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Uptake of modern contraceptives and associated factors among adolescents during the postpartum period in Lira, Northern Uganda: a cross-sectional study

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Abstract

Background

Modern postpartum contraceptive use is essential for preventing unintended and closely spaced pregnancies, particularly among adolescents. Despite its importance, uptake remains suboptimal globally, especially in low- and middle-income countries, including Uganda. Furthermore, evidence on factors associated with postpartum modern contraceptive uptake among adolescents in Lira District, Northern Uganda, remains limited. Therefore, this study assessed the factors associated with modern contraceptive use among adolescents during the postpartum period in Lira, Northern Uganda.

Methods

A facility-based cross-sectional study was conducted among 420 adolescent mothers aged 14–19 years attending postnatal care and young child clinic services in selected primary health care facilities in Lira District. Data were analyzed using descriptive statistics and modified Poisson regression. Statistical significance was set at $p < 0.05$.

Results

The mean age of participants was 18.7 years (SD ± 1.3), and 38.0% reported using modern postpartum contraceptives. Uptake was positively associated with knowledge of postpartum family planning (aPR = 1.92), post-delivery counselling (aPR = 1.60), counselling during young child clinic visits (aPR = 2.52), availability of preferred methods (aPR = 1.95), and partner approval (aPR = 5.67). Breastfeeding (aPR = 0.66) and older age at first pregnancy (15–19 years) (aPR = 0.70) were negatively associated.

Conclusion

Modern postpartum contraceptive use among adolescents remains suboptimal. Strengthening Integration of Comprehensive adolescent-friendly family planning during postpartum, improving counselling, ensuring method availability and engaging male partners are critical to improving uptake.

Background

Adolescent pregnancy remains a major global public health and development challenge, with approximately 12 million girls aged 15–19 giving birth annually, the vast majority in low- and middle-income countries [1, 2]. Sub-Saharan Africa continues to bear a disproportionate burden, with an adolescent birth rate of about 101 per 1,000 girls aged 15–19, while East Africa records a pooled adolescent pregnancy prevalence of 23.6%, ranging from 5.2% in Rwanda to 34.0% in Tanzania [3, 4]. In Uganda, the situation remains critical, with 24.8% of adolescent girls having begun childbearing, yet

modern contraceptive use among sexually active adolescents remains low at 9%–12%, contributing to unintended and repeat pregnancies [5, 6]. These statistics underscore persistent reproductive health inequities among adolescents in low-resource settings.

Modern contraceptive use is widely recognized as a key intervention for preventing unintended pregnancies, reducing adolescent fertility, and improving maternal and child health outcomes [7–9]. Evidence suggests that consistent use of modern contraceptives can reduce maternal mortality by up to 30% and significantly improve spacing of pregnancies, which is critical for adolescent health and survival [7]. Despite this, uptake remains suboptimal, particularly during the postpartum period when women are at heightened risk of rapid repeat pregnancies.

Modern postpartum contraception refers to the initiation and continued use of medically approved contraceptive methods within 12 months after childbirth to prevent unintended or closely spaced pregnancies[10–13].This period is a critical window for intervention because fertility can return as early as six weeks postpartum, even before menstruation resumes. Contraceptive uptake during the postpartum period is influenced by multiple interrelated factors operating at the individual, interpersonal, sociocultural, and health-system levels. These include adolescents' knowledge and perceptions of contraceptive methods, perceived risk of pregnancy, sociocultural and gender norms, partner influence and support, as well as the availability, accessibility, acceptability, and quality of health services. Understanding these interconnected factors is important for identifying barriers and opportunities to improve postpartum contraceptive uptake among adolescents.

Empirical evidence shows persistently low postpartum contraceptive uptake among adolescents globally and regionally. In sub-Saharan Africa, only 20%–30% of adolescent mothers use modern postpartum contraception, compared to over 60% in high-income countries[3, 7, 12, 14]. In East Africa, utilization varies considerably: in Ethiopia, fewer than 25% of adolescent mothers initiate postpartum contraception within six months; in Kenya, only 28% initiate a modern method despite high facility delivery rates; and in Tanzania, prevalence among adolescents is as low as 15.2%[15–17]. In Uganda, the modern contraceptive prevalence rate among adolescents aged 15–19 remains approximately 25%, with even lower uptake in the postpartum periodb[6, 18–20].

Previous studies have identified multiple determinants of postpartum contraceptive use among adolescents. These include exposure to family planning counseling during antenatal and postnatal care, partner support, and access to adolescent-friendly services[19, 21]. Conversely, barriers such as fear of side effects, stigma, misconceptions, limited autonomy in decision-making, and provider bias continue to limit uptake [22, 23]. Health system constraints including stock-outs of preferred methods, long waiting times, and weak integration of family planning into maternal and child health services further exacerbate low utilization.

Despite growing evidence on contraceptive use in general populations, context-specific evidence on modern postpartum contraceptive use among adolescent mothers in Uganda remains limited. Evidence disaggregated by adolescent age and postpartum period is particularly scarce. Furthermore, existing

studies often combine adolescents with adult women, which may obscure age-specific patterns and the unique reproductive health needs and decision-making circumstances of adolescent mothers.[19, 20, 24]. In Lira District, only about 22% of adolescent mothers initiate a modern contraceptive method within six months postpartum, while repeat adolescent pregnancies account for nearly 28% of adolescent deliveries in public health facilities[25]. Therefore, this study examined the utilization of modern contraceptives and associated factors among adolescent during the postpartum period in Lira, Northern Uganda.

Study Methods

Study design

We conducted a facility-based cross-sectional survey among postpartum adolescents aged 14–19 years attending selected Primary Health Care (PHC) facilities in Lira District, Uganda, between April and May 2026 to determine factors associated with the uptake of modern contraceptives during the postpartum period. This design was chosen because it enabled collection of data on both exposure (associated factors) and outcome (utilization of modern postpartum contraceptives) at the same point in time hence it saved time for investigation.

