes the cost of the consultation, laboratory tests, treatments, drugs, and consumables. It also includes charges for admission, hospital stay, investigations, and treatment and management (5). Direct non-medical OOPE is comprised of the cost of traveling, food and lodging of the pregnant mother or family members/accompanying person, accommodation, and cost for servant/maid for household work (5, 7, 8). High OOPE is a barrier to affordability and accessibility creating inequities in maternal health (21, 22). Studies performed in low and middle-income countries (LMICs) such as India (24), Pakistan (25), Zambia (26), and Ghana (27) revealed that OOPE is a significant barrier to optimal maternal care.

Sri Lanka exerts free government health services since the early 1900s (28). The country accommodates free health services by allocating an annual average budget of around 163,079.6 million rupees during the last three years, which accounted for 1.6% of the gross domestic product in 2019 (29). However, it is reported as OOPE accounts for more than 35% of total health expenditure, which has remained there for the past ten years (30, 31). At present, Sri Lankan maternal health services are well developed and accessed by pregnant women via both the public (to a more considerable extent) and the private health system. However, Over-medicalization is a significant problem in the Sri Lankan maternal health care service provision, which is in the fourth phase of the obstetric transition (28, 32).

Sri Lanka is a leading country among the LMICs when considering the SDG targets related to maternal and child health. This country has a unique free public health system delivering maternal care through a well-established network of primary health care officers—Sri Lanka reports almost complete coverage in antenatal care provided by the public health system (30). A detailed assessment of OOPE on maternal care in a country with such circumstances would be valuable in generating global level evidence on the manifestations of OOPE in situations with high health system standards.

The present study addresses the main question that continues to remain unanswered: "Do pregnant women have OOPE despite having access to a free health care system with universal coverage in Sri Lanka?"

## **Methods**

### **Aim of the Study**

This research explores the magnitude and associated factors of OOPE among pregnant women during the first prenatal clinic visit in rural Sri Lanka.

This study was a part of a large cohort survey of pregnant women living in the Anuradhapura district, Sri Lanka, Rajarata Pregnancy Cohort (RaPCo). The details of the RaPCo study are already published (21).

### **Study Design and Setting**

The present study reports the findings of the follow-up of a cohort of pregnant women enrolled in the RaPCo study during the first trimester and held in Anuradhapura, the largest district in Sri Lanka (7,179

km<sup>2</sup>). The recorded total population is 902,930, and 92.7% of them live in rural areas. Agriculture is their primary source of revenue with a median household income of LKR 41,629.00 (United States Dollar [USD] 285.91) per month (33), and Sinhalese are the leading ethnic group (90.7%) (34). In the Anuradhapura district, health expenditure consists of 42% from private, 22% from central government, and 36% from other government sources (35, 36).

The services for pregnant women are offered via the Medical Officer of Health (MOH), and the Anuradhapura district has 22 MOH areas. The district is divided into 275 public health midwife (PHM) areas, with each PHM area having a population of 1500–4000. The number of pregnant women registered in the area in 2015 was approximately 17,000, and the number of live births was 15,376 (37). The study protocol of the RaPCo has published further details on the study setting, including MOH areas (37).

## Study Participants

The study population of the RaPCo study included all pregnant women residing in the Anuradhapura district from July to September 2019 with the following eligibility criteria:

### *Inclusion Criteria:*

1. Pregnant women registered in the "pregnant mothers' register" of PHMM and visiting antenatal field clinics in the Anuradhapura district.
2. Permanent residence in the Anuradhapura district for the year ahead.
3. Period of amenorrhea (POA)/gestational age (GA) less than 12 weeks by the time of recruitment.

### *Exclusion Criteria:*

1. Pregnant women who are planning to leave the study area for childbirth or after childbirth.
2. Pregnant women with uncertain dates.

Pregnant women were recruited with the assistance of the PHMM of each MOH area at the special clinics organized by the cooperation of the research team and the divisional level public health officers. All MOOH and PHMM were informed of the study objectives and the data collection process.

Considering the sensitive nature of data that included the in-depth financial details collected for this investigation, only the women who volunteered to provide such information were chosen to participate in this study. Written consent was sorted from the participants, and ethical and administrative clearance was obtained before recruitment.

