




Immediate postpartum intrauterine contraceptive device utilization and associated factors among women who gave birth in public health facilities of Adama town, Ethiopia

SAGE Open Medicine
Volume 10: 1–8
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DOI: 10.1177/20503121221142412
journals.sagepub.com/home/smo



Etenat Aemro¹, Meyrema Abdo², Alem Deksisa²,
Afework Alemayehu³, Teshale Mulatu³ ,
Tahir Ahmed Hassen³, Alemayehu Molla⁴ ,
and Kedir Teji Roba³

Abstract

Objectives: The evidence on utilization of immediate postpartum intrauterine contraceptive devices (IPPIUCDs) and its associated factors are limited in Ethiopia. Hence, this study intended to assess IPPIUCD utilization and related factors among women who gave birth in Adama town public hospitals, Ethiopia.

Method: A facility-based cross-sectional study was done among 493 postpartum mothers at selected government health facilities in Adama town from January 20 to February 20, 2021. All women who gave birth in selected government health facilities and within 48 h of postpartum were included in the study. Data were collected using an interviewer-administered questionnaire. Logistic regression models were used to identify the factors associated with IPPIUCD utilization. Adjusted odds ratios (AORs) with 95% confidence interval (CI) were calculated to measure the strength of association and statistical significance was declared at $p < 0.05$.

Result: In this study, 22.1% (95% CI: 17.3–25.2) of the mothers used IPPIUCDs within 48 h of giving birth. Having three or more children (AOR = 4.18, 95% CI: 1.79–9.79), having no desire to have another child (AOR = 3.9, 95% CI: 1.86–8.17), counseling after delivery (AOR = 3.1, 95% CI: 1.52–6.34), and having good knowledge about PPIUCD (AOR = 3.82, 95% CI: 1.94–7.49) were significantly associated with IPPIUCD utilization.

Conclusion: The utilization of IPPIUCD in this study was low. Strategies to raise pregnant mothers' awareness of IPPIUCD through mass media, and integrating standard counseling on immediate postpartum intrauterine device (IPPIUD) during antenatal care, and the immediate postpartum period are required to improve IPPIUD utilization.

Keywords

Utilization, postpartum intrauterine device, immediate postpartum contraceptive, Adama town, Ethiopia

Date received: 05 July 2022; accepted: 14 November 2022

Introduction

Family planning (FP) allows couples to achieve their desired number of children, and to decide the spacing of their pregnancies. It is a crucial life-saving intervention for mothers and their children. It can prevent more than 30% of maternal deaths and 10% of child death if pairs space their pregnancies more than 2 years apart. Postpartum FP refers to the method used to prevent unplanned pregnancy and closely spaced pregnancies through the first year after childbirth.^{1,2}

¹Burka Health Center, Eastern Shewa, Ethiopia

²Department of Public Health, Adama Hospital Medical College, Adama, Ethiopia

³School of Nursing and Midwifery, College of Health and Medical Science, Haramaya University, Harar, Ethiopia

⁴College of Health and Medical Science, Diredawa University, Diredawa, Ethiopia

Corresponding author:

Afework Alemayehu, School of Nursing and Midwifery, College of Health and Medical Science, Haramaya University, P.O. Box 235, Harar, Ethiopia.
Email: abitafewushi@gmail.com



Postpartum FP reduces maternal mortality and morbidity by 75%, reduces unwanted and mistimed pregnancies by two-thirds, and reduces the risks of abortion by 73%.^{3,4} Evidence shows that 95% of postpartum women in resource-limited countries want to avoid pregnancy for at least 2 years, and nearly two-thirds of the women had an unmet need for FP services.^{5,6}

The 2016 Ethiopia Demographic and Health Survey showed that, among postpartum women who did not intend to have children soon, only 23.7% used modern FP and 22% of children were born less than 2 years after their siblings.⁷

Postpartum FP intervention focused on long-acting reversible contraception plays a vital role in the spacing of pregnancies and improving maternal and newborn health.⁸ The use of long-term contraceptive methods reduces maternal deaths by 40%, infant mortality by 10%, and childhood mortality by 21%.⁹

