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## CLINICAL ARTICLE

## Use of early postnatal care among postpartum women in Eastern Uganda

Jonathan Izudi<sup>a,b,\*</sup>, Dinah Amongin<sup>a,c</sup><sup>a</sup> Institute of Health Policy and Management, International Health Sciences University, Kampala, Uganda<sup>b</sup> Uganda Society for Health Scientists, Makerere University College of Health Sciences, Department of Anatomy, Kampala, Uganda<sup>c</sup> Department of Gynecology and Obstetrics, College of Health Sciences, Makerere University, Kampala, Uganda

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## ABSTRACT

**Objective:** To investigate the level and predictors of early postnatal care (EPNC) utilization in Soroti District, Eastern Uganda. **Methods:** A cross-sectional study was conducted at nine health facilities in February 2014. Women aged 15–49 years who had delivered in the previous year (but > 1 week ago) were enrolled at postnatal care clinics. Data were collected using a structured questionnaire. Multivariate analysis was used to identify factors associated with EPNC use (postnatal care visit 2–7 days after delivery). **Results:** Among 357 respondents, 55 (15.4%, 95% confidence interval [CI] 11.6%–19.2%) used EPNC services. EPNC attendance was significantly associated with formal employment (adjusted odds ratio [aOR] 3.88; 95% CI 1.08–13.93;  $P = 0.038$ ) and education about postnatal care schedules (aOR 9.73; 95% CI 1.58–60.06;  $P = 0.014$ ). Women at public health facilities were significantly less likely to have attended EPNC than were those at private facilities (aOR 0.03; 95% CI 0.01–0.10;  $P < 0.001$ ). An increase in length of hospitalization by 1 day was associated with reduced EPNC utilization (aOR 0.63; 95% CI 0.43–0.91;  $P = 0.015$ ). **Conclusion:** EPNC was poorly utilized and prioritized. Its use was hindered by protracted hospitalization, care provision at public facilities, maternal unemployment or self-employment, and lack of information.

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## 1. Introduction

High maternal and infant mortality and morbidity rates remain a significant public health issue for most low-income countries [1]. Maternal and newborn deaths occur mostly during pregnancy, delivery, or within the first week after delivery [2]. Estimates suggest that 50% of maternal and 40% of newborn deaths occur within the first 24 hours after delivery [3]. In Uganda, maternal and neonatal morbidity constitutes about 20.4% of the total disease burden and contributes 38% of the infant mortality rate [4]. Currently, Uganda has an unacceptable maternal mortality ratio of 438 maternal deaths per 100,000 live births, which is attributed mainly to hemorrhage, obstructed labor, pregnancy-induced hypertension, unsafe abortions, and septicemia [4].

Early postnatal care (EPNC) visits can reduce maternal and newborn morbidity and mortality, and enhance survival, particularly through early detection and management of postpartum complications [5]. However, it is the weakest of all reproductive and child health interventions in Africa [6] and receives much less attention from healthcare providers than pregnancy and childbirth [3]. Only 13% of women in Africa attend postnatal care appointments [2,6].

Health data for Soroti District in Eastern Uganda indicated that 58% of women attended postnatal care appointments between July 2012 and June 2013, and that the maternal mortality ratio was 167 maternal deaths per 100,000 live births, with deaths occurring mainly in the first week after birth (data from an interview conducted August 8, 2013, with a Soroti district health office worker). The aim of the present study was to investigate the level and predictors of utilization of EPNC visits among postpartum mothers in this district.

## 2. Materials and methods

A cross-sectional study was conducted at health facilities in Soroti District between January 30 and March 6, 2014. The study population included women aged 15–49 years who had had a delivery within the previous year, but more than 1 week ago. Women were enrolled when attending postnatal care clinics for interventions such as immunization, contraception, and growth monitoring. Informed consent was obtained from respondents before data collection. Participant identities remained anonymous throughout by coding. Approval was obtained from the Institutional Review Board of the International Health Sciences University, Kampala, Uganda.

Among 36 health facilities in Soroti District, nine were selected for inclusion; these nine comprised health facilities of all levels to give a representative sample of health facilities in the district. The district contains only two level IV health centers (HCIV) and one regional referral

\* Corresponding author at: International Health Sciences University, Institute of Health Policy and Management, P.O. Box 7782, Kampala, Uganda. Tel.: +256 78209774, +256 701150688; fax: +256 414345768.

E-mail addresses: sabo\_nah@yahoo.com, jonahzd@gmail.com (J. Izudi).

hospital (RRH), so these centers were selected purposively. The remaining six facilities were randomly selected by systematic sampling.

Using STATA version 12 (StataCorp, College Station, TX, USA), a required sample size of 310 was calculated for 85% power and a 95% confidence interval, assuming 7.7% of women attended postnatal care within 2–7 days of delivery [7]. To account for a 15% non-response rate, the final required sample size was 357. The sample size for each health facility was calculated based on its catchment population using Kish's formula for computing effective sample size [8].

At the selected health facilities, systematic random sampling followed by convenience sampling was used to select participants. Initially, the expected average daily number of mothers attending different services in the postnatal clinic was established from the clinician in charge. A sampling interval was obtained by dividing the average number of clinic attendees on a postnatal care clinic day by the required sample size for that particular health facility. From the obtained sampling interval, a convenience sampling method was used to select one respondent at a time until the required sample size was obtained.