## Definitions and Measures

The OOPE associated with the first prenatal clinic visit, known as the 'booking visit,' was assessed in detail during this study. In Sri Lankan maternal health services, the 'booking visit' is the first clinic visit by a pregnant mother. These services are freely available to any expectant mother throughout the country's

public health sector (38). During this visit, all pregnant women are examined by a medical officer, and generally, all relevant investigations are done in the government healthcare sector, free-of-charge, under several objectives (38). Private health services are also available, where pregnant women can channel a specialist in the private sector. This visit includes the cost for a consultation, laboratory investigations, and medicines/supplements.

To assess the OOPE associated with the booking visit in this study, the OOPE was computed under two main categories: direct medical cost and direct non-medical cost.

- Direct medical cost (cost for consultation and cost for medicines/micronutrient supplements)
- Direct non-medical cost (cost for traveling, costs for foods and refreshments, the cost for accompanying person, and other costs)

All recruited women were provided with facilities for basic investigations free-of-charge in the RaPCo study; hence, this analysis did not include any laboratory investigation cost.

## Data Collection

The study instruments included an interviewer-administered questionnaire on sociodemographic and pregnancy-related factors and a self-administered questionnaire on economic aspects. All the study tools were pre-tested and edited according to the pre-tested sample's answers, comments, and suggestions.

The participants were provided with the self-administered questionnaire to be filled at home. In addition to explaining how to complete the self-administered questionnaire, an information leaflet was attached, stating the study's overall objective and instructions to complete— to improve the data credibility. Pregnant women were asked to keep pregnancy-related expenditures in a diary before filling the questionnaire, and telephone reminders were made to complete the questionnaires within two weeks.

## Data Analysis

Data were manually entered in Microsoft Office Excel and imported into SPSS for analysis. Data entry was followed by data cleaning to identify incompatible entries and missing data. The Statistical Package for Social Sciences (IBM SPSS Statistics 21) was used for data analysis.

All the income and expenditure-related data were collected in Sri Lankan Rupees (LKR). In the data management stage, the monetary values were converted from LKR to United States Dollar (USD), according to the rates of July 2019, i.e., USD 1 = LKR 176.38 (39).

Sample characteristics were reported using descriptive statistical measures; mean (SD), median (IQR), mode, and frequencies. Descriptive statistics helped to summarize the magnitude of OOPE. Further, we presented the proportion of OOPE over household income and expenditure. The total OOPE was presented in terms of different income quintiles. The OOPE occurred for pregnant women who used private medical care and government-free health facilities using descriptive statistical measures. To analyze the associated factors, we performed the Kolmogorov-Smirnov test to assess the distribution of

the variable OOPE. The test result disclosed the data are not normally distributed ( $p < 0.05$ ). Therefore, we used non-parametric tests to assess statistical significance and conducted the Mann-Whitney U test and the Kruskal-Wallis H test for the categorical variables. The continuous variables were analyzed via the Spearman Rank Correlation.

## Results

### Sample characteristics

The study sample consisted of 1,389 pregnant women, and all the sample characteristics were presented in table one. The mean (Standard Deviation [SD]) age of the participants was 28.3 (5.5) years. The sample's leading ethnic group was Sinhalese ( $n = 1184, 89.8\%$ ), and the main religion was Buddhism ( $n = 1172, 88.8\%$ ). Most pregnant women have studied up to Grade 11 ( $n = 641, 48.8\%$ ). In the sample, 78.8% of pregnant women were unemployed ( $n = 1094$ ), and among the employed group, 38.4% ( $n = 112$ ) were working in the government sector.

Most pregnant women were in their first pregnancy ( $n = 510, 36.7\%$ ). The mean (SD) duration until pregnancy confirmation was 6.4 (2.7) weeks. Public transport was the primary transportation mode for accessing health care facilities ( $n = 895, 68.9\%$ ), and most pregnant women ( $n = 784, 61.3\%$ ) preferred to use government health facilities.

The mean (SD) and the median (Inter Quartile Range [IQR]) monthly income of the employed pregnant women were USD 154.82 (126.20) and USD 141.74 (85.04-203.54), respectively. The mean (SD) of the monthly household income and the expenditure were USD 283.24 (220.99) and USD 184.81 (119.20), respectively. The corresponding median (IQR) values were USD 226.78 (170.09-323.17) and USD 163.00 (111.12-230.47).