Study settings and Population

The study was conducted among postpartum adolescents attending selected Primary Health Care facilities in Lira District, Northern Uganda. The eight public PHC facilities comprised of six Health Centre IIIs (Aromo, Abala, Agali, Barr, Alik and Barlonyo) and two Health Centre IVs (Amac and Ogur).Lira District is located in the Lango Sub-region, approximately 340 km north of Kampala, the capital city of Uganda [26]. The district is predominantly rural and has a largely youthful population, with adolescents and young adults constituting a substantial proportion of its residents [26]. The majority of households depend on subsistence agriculture, including crop farming and livestock rearing, as their main source of livelihood [26]. Other economic activities include petty trade, boda-boda transport services, market vending, artisanal work and casual labour.

Health service delivery in Lira District is organized under a decentralized health system managed by the District Health Department under the Ministry of Health [27]. The selected facilities provide routine maternal, neonatal, and child health services, including postnatal care (PNC), Young Child Clinic (YCC), immunization, and family planning services. These facilities serve defined catchment populations across rural communities and constitute the primary point of contact for postpartum women seeking reproductive health services. The study population comprised adolescent mothers aged 14–19 years attending Young Child Clinic and Postnatal Care services at the selected facilities during the study period.

Sample size and sampling procedures

The sample size was determined using the Fleiss formula for a single population proportion in a cross-sectional study, with modern postpartum contraceptive use among adolescent mothers aged 10–19 years as the primary outcome. A documented prevalence of 22% (p = 0.22) from the Uganda Demographic and Health Survey (UDHS) 2022, a 95% confidence level (Z = 1.96), and a 5% margin of error (d = 0.05) were used. These parameters yielded an initial sample size of 264 adolescent mothers.

Because participants were recruited from multiple health facilities using a multistage cluster sampling design, a design effect of 1.5 was applied to account for the potential correlation of responses among participants sampled within the same health facility. The design effect of 1.5 was selected based on a comparable facility-based cross-sectional study conducted in Northern Uganda across five health facilities, which investigated utilization of postpartum family planning and associated factors among postpartum women (Madira et al., 2025b). Applying the design effect increased the sample size from 264 to 396 participants. A further 10% allowance for non-response was applied, resulting in a final target sample size of 436 adolescent mothers. Of the targeted 436 respondents, 420 completed the study, yielding a response rate of 95.5%.

This sample size was proportionally distributed across the eight selected health facilities in Lira District based on client load. In each health facility, the allocated sample size was further distributed across the main maternal and child health service points, specifically postnatal care and young child clinic services, which served as the recruitment entry points.

Consecutive sampling method was used in each health facility. All eligible adolescent mothers aged 10–19 years within 12 months postpartum who attended postnatal care or young child clinic services during the data collection period were screened and recruited consecutively until the required sample size for each facility was reached, resulting in a total of 420 respondents enrolled in the study.

Inclusion and exclusion criteria

Prior to enrollment, participants were assessed for eligibility using a standardized screening tool (Additional File 1). Only adolescent mothers aged 14–19 years within 12 months postpartum and attending either young child clinic (YCC) or postnatal care (PNC) services at the selected health facilities were included in the study. Adolescents who were physically unwell, unable to sustain a 15-minute interview, or unable to participate due to time constraints or medical emergencies involving their children were excluded from the study.

Data collection tools and procedures

Data were collected using a **structured, interviewer-administered questionnaire** (Additional File 2). Four research assistants were recruited and trained on the study objectives, questionnaire administration,

ethical considerations, confidentiality, and procedures for engaging adolescent participants. Two research assistants were assigned to each level of health facility (HC III and HC IV) to facilitate effective communication and provide a supportive environment for adolescent participants.

Prior to the main data collection, the questionnaire was pre-tested among 10% of the calculated sample size (n = 44) adolescent mothers attending similar maternal and child health services in comparable settings outside the selected study facilities. The pre-test assessed the clarity, relevance, appropriateness, and ease of understanding of the questions. Necessary revisions were made based on the pre-test findings, and participants involved in the pre-test were excluded from the final study sample.

During the main data collection, eligible participants were approached and provided with a brief explanation of the study, including its purpose, procedures, potential benefits and their rights as participants. Written informed consent was obtained from participants aged 18–19 years, while assent and parental or guardian consent were obtained for participants below 18 years before administration of the questionnaire. Interviews were conducted by the trained research assistants in a private and supportive setting to protect participants' privacy and confidentiality.

Interviews lasting for 15–30 minutes were conducted in a private setting within the health facilities and participants were interviewed at a convenient time when they were not engaged in active clinic procedures to ensure comfort and minimize disruption of services. Data collected included sociodemographic characteristics, sexual and reproductive history/Individual factors, Socio-cultural factors, Health system factors and uptake of modern contraceptive methods during the postpartum period.

Data processing and analysis

Data were entered into a REDCap database and stored on a password-protected computer accessible only to the study team. A data entry screen was also created in EpiData version 4.7 with built-in validation checks to ensure accuracy. Data were cross-checked for completeness, inconsistencies, and missing values, cleaned, and then exported to Stata version 18 for analysis. Descriptive and inferential analyses were performed, including chi-square tests and multivariable Poisson regression. Statistical significance was set at $p < 0.05$, and adjusted prevalence ratios with 95% confidence intervals were reported.

Results

Recruitment of study Respondents

A total of 460 potential respondents were screened for eligibility. Of these, 24 were excluded, including 10 who required urgent medical treatment and 10 who resided outside the study area (Awere/Pader District). Consequently, 436 eligible participants were recruited into the study. Of these, 423 were

successfully interviewed. During data cleaning and analysis, 3 participants were excluded due to incomplete and inconsistent data, yielding a final analytical sample of 420 Respondents (Fig. 1).

Socio-demographic characteristics of study respondents (N = 420)

The mean age of the study respondents was 18.7 years (SD ± 1.3) and most 410(97.6%) were aged 15–19 years. The majority were in marital relationship 374(83.6) predominantly identifying as Protestant 182(43.2%) and least were Muslims 5(0.48%). Most 393(93.6%) had attained primary education and were not attending school 398(94.8%), while a large proportion 363(86.4%) resided in rural areas and were mainly engaged in farming 271 (64.5%), as presented in Table 1.