Postpartum intrauterine contraceptive device (PPIUCD) is a highly effective, reversible, and long-acting contraceptive with failure rates of less than 1% in the first year of use, and it does not affect breastfeeding.¹⁰ Immediate postpartum intrauterine device (IPPIUD) insertion can be done within 10 min after placental delivery and until 48 h of postpartum.¹¹ Although the immediate PPIUCD (IPPIUCD) is highly effective and safe for lactating mothers, only < 1% of postpartum women used it in Ethiopia.⁷ Numerous factors attributed to the non-use of IUCD in the immediate postpartum period: marital status, educational status, number of alive children, family size, husband approval, antenatal care (ANC) follow-up, place of delivery, and counseling during postnatal care (PNC) were some of the factors that affect PPIUD utilization.^{12,13}

The Ethiopian government had planned to increase the use of contraceptives among married women of the reproductive age group to 55% and decrease the unmet need to 10% by 2020.¹⁴ The national FP guideline recommends integrating FP counseling during ANC, immediately after delivery, and PNC services. Furthermore, FP counseling and services were being provided for the women at the community level by health extension workers.^{6,15} These health personnel provide injectable contraception and currently have begun to insert implants. Yet, the use of IPPIUCD is not well-practiced and almost absent from the contraceptive method mix. Although, copper-bearing IUCD (TCu-380A) is broadly available and freely offered in public healthcare facilities, it is still very much underutilized in Ethiopia. Understanding the factors that affect the utilization of IPPIUCD is therefore important in designing interventions aimed to improve IPPIUCD uptake. This study, therefore, aimed to determine the prevalence of immediate postpartum IUCD utilization and identify its associated factors among mothers who gave birth at Adama town public hospitals.

Materials and methods

Study area and period

This study was conducted in Adama town, Ethiopia. Adama town is located 99 km south-east of Addis Ababa, the capital of Ethiopia. According to national census of 2007, the town has a total population of 250,817 among which 125,449 were females.¹⁶ There was one government hospital, three private hospitals, seven government health centers, one private clinic, and two maternal health clinic, namely Marie stops clinic and Family Guidance Association of Ethiopia, in the town. The study was conducted from January 20 to February 20, 2021 in the selected public health facilities of Adama town, Ethiopia.

Study design and population

The facility-based cross-sectional study was conducted among all mothers who gave birth within the last 48 h in the selected public health facilities of Adama town during the study period. Mothers with serious mental health problem and critically diseased were excluded from the study.

Sample size and sampling techniques

The sample size was calculated using double proportion formula for factors associated with immediate postpartum IUCD utilization. Taking plan to have another child as exposure variable (21.1% among unexposed and 33.3% among exposed),¹⁷ confidence level of 95%, the margin of error 5%, the power 80%, and the ratio of exposed to unexposed 1:1, yields a sample size of 448. Considering a 10% non-response rate, the final sample size was 493. Simple random sampling was used to select five health facilities (one hospital and four health centers) among eight public health facilities in the study area. During the study period, a total of 977 deliveries were recorded at selected health facilities. Then the sample was proportionally allocated to each health facility based on their case flows. All mothers who gave birth at selected health facilities within the last 48 h during the data collection period were consecutively included in the study until the required sample was reached.

Data collection tool and procedure

The data collection tool was adapted from previous similar studies.^{18–26} Data were collected using a structured questionnaire through a face-to-face interview. The training was given to both data collectors and supervisors for 1 day. The tool was pre-tested on 5% of the sample size in different health centers which were not included in the actual study. Corrections and modifications were made based on the result of the pre-test. Each eligible woman was approached after delivery within 48 h of postpartum. The women were asked whether they had IUCD inserted following delivery and

cross checked from summary of their medical record. The data collection process was supervised on regular bases and checked for completeness.

Statistical analysis

Data were entered into Epi info version 7 and then exported to SPSS version 22 for further analysis. Descriptive statistics were computed to characterize the study participants by the study variables. Binary logistic regression was used to analyze the association between the independent and dependent variables. Hosmer and Lemeshow's test for goodness of fit was used to assess whether the necessary assumptions were fulfilled. Those variables with a p value of less than 0.25 ($p < 0.25$) in bivariate analysis were included in multivariable logistic regression to control possible confounders. Adjusted odds ratio (AOR) with a 95% confidence interval (CI) was used to present the association and the level of significance was declared at a p value of less than 0.05. Accordingly, knowledge about PPIUCD, desire to have more children, ANC follow-up, partner support, number of alive children, educational status, attitude towards IUCD, gravidity, and counseling after delivery were selected as candidate variables in the bivariable logistic regression. However, after adjusting for other variables, knowledge about PPIUCD, desire to have more children, the number of alive children, and counseling after delivery remained significantly associated with immediate postpartum IUCD utilization in the multivariable model.