Table 1  
Characteristics of the surveyed sample

Characteristics/measurement		n	Percentage (%) / statistics
Ethnicity	Sinhalese	1184	89.8%
	Tamil	6	0.5%
	Moor	124	9.4%
	Malay	1	0.1%
	Other	4	0.3%
Religion	Buddhist	1172	88.8%
	Catholic/Christian	18	1.4%
	Hindu	4	0.3%
	Islam	126	9.5%
Education level (in school)	Less than primary education (< grade 5)	10	0.8%
	Up to primary education	2	0.2%
	Between grade 5 to 11	116	8.8%
	Up to ordinary level examination (O/L)	641	48.8%
	Up to advanced level examination (A/L)	544	41.4%
Employment status	Employed	295	21.2%
	Unemployed	1094	78.8%
Employment sector	Government	112	38.4%
	Semi-government	15	5.1%
	Private	79	27.1%
	Other	86	29.5%
Age (in years)	Mean (SD)	1389	28.3 (5.5)
	Median (IQR)		28 (25–32)
No. of pregnancies	Mean (SD)	1389	2.1 (1.1)
	Median (IQR)		2 (1–3)
	1	510	36.7%

Characteristics/measurement		n	Percentage (%) / statistics
	2	416	29.9%
	3	335	24.1%
	4 and more	128	9.3%
Period of Amenorrhea (POA)-at the time of recruitment (in weeks)	Mean (SD)	1389	9.2 (3.1)
	Median (IQR)		9 (7–10)
	< 6 weeks	174	12.5%
	6–8 weeks	484	34.8%
	8–10 weeks	372	26.8%
	10–12 weeks	173	12.5%
	> 12 weeks	135	9.7%
Mother's monthly income (USD)	Mean (SD)	295	154.82 (126.20)
	Median (IQR)		141.74 (85.04-203.54)
Monthly household income (USD)	Mean (SD)	1389	283.24 (220.99)
	Median (IQR)		226.78 (170.09-323.17)
Monthly household expenditure (USD)	Mean (SD)	1362	184.81 (119.20)
	Median (IQR)		163.00 (111.12-230.47)

### The Magnitude of OOPE for the First Prenatal Clinic Visit

## Breakdown of OOPE- Direct Medical and Non-medical Cost

The mean (SD) OOPE for the first prenatal clinic visit was USD 8.12 (16.47). Compared to monthly household income and expenditure, the total OOPE for the first prenatal clinic visit was approximately 2.9% of revenue and 4.5% of the spending. This was calculated by assuming that the monthly household income and the spending do not change in the short run since there is no impact on revenue. In the short run, prices vary by the consumption pattern/behavior and health care expenditure pattern.

The breakdown of OOPE in the first prenatal clinic visit was reported in terms of the direct medical cost and direct non-medical cost in Table 2.

Table 2  
Direct medical and non-medical expenditure

Classifications	Breakdown of expenses	n (% of the sample)	Expenses (USD)		Total OOPE (USD)	
			Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)
Direct medical cost	Cost of consultation	289 (20.8%)	16.41 (17.10)	14.74 (11.34–17.01)	16.26 (20.45)	14.17 (1.13–22.68)
	Cost for medicines/micronutrient supplements	382 (27.5%)	7.72 (10.22)	2.83 (0.62–11.34)		
Direct non-medical cost	Cost for travelling	693 (49.9%)	2.19 (3.93)	1.13 (0.57–1.7)	3.82 (6.14)	1.98 (0.85–3.97)
	Cost for food and refreshment	594 (42.8%)	1.58 (1.90)	1.13 (0.57–1.70)		
	Cost for accompanying person	262 (18.9%)	1.49 (1.79)	0.85 (0.57–1.70)		
	Other cost	188 (13.5%)	3.93 (6.90)	0.85 (0.57–5.66)		

The direct medical OOPE of the first prenatal clinic visit was 68.2% of the total OOPE; thus, it is almost twice the value of the direct non-medical cost. Among the direct medical expense, the cost share for consultation (USD 16.41) was the highest, followed by the cost for medicines/micronutrient supplements (USD 7.72).