Table 1
Socio-demographic characteristics of participants (N = 420)

Variable	Category	Frequency (n)	Percentage (%)
Age category	10–14 years	10	2.38
	15–19 years	410	97.62
Marital status	In Marital relationship	374	83.6
	Not in Marital Relationship	73	17.4
Schooling status	Not in school	398	94.76
	In school	22	5.24
Education level	No education	3	0.71
	Primary	393	93.57
	Secondary	22	5.24
	Tertiary	2	0.48
Religion	Catholic	143	34.05
	Muslim	2	0.48
	Pentecostal	93	22.14
	Protestant	182	43.33
Residence	Rural	363	86.43
	Peri-urban	28	6.67
	Urban	29	6.9
Livelihood source	None	54	12.86
	Farming	271	64.52
	Casual labor	7	1.67
	Formal work	24	5.71
	Small business	64	15.24

Uptake of modern contraceptives among adolescents during the postpartum period in Lira District, Uganda

In this study,161(38.0%) of the respondents reported current use of a modern contraceptive method (Fig. 2).

Insert Fig. 2 **here**

Further analysis on the distribution of postpartum contraceptive methods among users indicates that injectables were the most commonly used 74(46.2%) and oral pills were the least utilized method 2(1.3%) (Fig. 3).

Insert Fig. 3 **here**

Individual-level factors associated with uptake of modern contraceptives among adolescents during postpartum period in Lira, Northern Uganda (N = 420)

The vast majority of respondents 396(94.3%) reported no pregnancy complications, and most 407(96.9%) were currently breastfeeding. A substantial proportion had heard of PPFP 347(82.6%) and reported knowledge of fertility return 274(65.2%), while only 126(30.0%) had ever used contraception previously (Table 2).

Table 2
Individual Level Factors Associated with Uptake of Modern Contraceptives Among Adolescents during Postpartum period in Lira, Northern Uganda (N = 420)

Variable	Category	Frequency (N)	Percentage (%)
Age at First Pregnancy	10–14 years	29	6.9
	15–19 years	391	93.1
Number of Children	0	2	0.5
	1	336	80
	2	74	17.6
	3+	8	1.9
Pregnancy Complications	No	396	94.3
	Yes	24	5.7
Breastfeeding Status	No	13	3.1
	Yes	407	96.9
Heard of PPFP	No	73	17.4
	Yes	347	82.6
Knowledge of Fertility Return	No	146	34.8
	Yes	274	65.2
Previous Contraceptive Use	No	294	70
	Yes	126	30

Socio-cultural Factors Associated with Uptake of Modern Contraceptives Among Adolescents during Postpartum period in Lira, Northern Uganda (N = 420)

The majority of respondents reported exposure to family planning information 339(80.7%), while 267 (63.6%) reported partner approval for family planning and most 310(73.8%) had discussed FP with their partners. Most participants indicated cultural or religious barriers to family planning 317(75.5%), while a substantial proportion reported partner approval for family planning (63.6%) (Table 3).

Table 3
Socio-cultural factors associated with uptake of modern contraceptives among Adolescents during postpartum period in Lira, Northern Uganda (N = 420)

Variable	Category	Frequency (N)	Percentage (%)
Partner Approval	No	79	18.8
	Yes	267	63.6
	Not sure	74	17.6
Discussed FP with Partner	No	110	26.2
	Yes	310	73.8
Cultural/Religious Barriers	No	103	24.5
	Yes	317	75.5
Parental/Guardian Support	No	127	30.2
	Yes	293	69.8
Exposure to FP Information	No	81	19.3
	Yes	339	80.7
Community Attitude	Positive	202	48.1
	Negative	206	49
	Neutral	12	2.9
Belief in Myths	No	330	78.6
	Yes	90	21.4

Health System factors associated with uptake of modern contraceptives among Adolescents during postpartum(N = 420)

The majority of respondents reported availability of postpartum family planning services 351(83.6%) and that preferred contraceptive methods were available at their health facilities 373(88.8%). Most

participants received family planning counseling during antenatal care 367(87.4%) and young-child clinic visits 370(88.1%) and perceived health worker attitudes as respectful 403(96.0%) (Table 4).

Table 4
Health system factors associated with uptake of modern contraceptives among Adolescents during postpartum period in Lira, Northern Uganda (N = 420)

Variable	Category	Frequency (N)	Percentage (%)
Availability of PPFP Services	No	22	5.2
	Yes	351	83.6
	Don't know	47	11.2
FP Counseling during ANC	No	53	12.6
	Yes	367	87.4
FP Counseling after Delivery	No	250	59.5
	Yes	170	40.5
FP Counseling during YCC Visits	No	50	11.9
	Yes	370	88.1
Preferred FP Method Available at Health Facility	No	47	11.2
	Yes	373	88.8
Privacy/Confidentiality Availability	No	139	33.1
	Yes	281	66.9
Health Worker Attitude	Harsh	17	4
	Respectful	403	96
Distance to Facility	< 2 km	161	38.3
	2–5 km	190	45.2
	> 5 km	69	16.4

Bivariate analysis of individual factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Bivariate analysis showed that marital status($p < 0.001$), age at first pregnancy($p < 0.001$), previous contraceptive use($p < 0.001$), knowledge of fertility return($p < 0.001$) and awareness of PPFP($p < 0.001$) were associated with uptake of modern postpartum contraceptives (Table 5).