Operational definitions

Immediate postpartum IUCD utilization: It refers to the use of copper-bearing IUCD (TCu-380A) during the first 48 h after delivery.

Knowledge on IUCD: The woman was considered as having good knowledge if she answered equal to or above mean score of knowledge assessment questions and poor knowledge if she answered less than mean score of knowledge assessment questions.¹⁹

Attitude toward IUCD: The woman was categorized as having a positive attitude if she answered greater than the mean score of attitude questions and negative attitude if she scored less than the mean score of attitude questions.¹⁹

Results

Sociodemographic characteristics of the participants

A total of 488 mothers participated in this study which gave a 98.9% response rate. The mean age of the respondents was 26.9 years (± 5.4 SD). More than two-fifths of the study participants (213) had secondary education and about half (246) were housewives (Table 1).

Table 1. Socioeconomic and demographic characteristics of mothers who gave birth in public health facilities of Adama town, Ethiopia, 2021 ($n = 488$).

Characteristics	Category	Frequency	Percent
Residence	Urban	403	82.6
	Rural	85	17.4
Age (years)	18–22	116	23.8
	23–27	179	36.7
	28–32	95	19.5
	33–37	69	14.1
	38–42	29	5.9
Marital status	Married	471	96.5
	Unmarried	17	3.5
Religion	Orthodox	239	49.0
	Muslim	165	33.8
	Protestant	79	16.2
	Others*	5	1.0
Educational level	No formal education	52	10.7
	Primary	89	18.2
	Secondary	213	43.6
	Higher and above	134	27.5
Occupational status	Student	29	5.9
	Employee	82	16.8
	Housewife	246	50.4
	Merchant	49	10.0
	Unemployed	56	11.5
	Others**	26	5.3
	Partner's education	No formal education	65
Primary		85	17.4
Secondary		196	40.2
Higher and above		142	29.1
Partner's occupation	Daily laborer	51	10.5
	Employee	155	31.8
	Unemployed	12	2.5
	Merchant	113	23.2
	Farmer	102	20.9
	Others*	55	11.3
	Monthly income	<5000	363
≥ 5000		125	25.6

*Others: Catholic, Pagans, business owners, daily laborers.

Reproductive characteristics of participants

This study found that 216 (44.3%) of the participants had a history of 2–3 pregnancies. The majority, 363 (74.4%), of the participants had 1–2 alive children. Among the participants, 116 (23.8%) mothers had unplanned last pregnancies. The most commonly cited reason for unplanned pregnancy was the non-use of contraceptive method (76.2%) (Table 2).

Table 2. Reproductive characteristics of mothers who gave birth in public health facilities of Adama town, Ethiopia, 2021 (n = 488).

Characteristics	Category	Frequency	Percent
Gravidity	1	198	40.6
	2–3	216	44.3
	4 and above	74	15.2
Parity	1	233	47.7
	2–4	234	48.0
	5 and above	21	4.3
Number of alive children	1–2	363	74.4
	3 and above	125	25.6
Abortion history	Yes	91	18.6
	No	397	81.4
Number of abortion (n = 91)	1	77	84.6
	2 and more	14	15.4
Last pregnancy planned	Yes	372	76.2
	No	116	23.8
Reason for unplanned pregnancy (n = 116)	Method failure	33	28.4
	Not using any contraceptive	83	71.6
Plan to have more children	Yes	368	75.4
	No	120	24.6
Number of children you plan to have (n = 368)	1–2	240	65.2
	3–4	124	33.7
	5 and above	4	1.1
	<2 years	58	15.8
Next pregnancy plan (n = 368)	≥2 years	310	84.2
	Yes	404	82.8
Partner support	No	84	17.2
	Husband	36	7.4
Decision-maker on use of FP	Wife	118	24.2
	Jointly	334	68.4

FP, family planning.