Figure 1 presents the breakdown of all expenditures and the composition of direct medical and direct non-medical costs during the first trimester of the pregnant women in the sample. It highlights that the costs for consultation had the highest proportion of OOPE among all cost categories and accounted for 42.1%. In contrast, the cost for the accompanying person is the minor share, 3.5% of the total OOPE.

Among the surveyed sample, 343 pregnant women (24.7%) were financing health care by spending money kept for their everyday transaction purposes, and 191 pregnant women (13.8%) have withdrawn money from their savings. Only one mother from the entire study sample owned a health insurance

policy, while others financed by informal loans with high-interest rates (n = 14, 1.0%) and selling assets such as jewelry (n = 7, 0.5%).

## OOPE among Different Income Quintiles

Table 3 presents the OOPE among different income quintiles.

Table 3  
OOPE among different income quintiles

Income Quintile (USD)	OOPE (USD)		n (%)	OOPE on household Income (%)	OOPE on household cost (%)
	Mean (SD)	Median (IQR)			
1 < 170.08	8.79 (13.83)	2.83 (1.13–11.06)	383 (27.6%)	4.4%	3.6%
2 170.09-215.44	10.30 (13.76)	3.12 (1.13–17.29)	192 (13.8%)	4.5%	5.1%
3 215.45-255.13	15.28 (24.13)	3.40 (1.13–21.97)	277 (19.9%)	4.8%	5.9%
4 255.14-368.52	10.31 (18.86)	2.83 (0.85–11.34)	282 (20.3%)	2.5%	3.9%
5 > 368.53	10.12 (18.32)	3.01 (1.13–16.44)	255 (18.4)	1.3%	4.1%

The lowest income groups' (< USD 170.08 and USD 170.09-215.44) OOPE for the first prenatal clinic visit were USD 8.79 and USD 10.30, 4.4% and 4.5% monthly household income, respectively.

Among the pregnant women in the lowest income quintile, 61.3% of expenditure was direct medical expenditure; the mean (SD) OOPE were USD 14.56 (7.41) for consultation and USD 5.64 (9.20) for medicines, which accounted for 37.9% and 23.4% of total OOPE for the first prenatal clinic visit. The direct non-medical expenditure accounted for 38.7% within the lowest income quintile.

### OOPE in Free Health Services

Table 4 indicates the direct medical and direct non-medical expenditure incurred for the first prenatal clinic visit among pregnant women who used only government-free health services and private health

services. The majority (n=1100, 79.2%) in the study sample used only the government's free maternal health services. There is a statistically significant difference in OOPE between pregnant women who used only the government's free health services and those who used private health services (U=6,873.5, =23.412). Even among the pregnant women who used free maternal health services, the OOPE was USD 3.49 (SD=6.53), and the mean (SD) direct medical cost for the first prenatal clinic visit was USD 2.82 (6.17), including the price for the medicine.

**Table 4: OOPE in free government and private health facilities**

Cost Category	The cost incurred using only government free health care (USD)			The cost incurred in using private health care (USD)		
	n (% of the sample)	Mean (SD)	Median (IQR)	n (% of the sample)	Mean (SD)	Median (IQR)
Cost for consultation	-	-	-	289 (20.8%)	16.41 (17.10)	14.74 (11.34-17.01)
Cost for medicine	189 (13.6%)	2.82 (6.17)	0.85 (0.57-2.55)	198 (14.3%)	12.27 (11.16)	9.07 (3.97-17.01)
Cost for travelling	521 (37.5%)	1.58 (2.80)	0.85 (0.57-1.70)	172 (12.4%)	4.05 (5.84)	1.90 (1.13-4.40)
Food and refreshment	440 (31.7%)	1.27 (1.30)	1.13 (0.57-1.56)	154 (11.1%)	2.45 (2.86)	1.70 (1.13-2.83)
Cost for accompanying person	204 (14.7%)	1.22 (1.47)	0.85 (0.57-1.13)	58 (4.2%)	2.44 (2.41)	1.70 (1.13-2.83)
Other costs	156 (11.2%)	2.94 (4.71)	0.71 (0.57-3.72)	32 (2.3%)	8.73 (12.16)	2.83 (0.88-12.76)
<b>Total (OOPE)</b>	<b>1100 (79.2%)</b>	<b>3.49 (6.53)</b>	<b>1.70 (0.85-3.54)</b>	<b>289 (20.8%)</b>	<b>29.99 (24.09)</b>	<b>24.38 (17.31-34.58)</b>

Figure 2 illustrates the share of different cost categories on OOPE according to the health care facilities used. All the direct medical costs were high among the pregnant women who used government and

private health services, and the share of all direct non-medical costs was high among pregnant women who used government health facilities only.