Table 5
Bivariate analysis of individual factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Variable		Modern PPC Use				
	Category	**No n (%)**	**Yes n (%)**	**cPR**	**95% CI**	**p-value**
Age Category (a1)	10–14 years (Ref)	7 (2.7)	3 (1.9)	1	–	–
	15–19 years	252 (97.3)	158 (98.1)	1.3	0.26–6.31	0.755
Schooling Status (a2)	Not in school (Ref)	245 (94.6)	153 (95.0)	1	–	–
	In school	14 (5.4)	8 (5.0)	0.9	0.42–2.12	0.888
Marital Status (a3)	Not in Marital Relationship (Ref)	35 (13.5)	5 (3.1)	1	–	–
	In Marital Relationship	224 (86.5)	156 (96.9)	3.4	1.82–6.32	**< .001***
Education Level (a4)	No education (Ref)	1 (0.4)	2 (1.2)	1	–	–
	Primary	248 (95.8)	145 (90.1)	0.6	0.13–2.41	0.431
	Secondary	8 (3.1)	14 (8.7)	1	0.23–4.01	0.949
	Tertiary	2 (0.8)	0 (0.0)	0	0.00–0.00	**< .001***
Age at First Pregnancy (b81)	10–14 years (Ref)	9 (3.5)	20 (12.4)	1	–	–
	15–19 years	246 (96.5)	140 (87.6)	0.5	0.48–0.58	**< .001***
Previous Contraceptive Use (b5)	No (Ref)	208 (80.3)	86 (53.4)	1	–	–
	Yes	51 (19.7)	75 (46.6)	4	3.24–5.03	**< .001***
Knowledge of Fertility Return (b6)	No (Ref)	110 (42.5)	36 (22.4)	1	–	–

Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category

Bivariate analysis of socio-cultural factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Variable		Modern PPC Use				
	Category	**No n (%)**	**Yes n (%)**	**cPR**	**95% CI**	**p-value**
	Yes	149 (57.5)	125 (77.6)	1.8	1.30–2.60	**0.001***
Heard of PPFP (b7)	No (Ref)	65 (25.1)	8 (5.0)	1	–	–
	Yes	194 (74.9)	153 (95.0)	2	1.81–2.27	**< .001***

Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category

Bivariate analysis of socio-cultural factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Bivariate analysis of socio-cultural factors showed that partner approval($p < 0.001$), discussion of family planning with a partner($p < 0.001$), parental/guardian support($p < 0.001$), peer influence($p = 0.038$), exposure to FP information($p < 0.001$), and community attitude($p < 0.001$) were significantly associated with uptake of modern postpartum contraceptives (Table 6).

Table 6
Bivariate analysis of socio-cultural factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Variable		Modern PPC Use				
	Category	No n (%)	Yes n (%)	cPR	95% CI	p-value
Partner Approval (s1)	No (Ref)	72 (27.8)	7 (4.3)	1	–	–
	Yes	120 (46.3)	147 (91.3)	6.1	4.05–9.30	**< .001***
	Not sure	67 (25.9)	7 (4.3)	1.1	0.98–1.13	**0.141***
Discussed FP with Partner (s2)	No (Ref)	95 (36.7)	15 (9.3)	1	–	–
	Yes	164 (63.3)	146 (90.7)	3.5	2.63–4.56	**< .001***
Cultural/Religious Barriers (s3)	No (Ref)	57 (22.0)	46 (28.6)	1	–	–
	Yes	202 (78.0)	115 (71.4)	0.8	0.57–1.16	0.259
Parental/Guardian Support (s4)	No (Ref)	97 (37.5)	30 (18.6)	1	–	–
	Yes	162 (62.5)	131 (81.4)	1.9	1.82–1.94	**< .001***
Peer Influence (s5)	No (Ref)	45 (17.4)	20 (12.4)	1	–	–
	Yes	214 (82.6)	141 (87.6)	1.3	1.01–1.65	**0.038***
Stigma/Judgment (s6)	No (Ref)	145 (56.0)	87 (54.0)	1	–	–
	Yes	114 (44.0)	74 (46.0)	1.1	0.99–1.11	**0.121***
Exposure to FP Information (s7)	No (Ref)	67 (25.9)	14 (8.7)	1	–	–
	Yes	192 (74.1)	147 (91.3)	2.5	2.30–2.75	**< .001***

Note. *Significant Variable at $p < 0.05$; cPR: Crude Prevalence Ratio; Ref: Reference Category

Bivariate analysis of health system factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Variable		Modern PPC Use				
	Category	No n (%)	Yes n (%)	cPR	95% CI	p-value
Community Attitude (s8)	Positive (Ref)	108 (41.7)	94 (58.4)	1	–	–
	Negative	142 (54.8)	64 (39.8)	0.7	0.63–0.70	**< .001***
	Neutral	9 (3.5)	3 (1.9)	0.5	0.21–1.36	0.187
Belief in Myths (s9)	No (Ref)	193 (74.5)	137 (85.1)	1	–	–
	Yes	66 (25.5)	24 (14.9)	0.6	0.29–1.42	0.274

Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category

Bivariate analysis of health system factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Bivariate analysis of health system factors showed that availability of PPFP services(p = 0.041), FP counseling(p < 0.001), availability of the preferred FP method(p < 0.001), health workers attitude(p < 0.001) and distance to the health facility(p < 0.001) were associated with uptake of modern contraceptives during postpartum (Table 7).

Table 7
Bivariate analysis of health system factors associated with uptake of modern contraceptives among adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Variable		Modern PPC Use				
	Category	No, n (%)	Yes, n (%)	cPR	95% CI	p-value
Availability of PPFP Services	No	18 (6.9)	4 (2.5)	Ref	—	—
	Yes	198 (76.4)	153 (95.0)	2.4	1.04–5.57	**0.041***
	Don't know	43 (16.6)	4 (2.5)	—	—	—
FP Counseling during ANC	No	37 (14.3)	16 (9.9)	Ref	—	—
	Yes	222 (85.7)	145 (90.1)	1.3	1.19–1.45	**< 0.001***
FP Counseling after Delivery	No	176 (68.0)	74 (46.0)	Ref	—	—
	Yes	83 (32.0)	87 (54.0)	1.7	1.42–2.13	**< 0.001***
FP Counseling during YCC Visits	No	45 (17.4)	5 (3.1)	Ref	—	—
	Yes	214 (82.6)	156 (96.9)	4.2	1.57–11.39	**0.004***
Preferred FP Method Available	No	40 (15.4)	7 (4.3)	Ref	—	—
	Yes	219 (84.6)	154 (95.7)	2.8	1.52–5.07	**0.001***
Privacy/Confidentiality	No	83 (32.0)	56 (34.8)	Ref	—	—
	Yes	176 (68.0)	105 (65.2)	0.9	0.81–1.07	0.315
Health Worker Attitude	Harsh	12 (4.6)	5 (3.1)	Ref	—	—
	Respectful	247 (95.4)	156 (96.9)	1.3	1.19–1.46	**< 0.001***

Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category

Multivariate Analysis of Predictors of Modern Contraceptives Use Among Adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Variable		Modern PPC Use				
	Category	No, n (%)	Yes, n (%)	cPR	95% CI	p-value
Distance to Facility	< 2 km	87 (33.6)	74 (46.0)	Ref	—	—
	2–5 km	119 (45.9)	71 (44.1)	0.8	0.75–0.87	**< 0.001***
	> 5 km	53 (20.5)	16 (9.9)	0.5	0.40–0.62	**< 0.001***
Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category						

Multivariate Analysis of Predictors of Modern Contraceptives Use Among Adolescents during the postpartum period in Lira, Northern Uganda (N = 420)

Results of the multivariate Poisson regression analysis demonstrate that adolescents who were breastfeeding were 34% less likely to use modern contraceptives during postpartum compared to those who were not breastfeeding (aPR: 0.66, 95% CI: [0.47, 0.95]). Adolescents who had heard of PPFP were 1.92 times likely to utilize modern postpartum contraceptives compared to those who had not (aPR: 1.92, 95% CI: [1.06, 3.48]). Adolescents who received FP counseling after delivery were 1.60 times likely to utilize modern postpartum contraceptives compared to those who did not receive counseling (aPR: 1.60, 95% CI: [1.27, 2.02]). Adolescents who received FP counseling during YCC visits were 2.52 times likely to utilize modern postpartum contraceptives compared to those who did not (aPR: 2.52, 95% CI: [1.16, 5.47]). Adolescents with access to a preferred FP method were 1.95 times likely to utilize modern postpartum contraceptives compared to those without access (aPR: 1.95, 95% CI: [1.06, 3.56]). Adolescents whose partners approved FP use were 5.67 times likely to utilize modern postpartum contraceptives compared to those without partner approval (aPR: 5.67, 95% CI: [3.10, 10.39]) (Table 8).

Table 8
Multivariate Analysis of Predictors of Modern Contraceptives Use Among Adolescents during the Postpartum period in Lira, Northern Uganda (N = 420)

Variable	cPR (95% CI)	p-value	aPR (95% CI)	p-value
Age category				
10–14 years	1	—	1	—
15–19 years	1.29 (0.48–3.48)	0.618	1.53 (0.76–3.07)	0.236
Breastfeeding status				
No	1	—	1	—
Yes	0.54 (0.34–0.85)	0.008*	0.66 (0.47–0.95)	**0.023***
Heard of PPFP				
No	1	—	1	—
Yes	4.04 (2.02–8.07)	< 0.001*	1.92 (1.06–3.48)	**0.032***
Previous contraceptive use				
No	1	—	1	—
Yes	2.03 (1.58–2.60)	< 0.001*	1.22 (0.97–1.52)	0.09
Age at first pregnancy				
10–14 years	1	—	1	—
15–19 years	0.53 (0.39–0.71)	< 0.001*	0.70 (0.52–0.93)	**0.016***
FP counseling during ANC				
No	1	—	1	—
Yes	1.31 (0.90–1.91)	0.153	0.61 (0.42–0.88)	**0.008***
FP counseling after delivery				
No	1	—	1	—
Yes	1.74 (1.33–2.27)	< 0.001*	1.60 (1.27–2.02)	**< 0.001***
Preferred FP method available				
No	1	—	1	—
Yes	2.78 (1.28–6.02)	0.010*	1.95 (1.06–3.56)	**0.031***
FP counseling during YCC visits				

Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category

Variable	cPR (95% CI)	p-value	aPR (95% CI)	p-value
No	1	—	1	—
Yes	4.23 (1.86–9.60)	0.001*	2.52 (1.16–5.47)	**0.019***
Partner approval				
No	1	—	1	—
Yes	6.13 (3.10–12.15)	< 0.001*	5.67 (3.10–10.39)	**< 0.001***
Parental/guardian support				
No	1	—	1	—
Yes	1.88 (1.32–2.66)	< 0.001*	1.13 (0.85–1.49)	0.403
Stigma/Judgment				
No	1	—	1	—
Yes	1.05 (0.81–1.34)	0.731	1.14 (0.92–1.41)	0.221
Note. *Significant Variable at p < 0.05; cPR: Crude Prevalence Ratio; Ref: Reference Category				

Discussion

In this study, we assessed the factors associated with modern contraceptive use among adolescents during the postpartum period in Lira, Northern Uganda. We found that the overall uptake of modern contraceptive use among adolescents during the postpartum period was 38%. This implies that only about four in every ten adolescent mothers were using a modern contraceptive method within the first year postpartum. This level of utilization reflects a moderate but still suboptimal uptake in a high-risk population for rapid repeat pregnancies. The prevalence observed in this study is higher than findings from Ethiopia (28.4%) and Kenya (31.7%) among postpartum adolescents, but lower than estimates reported in urban Ugandan settings and Rwanda where uptake reaches approximately 49.8% and 52.0%, respectively [14–16, 18–20, 28]. The variation across settings may reflect differences in health system integration of family planning services, urban–rural disparities, and differential access to adolescent-responsive care.

Breastfeeding was associated with reduced uptake of modern contraception, with breastfeeding adolescents 34% less likely to use a method. This likely reflects overreliance on lactational amenorrhea as a perceived protective method and underestimation of early postpartum fertility return. Similar findings from Uganda and Ethiopia show that misconceptions about breastfeeding as contraception delay initiation of modern methods [9, 20, 21]. This points to gaps in postpartum counseling, particularly in reinforcing accurate information on fertility return and timely transition to effective contraceptive methods.