Health service utilization of the participants

Most of the study participants, 471 (96.5%), had ANC follow-up for their current pregnancy and 124 (26.3%) mothers had counseling on postpartum FP during their visit. Four hundred (82.0%) of the participants ever used contraceptives. While 194 (48.5%) of the participants used injectable FP, only 14 (3.5%) used IUCD (Table 3).

Immediate postpartum IUCD utilization among the participants

Of the total participants, 108 (22.1%) had utilized PPIUCD immediately (within 48 h of giving birth). The reported

Table 3. Health service utilization of mothers who gave birth in public health facilities of Adama town, Ethiopia, 2021 (n = 488).

Characteristics	Category	Frequency	Percent
Time taken to arrive to HF	≤30 min	393	80.5
	>30 min	95	19.5
Method of transportation	By foot	128	26.2
	By public transport	352	72.1
	By own car	8	1.6
ANC follow up	Yes	471	96.5
	No	17	3.5
Frequency of ANC (n = 471)	1–2	64	13.6
	3–4	323	68.6
	5 and above	84	17.8
Counseling during ANC	Yes	124	26.3
	No	347	73.7
Mode of delivery	Vaginal delivery	311	63.7
	Caesarian delivery	177	36.3
Current birth outcome	Alive	468	95.9
	Dead	20	4.1
Counseling after delivery	Yes	343	70.3
	No	145	29.7
Contraceptive used	Yes	400	82.0
	No	88	18.0
Types of contraceptives used	Injection	194	48.5
	Implant	87	21.8
	Pills	73	18.2
	Emergency contraceptive	29	7.2
	IUCD	14	3.5
	Condom	3	0.8

ANC, antenatal care; IUCD, intrauterine contraceptive device.

reasons for not using immediate PPIUD were as follows: wanting to use it another time 197(51.9%), preference for another method 117(30.8%), fear of side effects 18(4.7%), and partner disapproval 15(4.0%) (Figure 1).

Knowledge and attitude of participants toward PPIUCD

Out of 488 study participants, 466 (95.5%) have heard about PPIUCD and 307 (62.9%) were aware that PPIUCD can be inserted immediately after delivery. More than half (53.7%) of the participants had a good knowledge about PPIUCD and knew that pregnancy can happen after removal of IUCD. Furthermore, 292 (59.8%) of the participants knew the side effect of IUCD and more than half, 274 (56.1%) of them had a positive attitude toward PPIUCD use.

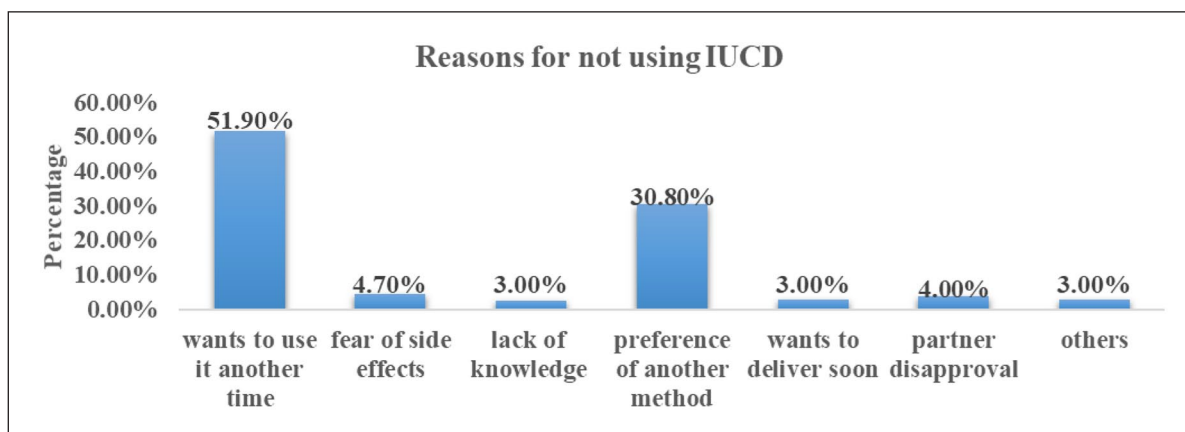


Figure 1. Reason for not using IPPIUCD among mothers who gave birth in public health facilities of Adama town, East Shewa zone Ethiopia 2021. IPPIUCD, immediate postpartum intrauterine contraceptive device.