### **Factors associated with OOPE**

Table 5 demonstrates the OOPE associated factors for the first prenatal clinic visit. A statistically significant positive correlation exists between OOPE and monthly household expenditure, and a statistically significant negative correlation between OOPE and the number of pregnancies.

### **Table 5: Associated factors of OOPE**

Performed Test	Variable	Groups Tested	Mean (SD) OOPE [USD]	Median (IQR) OOPE [USD]	Test Statistics
Mann-Whitney U Statistics	Employment status	Employed (n <sub>1</sub> =295)	13.64 (12.63)	14.17 (1.13-19.84)	U=92939.5 (=0.263)
		Unemployed (n <sub>2</sub> =1094)	17.02 (22.16)	14.46 (1.42-23.96)	
Kruskal-Wallis H Test	Employment sector	Government (n <sub>1</sub> =112)	12.61 (11.61)	13.61 (0.85-18.71)	=4.266 (p=0.234)
		Semi-government (n <sub>2</sub> =15)	10.09 (7.37)	8.5 (5.67-16.44)	
		Private (n <sub>3</sub> =79)	17.20 (13.94)	17.01 (3.4-24.66)	
		Other (n <sub>4</sub> =86)	12.56 (13.08)	11.34 (0.91-17.38)	
	Ethnicity	Sinhalese (n <sub>1</sub> =1184)	16.32 (21.18)	14.17 (1.13-22.68)	=1.926 (p=0.588)
		Tamil (n <sub>2</sub> =6)	12.57 (9.21)	17.01 (9.50-20.98)	
		Moor (n <sub>3</sub> =124)	13.73 (13.49)	12.47 (0.85-20.98)	
	Religion	Buddhist (n <sub>1</sub> =1172)	16.37 (21.24)	14.17 (1.13-22.68)	=1.944 (p=0.584)
		Catholic/Christian (n <sub>2</sub> =18)	9.30 (7.50)	12.76 (1.98-14.17)	

	Hindu (n <sub>3</sub> =4)	17.86 (1.20)	17.86 (17.01-18.71)	
	Islam (n <sub>4</sub> =126)	13.73 (13.49)	12.47 (0.85-20.98)	
Education level	Less than primary education (n <sub>1</sub> =10)	30.62 (48.49)	9.78 (1.00-60.24)	=3.157 (p=0.532)
	Between grade 5 to 11(n <sub>3</sub> =116)	17.45 (13.40)	17.01 (4.12-22.96)	
	Up to ordinary level (n <sub>4</sub> =641)	16.28 (21.84)	14.17 (1.13-23.39)	
	Up to advanced level (n <sub>5</sub> =544)	15.23 (19.49)	14.17 (1.13-20.41)	
Period of Amenorrhea (at the time of recruitment)	<6 weeks (n <sub>1</sub> =174)	14.85 (14.01)	14.17 (1.13-19.84)	=1.000 (p=0.910)
	6-8 weeks (n <sub>2</sub> =484)	17.10 (24.15)	14.6 (1.13-21.54)	
	8-10 weeks (n <sub>3</sub> =372)	16.89 (22.42)	14.74 (1.56-25.23)	
	10-12 weeks (n <sub>4</sub> =173)	13.41 (13.28)	12.62 (1.13-19.84)	
	>12 weeks (n <sub>5</sub> =135)	15.05 (16.25)	14.17 (1.13-20.41)	

Spearman Rank Correlation

Number of pregnancies\*

$r_s = -0.155$   
(p=0.000)

Age of the mother

	$r_s=0.028$ ( $p=0.378$ )
Mother's monthly income level	$r_s=0.012$ ( $p=0.861$ )
Monthly household income	$r_s=-0.002$ ( $p=0.942$ )
Monthly household expenditure*	$r_s=0.095$ ( $p=0.002$ )

\*Reject null hypothesis: no correlation – since the p values are lesser than 0.05.