Awareness of postpartum family planning was a strong enabling factor, with adolescents who had heard of PPFP nearly twice as likely to use modern contraception. This is consistent with studies from Uganda, Ethiopia, and Kenya demonstrating that exposure to family planning information significantly improves uptake among adolescents [5, 9, 29]. Knowledge likely improves perceived risk of rapid repeat pregnancy, reduces misconceptions, and increases confidence in method use, underscoring the importance of sustained, adolescent-tailored information through multiple communication channels and routine service delivery points [28].

Adolescents whose first pregnancy occurred at 15–19 years were 30% less likely to use postpartum contraception compared to those who conceived earlier. This may reflect lower perceived vulnerability or reduced targeting by adolescent-focused reproductive health interventions among older adolescents. Similar age-related disparities have been reported in Uganda, where programmatic focus often prioritizes younger adolescents [18, 24, 30]. This finding highlights the need for inclusive postpartum family planning strategies that ensure older adolescents are not excluded from intensified counseling and follow-up.

Postpartum counseling significantly improved use, particularly counseling after delivery (aPR = 1.60) and during Young Child Clinic visits (aPR = 2.52), whereas antenatal counseling showed weaker influence. This suggests that repeated postnatal contacts provide more effective opportunities for reinforcing messages and supporting informed decision-making at the point of need. Similar evidence across sub-Saharan Africa shows stronger effects of integrated postnatal and child health family planning services compared to antenatal counseling alone [19, 21]. Strengthening continuity of counseling across the maternal care continuum is therefore essential.

Availability of preferred contraceptive methods was positively associated with uptake (aPR = 1.95), consistent with evidence that method choice and reliable supply enhance acceptance and continuation of contraception [3, 7, 14, 22]. Ensuring uninterrupted availability of a broad method mix tailored to adolescent needs remains central to improving postpartum contraceptive use in similar settings.

Partner approval emerged as the strongest predictor of uptake (aPR = 5.67), highlighting the dominant role of male partners in reproductive decision-making. Adolescents with supportive partners were substantially more likely to use contraception, reflecting persistent gender power imbalances in Northern Uganda. This finding aligns with evidence across sub-Saharan Africa emphasizing the importance of male involvement and spousal communication in postpartum contraceptive uptake [21, 23, 31]. It underscores the need for gender-transformative and couple-based interventions that promote shared decision-making and male engagement.

Overall, modern postpartum contraceptive uptake among adolescents in Lira District remains suboptimal and is shaped by intersecting informational, socio-cultural and health system factors. Strengthening integrated adolescent-responsive counseling, improving method availability, addressing misconceptions about breastfeeding and enhancing male partner engagement are critical to improving uptake and reducing repeat adolescent pregnancies

Study strengths and limitations

This study drew on a relatively large and adequate sample of adolescents, which enhanced the statistical power and reliability of the findings. Participants were recruited from different communities within Lira District, allowing for variation in socio-demographic and health service experiences, thereby improving the representativeness of the study population. In addition, the study utilized a robust and structured data collection tool with comprehensive variables covering individual, socio-cultural and health system factors, enabling a more holistic analysis of determinants of modern postpartum contraceptive use. The use of adjusted analysis further strengthened the study by controlling for potential confounders and improving the accuracy of estimated independent associations.

This study also had limitations. First, the cross-sectional design limited the ability to establish causal or temporal relationships, meaning the findings reflect associations rather than cause-and-effect; however, this was partially addressed through multivariable regression analysis and inclusion of a diverse sample drawn from both urban and rural health facilities, which strengthened the validity of the results. Secondly, the study relied on self-reported information on contraceptive use, partner influence and health system experiences, which may have introduced recall and social desirability bias; this was minimized through provision of privacy during interviews and the use of neutral, non-leading questions to encourage accurate responses.

Conclusion

Modern postpartum contraceptive use among adolescents in Lira District remains relatively low, indicating that a substantial proportion of adolescent mothers are still not protected from rapid repeat pregnancies despite available services. This suggests important gaps between service availability and actual utilization. The findings show that uptake is strongly influenced by knowledge of postpartum family planning, partner approval and access to quality counseling and preferred contraceptive methods, while breastfeeding and timing of first pregnancy also shape use patterns, likely through misconceptions and socio-cultural influences. Strengthening continuous, adolescent-responsive postpartum counseling, ensuring consistent availability of preferred methods, and actively engaging male partners are critical to improving uptake. Further qualitative studies are recommended to better understand deeper social and cultural barriers influencing contraceptive decision-making among adolescent mothers in similar settings.

Abbreviations

ANC Antenatal Care

aPR Adjusted Prevalence Ratio

CAO Chief Administrative Officer

DHO District Health Officer

FP Family Planning

LUREC Lira University Research Ethics Committee

FP Postpartum Family Planning

PNC Postnatal Care

WHO World Health Organization

YCC Young Child Clinic

MCU Modern Contraceptive Use

HC Health Centre

Declarations

Ethical Considerations

The study protocol was approved by the Lira University Research Ethics Committee (LUREC) (approval number: LUREC-2025-489). Administrative clearances were also obtained from the Chief Administrative Officer (CAO) and the District Health Officer (DHO) of Lira District, while the in-charges of the selected Health Centre III and IV facilities were informed prior to data collection and permission granted. Participation in the study was voluntary, and informed written consent was mandatory before participating in the study. For adolescents below 18 years, assent was obtained in addition to parental or guardian consent. Participants were free to withdraw from the study at any one point even during the interview. Privacy was ensured by conducting the interviews in a private room one-on-one. There will be dissemination of study results in which the participating facilities and the study participants will be informed about the study results.

Consent for publication

Not applicable as no individual person's data in any form including any individual details, images or videos have been included in this manuscript.

Competing interests

The authors declare no competing interests.

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Author Contribution

SKO conceived and designed the study, coordinated data collection, performed data analysis and interpretation and prepared the first draft of the manuscript. SU, RB and MSO supervised the study conceptualization, protocol development, data collection, data analysis and critically reviewed the manuscript for intellectual content. EA, MKA, BO, AGA, OM, MCO, JA, EE and EA contributed to the study design, interpretation of findings, drafting and critical review of the manuscript. All authors reviewed and agreed to the final manuscript.