Data for demographic, socioeconomic, and health system characteristics were collected by trained and supervised research assistants using a structured questionnaire consisting of both open- and closed-ended questions. The completed questionnaires were reviewed in real time for incompleteness, errors, and omissions. The questionnaire had been pretested by trained research assistants in a neighboring district to assess its acceptability, validity, reliability and appropriateness. The main outcome was EPNC use, which was defined as a postnatal care visit 2–7 days after delivery.

Data were cleaned for errors and omissions, entered into EpiData version 3.1 (EpiData Association, Odense, Denmark), exported to STATA version 12, sorted, and categorized. Necessary variable transformations were conducted. Legal and range values, routine data checks, skipping, and double data entry mechanisms in EpiData were used to minimize data entry errors.

Results were presented using tables with associated frequencies, percentages, odds ratios (ORs), confidence intervals (CIs), and *P* values. Numerical data were summarized using descriptive statistics such as mean, standard deviations, medians, and interquartile ranges (IQRs). Categorical data were analyzed using frequencies and percentages. The  $\chi^2$  test was used to analyze the relationship between the dependent variable and categorical variables whenever the cell count was equal to or greater than five. The Fisher exact test was used whenever the cell count was less than five. The *t* test was used to analyze the relationship between numerical independent variables and the dependent variable. *P* < 0.05 was deemed statistically significant. Binary logistic regression analysis was used to assess the magnitude of all significant relationships. Variables significant in the binary analysis were included in multivariate analysis to determine factors independently associated with EPNC use.

### 3. Results

Of the nine health facilities, eight were public (the RRH, two HCIVs, three level III health centers [HCIIIs], and two level two health centers [HCIIIs]); one HCII was a private facility. The mean age of the 357 respondents was  $25.86 \pm 5.80$  years (median 25; IQR 22–30). Approximately two-thirds of participants had a parity of three or less, and most were married (Table 1).

Among the 357 participants, 345 (96.6%) reported having attended prenatal care during their recent pregnancy. The mean number of prenatal care visits was  $4 \pm 1$  (median 4; IQR 3–4). A total of 305 (85.4%) women delivered at a health facility, and 309 (86.6%) had a spontaneous vaginal delivery. A skilled birth attendant (medical doctor, nurse, or midwife) attended 300 (84.0%) births, but a traditional birth attendant attended 46 (13.5%) and a traditional healer attended 9 (2.5%).

Among the 357 women, 191 (53.5%; 95% CI, 48.3%–58.7%) had used postnatal care services after the recent delivery, approximately half of

**Table 1**  
Sociodemographic characteristics (n = 357).

Variable	No. (%)
Age group, y	
≤25	180 (50.4)
>25	177 (49.6)
Parity	
≤3	231 (64.7)
>3	126 (35.3)
Religion	
Catholic	140 (39.2)
Muslim	27 (7.6)
Anglican	139 (38.9)
Other	51 (14.3)
Marital status	
Single	44 (12.3)
Married	302 (84.6)
Divorced/separated	9 (2.5)
Widowed	2 (0.6)
Tribe	
Itesot	224 (62.7)
Kumam	77 (21.6)
Other	56 (15.7)
Education	
None	27 (7.6)
Primary	162 (45.4)
Secondary	133 (37.3)
Tertiary	35 (9.8)
Occupation	
None	245 (68.6)
Formal employment	40 (11.2)
Self-employment	72 (20.2)

whom had used them 2–4 weeks after delivery (Table 2). Among the 68 women who had used postnatal care services in the first week, 13 (19.1%) used them before 2 days and 55 (80.9%) between 2 and 7 days. Therefore, only 55 (15.4%, 95% CI, 11.6%–19.2%) of the 357 participants used EPNC services.

Univariate analysis showed that women who had accessed postnatal care services at a hospital were significantly less likely to have used EPNC than were those who had accessed services at a health center (*P* = 0.005) (Table 3). Additionally, mothers who had accessed postnatal care services at public health facilities were significantly less likely to use EPNC than those who attended public facilities (*P* < 0.001) (Table 3). Compared with women from the Itesot tribe, Kumams were significantly more likely to access EPNC (*P* = 0.002) (Table 3).

Mothers from households with incomes of more than 75 000 Ugandan shillings per month were significantly less likely to use EPNC than those from households with incomes of up to 75 000 Ugandan shillings per month (*P* < 0.001) (Table 3). Occupation had a significant association with EPNC use, with self-employed mothers less likely to use EPNC than

**Table 2**  
Postnatal care attendance (n = 357).

Characteristics	No. (%)
Attended	
No	166 (46.5)
Yes	191 (53.5)
When attended <sup>a</sup>	
≤1wk	68 (35.6)
<2 d	13 (19.1)
2–7 d	55 (80.9)
2–4 wk	102 (53.4)
5–6 wk	21 (11.0)
Early attendance	
No	302 (84.6)
Yes	55 (15.4)

<sup>a</sup> Among the 191 women who did attend.

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