## Discussion

One primary reason for poor maternal and child health outcomes is identified as the higher OOPE associated with health care, especially among the poor, for whom health care access often imposes a considerable financial burden on families (8,23,40). In this context, the present study aimed to assess the OOPE of the first prenatal clinic visit comprehensively—the "booking visit" in pregnancy care in Sri Lanka.

This study used a probability sample representing the whole district. The total OOPE estimated for the first prenatal clinic visit (USD 8.12) could be underestimated because the laboratory investigations for this cohort were provided free-of-charge by the RaPCo study. Though the examinations are offered through free health care, some pregnant women prefer attending paid services to minimize travel and the waiting time in public hospitals. Even with a probable underestimation, this is a considerable amount for a single clinic visit in the availability of free healthcare services, especially considering its impact on household income and expenditure. Evidence suggests that the OOPE of maternal healthcare can range between 1% and 5% of total annual household expenditure throughout the pregnancy period and increase between 5% and 34% if complications occur. This could lead to a catastrophic expense for poor households in low-income countries in Asia and Africa (41).

The problem's severity is further emphasized with the reported 4% of OOPE of monthly household income within the lowest income quintiles. This could be challenging since only one mother was using health insurance for financing health care. Still, others had to withdraw from routine transactions/savings from informal loans with high interest rates and selling assets. According to statistics, society's poorest section has to pay for health needs from their expenditure, which they keep for basic necessities (8,9,16,23,42,43).

Most pregnant women (79.2%) used government-free health services, and 61.3% of them were below the middle-income quintile. Similarly, the literature suggests that the free government healthcare facilities' usage rates, including inpatient, primary, and preventive care, were highest among the poor (44). Even though using only government-free maternal health services, pregnant women had an OOPE of USD 3.49.

Among them, one-fifth was for the cost of medicine/micronutrient supplements (Folic acid, iron folate, Vitamin C, and calcium supplementation), and the rest was for unavoidable direct non-medical costs. This study did not specifically collect facts regarding the reasons and types of medicine/micronutrient supplements that pregnant women had to purchase.

Nonetheless, the government prenatal health care services are expected to provide micronutrient supplements and essential medicine for minor ailments for free. In that context, OOPE for the cost of medicine/micronutrient supplements indirectly implies either the unavailability of such medicine at the health care facility or pregnant women preferring to purchase them from outside due to various reasons. However, this is a vital issue since Sri Lanka exerts free government health services to all citizens (28,32) and, primarily, the government-financed healthcare in Sri Lanka (45). Therefore, the avoidable OOPE (direct medical cost) should be zero or at a minimal level in a setting with a free healthcare policy (5,8,17,46–48). However, available literature of different regions in the world also confirmed that the existence of OOPE with practicing public free health care policy and national-level free health programs in Nepal (1,49–51), Bangladesh (1,49,52), and India (22,24).

Among the study sample, 20.8% of pregnant women had utilized private health care services and had paid 42.1% of the cost for consultation and 21.6% for the cost for the medicine of the total OOPE. More importantly, 61.6% of pregnant women who used private health services were below the middle-income quintile. The emerging issue here is that (despite having free maternal healthcare services), many people spend high OOPE, unbearable for the low-income families' household expenses (5,6,8,53–57). Instead of accessing free government health care, people tend to bear the actual cost of some drugs, investigations, and surgeries, which may place a significant burden on Sri Lanka's households (28,58). This is under- and mal-utilization of the well-developed maternal health care package to catering all requirements for the initial prenatal clinic (38).

The positive correlation between OOPE and household expenditure is oblivious since OOPE acts as an independent health cost category, including medical and non-medical spending, which is in line with the existing evidence (59). The number of pregnancies reported a negative association with OOPE; a study conducted in India revealed a similar association (25). The probable reason could be better financial management during pregnancy with previous experience.

## **Conclusion And Recommendations**

The study provides strong evidence that the reported OOPE of the first prenatal clinic visit is high. The direct medical cost is almost twice more elevated than the direct non-medical cost. It is not worth observing whether a direct medical cost is incurred by pregnant women who used only the government's free maternal health services. One-fifth of pregnant women utilize private health services despite having free maternal health services.