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Availability of data and materials

The data sets generated and analyzed during the current study are not publicly available as no provisions were made to make them publicly available in terms of participants' consent. However, the data is available from the corresponding author on reasonable request.

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Figures

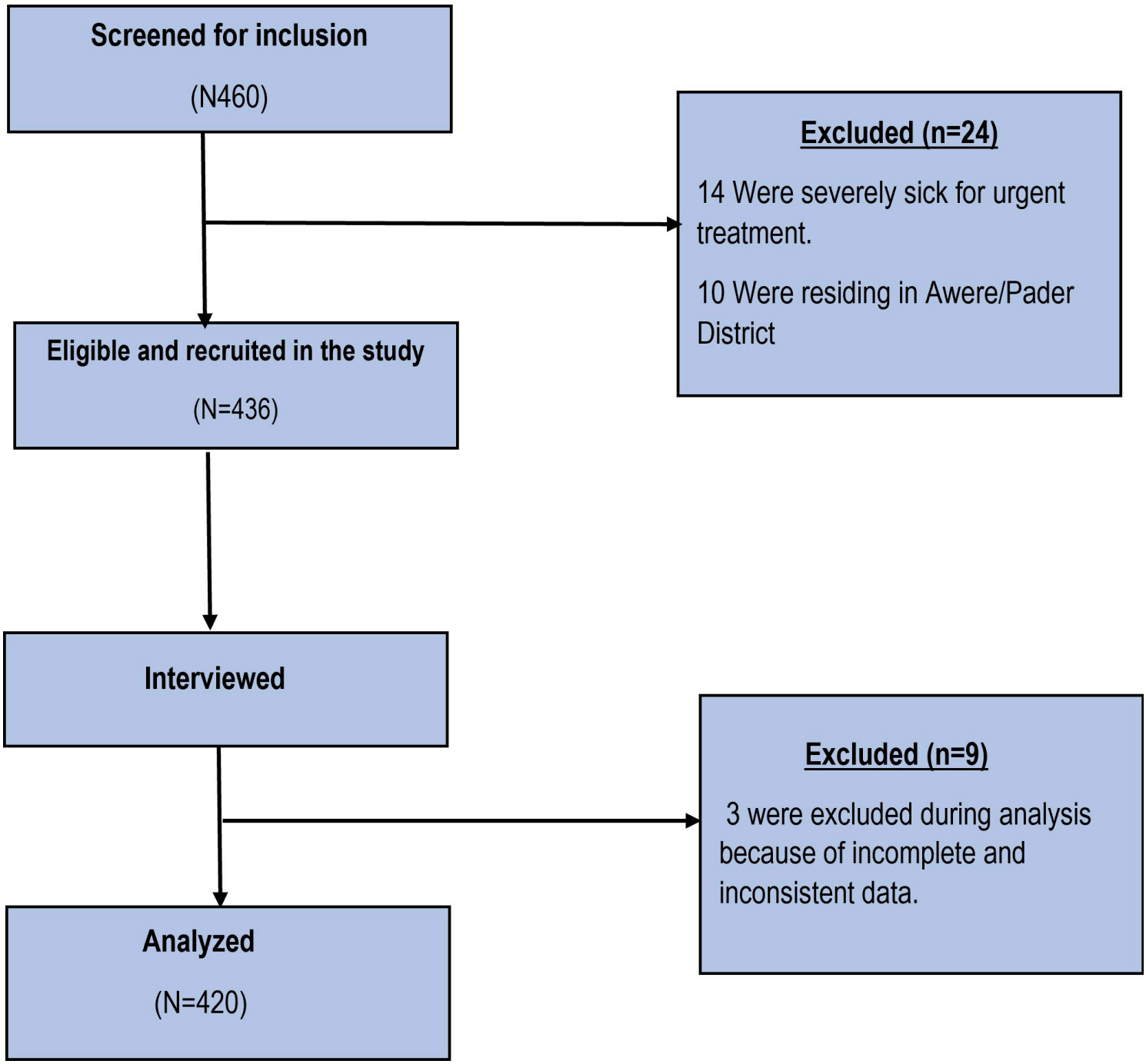