In this context, it is essential to ponder upon the implementation gaps in free health provision and create a mechanism to increase the demand for government-free maternal health services to minimize the

additional financial burden and further improve the maternal health care providing in Sri Lanka.

## **Abbreviations**

OOPE – Out-of-pocket Expenditure

SDGs – Sustainable Development Goals

LMICs – Low and middle-income countries

RaPCo – Rajarata Pregnancy Cohort

USD – United States Dollar

MOH – Medical Officer of Health

PHM – Public Health Midwife

POA – Period of amenorrhea

GA – Gestational Age

LKR – Sri Lankan Rupees

SD – Standard Deviation

IQR – Inter Quartile Range

AHEAD – Accelerating Higher Education Expansion and Development

## **Declarations**

### ***Ethics approval and consent to participate***

This study was conducted under the large cohort study in Anuradhapura District, Sri Lanka, Generating Evidence for Ending Preventable Maternal Deaths: the Rajarata Pregnancy Cohort (RaPCo). Ethical clearance to conduct the RaPCo study was obtained from the Ethics Review Committee of the Faculty of Medicine and Allied Sciences, Rajarata University of Sri Lanka (Reference no: ERC/2019/07). In accordance with the Declaration of Helsinki, all participants were informed that this study was voluntary and that data would be handled confidentially. All participants gave their informed written consent.

### ***Consent for publication***

Not applicable since individual data publication is not intended in this study.

### ***Availability of data and materials***

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

### ***Competing interests***

The authors declare that they have no competing interests.

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### ***Authors' contributions***

SPG analyzed and prepared the original draft preparation. SPG, NDW, and SBW developed the methods used. NDW, IRP, TCA, and SBA developed conceptualization, supervised, and reviewed, and edited. TCA obtained the funding acquisition. All authors read and approved the final manuscript.