Figure 1

Flow chart of recruitment of study Respondents

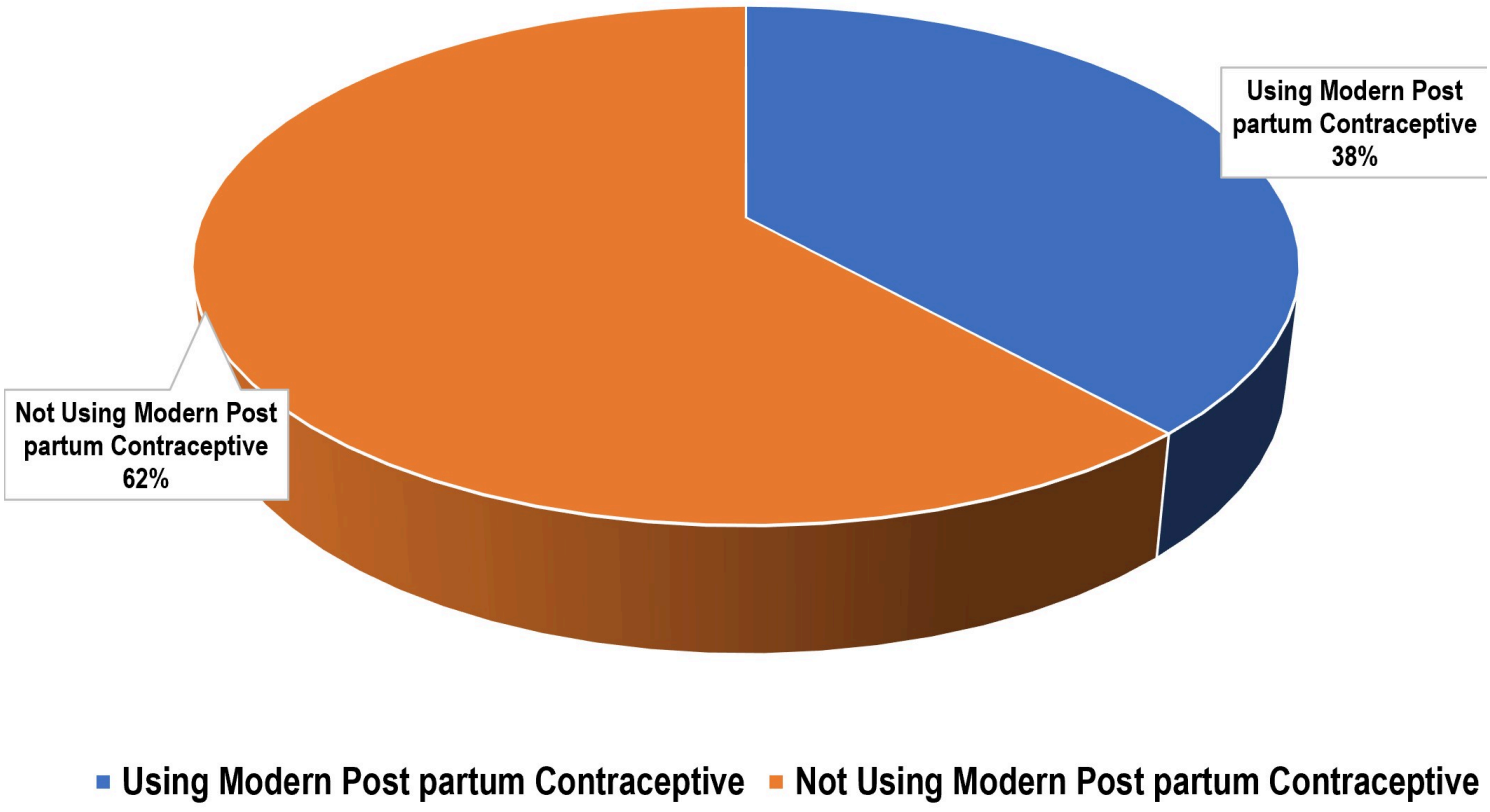


Figure 2

Uptake of modern contraceptives among *a*dolescents during *p*ostpartum in Lira, Northern Uganda

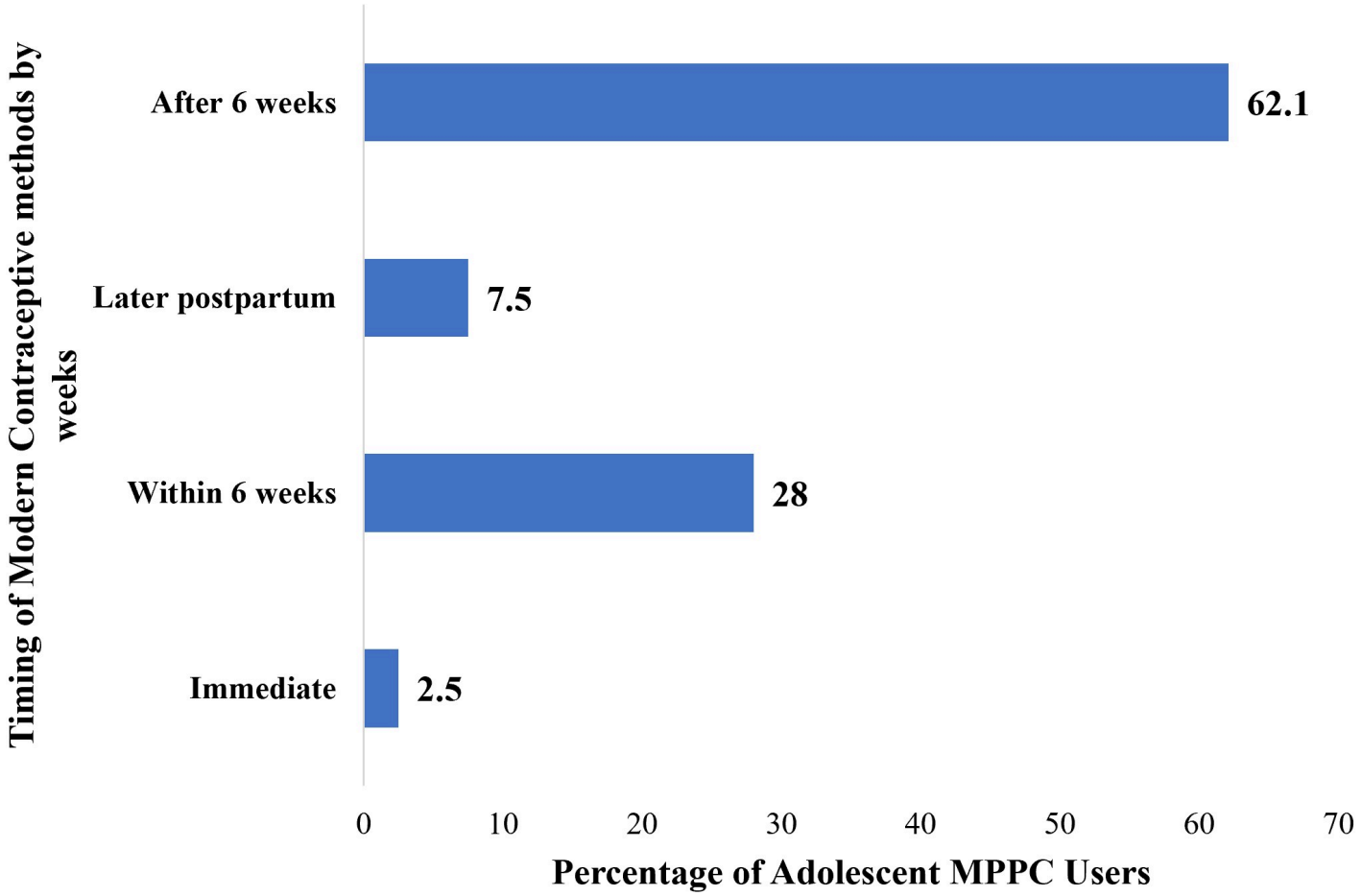


Figure 3

Further analysis of Timing for modern contraceptive use among adolescents during Postpartum in Lira, Northern Uganda

Supplementary Files

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