### ***Acknowledgment***

Not Applicable

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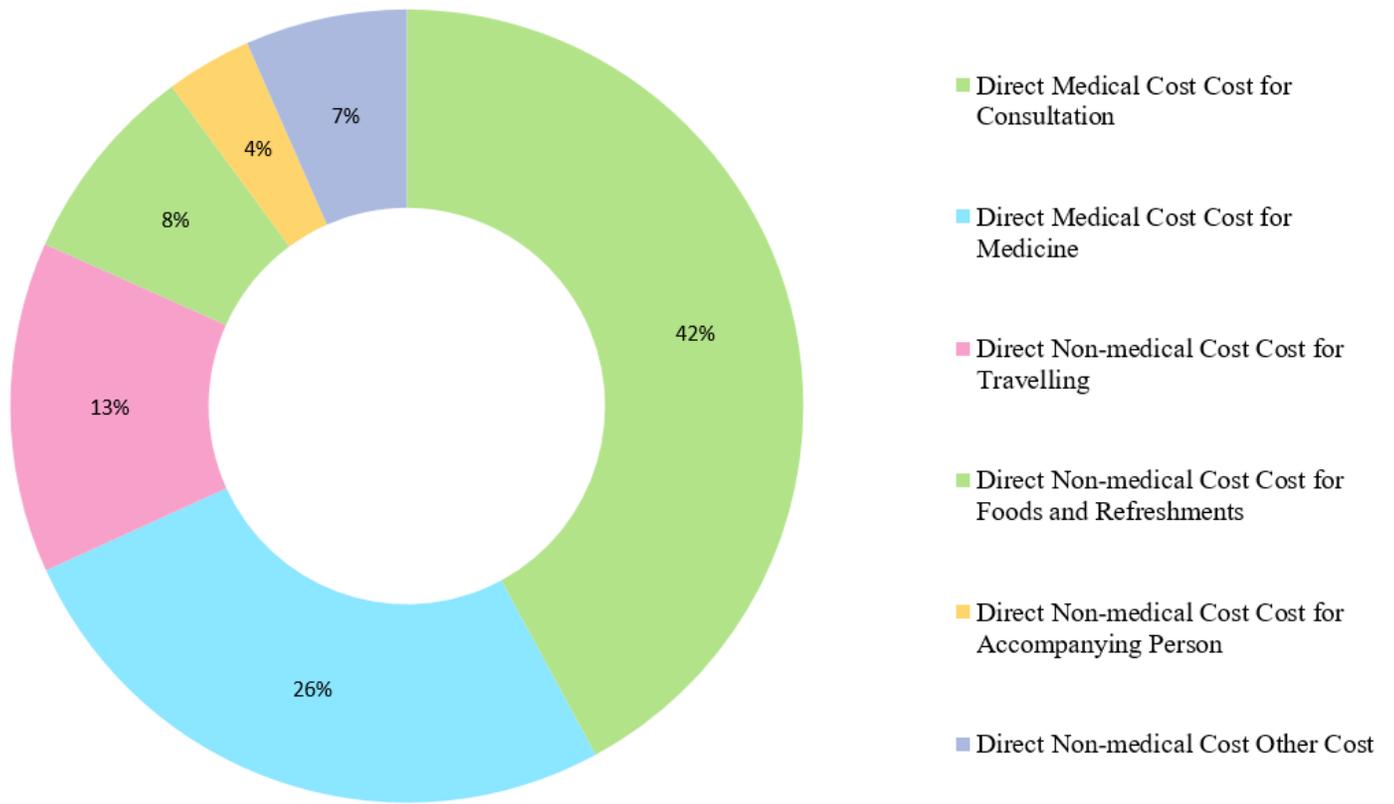
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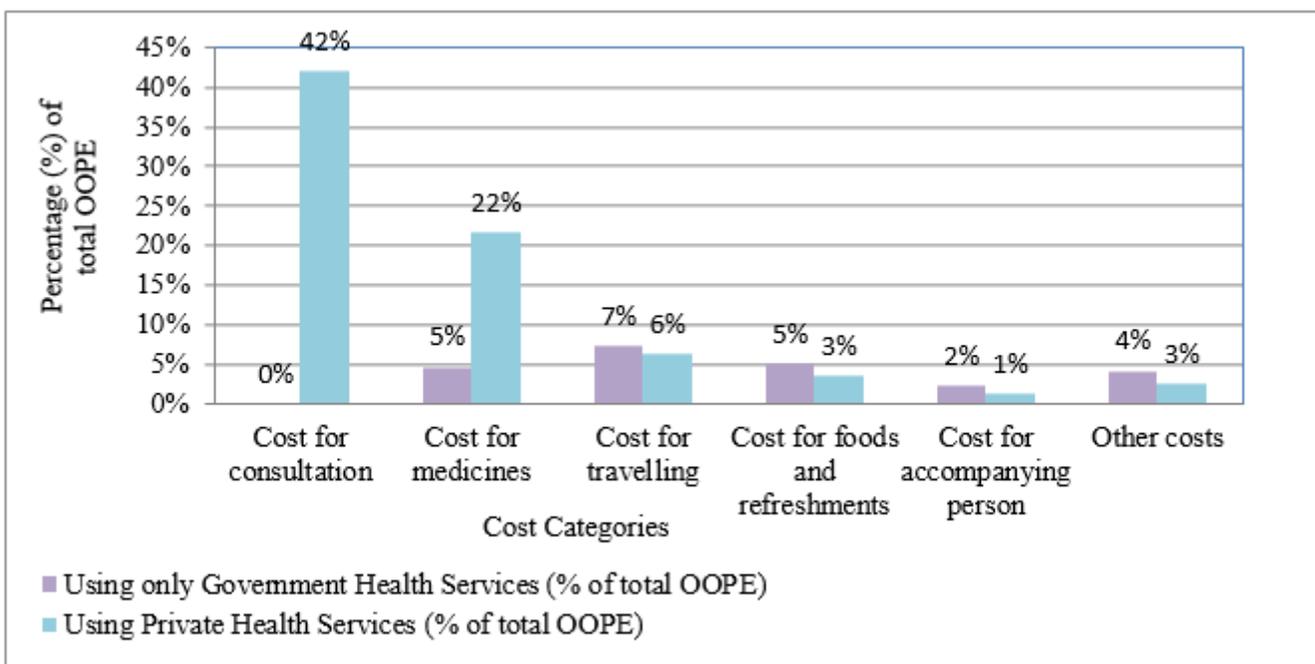
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## Figures



**Figure 1**

Breakdown of OOPE



## Figure 2

Percentage of cost categories out of the total OOPE by the healthcare facility used