Factors associated with immediate postpartum IUCD utilization

Women who had three or more children were four times more likely to use IPPIUCD than those who had only 1–2 children (AOR=4.18, 95% CI: 1.785–9.790). Women with no desire to have another child were almost four times more likely to use IPPIUCD than those women who have a desire to have another child (AOR=3.9, 95% CI: 1.863–8.173). Mothers who had counseling after delivery were three times more likely to use PPIUCD than women who had not (AOR=3.1, 95% CI: 1.522–6.346). Women with good knowledge of PPIUCD were 3.8 times more likely to use IPPIUCD than women with poor knowledge (AOR=3.815, 95% CI: 1.942–7.494) (Table 4).

Discussion

For mothers who rarely visit health institutions, IUCD insertion during the immediate postpartum increases the opportunities for reaching couples with FP options. This study assessed the prevalence of IPPIUCD utilization and associated factors among postpartum women visiting public health facilities in Adama town, Ethiopia.

The prevalence of IPPIUCD utilization in this study was 22.1% (95% CI: 17.3–25.2), which was consistent with studies done in North Shoa (21.3%),²⁰ Sidama, (21.9%),¹⁷ and pooled prevalence in Ethiopia (21.6%).²¹ However, it was higher than the studies conducted in Uganda (16.3%),²² Bale zone (12.4%),²³ Bahir Dar (13.3%),²⁴ and Debre Tabor (3.3%), Ethiopia.²⁵ These variations might be due to differences in sociocultural and demographic characteristics, and the number of facilities involved in the study. Moreover, studies conducted in Bahir Dar, Debre Tabor, and Uganda were conducted with small sample size and on a single facility which may result in decreased number of IPPIUCD users.

Yet, the finding of this study was lower than the one reported in the studies conducted in Addis Ababa (26.6%),¹⁹ and other African countries such as Nigeria (41%).²⁶ This difference might be the result of variation in the quality of healthcare provision, where tertiary-level healthcare services were given and most of the participants had higher educational status with better access to information about IPPIUCD compared to our study.

According to this study, mothers who did not have the desire to have other children were 3.9 times more likely to use IUCD than women who had the desire. This finding is similar to the study done in Sidama, Ethiopia.¹⁷ This may be due to mothers who had more children might use PPIUCD to prevent unplanned pregnancy and to space birth.

In this study, women who got counselling after delivery were three times more likely to use postpartum IUCD than their counterparts (AOR=3.1 95% CI: 1.522–6.346). This finding is similar to studies done in Sidama,¹⁷ Bahir Dar,²⁴ Addis Ababa,¹⁹ Ethiopia, and Rwanda.¹⁸ This might be because women who received FP counseling could be highly motivated and encouraged to use PPIUCD. This might also be due to counseling can solve traditional attitudes and myths thinking that PPIUCD is bad. On the other hand, counseling can have made clients to improve their knowledge about the methods they are going to use.

This study shows that women who had good knowledge about PPIUCD were 3.8 times more likely to use IPPIUCD than those women who had poor knowledge (AOR=3.815, 95% CI: 1.942–7.494). This is comparable with the study done in Addis Ababa,¹⁹ and meta-analysis finding in Ethiopia.²¹ This could be because mothers who had good knowledge about PPIUCD may have better practice and they are more likely to use the method consistently and effectively than their counterparts.

This study also revealed that the number of alive children was significantly associated with IPPIUCD utilization.

Table 4. Factors associated with immediate postpartum IUCD utilization among mothers who gave birth in public health facilities of Adama town, Ethiopia, 2021 (n = 488).

Variables	IPPIUCD use		COR (95% CI)	AOR (95% CI)	p Value
	Yes (%)	No (%)			
Knowledge level					
Poor knowledge	112 (49.5)	114 (50.5)	1	1	0.014*
Good knowledge	145 (55.3)	117 (44.7)	1.26 (1.23–6.29)	3.82 (1.94–7.94)	
Gravidity					
1	80 (40.4)	118 (59.6)	1	1	0.59
2–3	96 (44.4)	120 (55.6)	0.84 (0.67–2.33)	1.193 (0.51–2.80)	
4 and above	63 (85)	11 (15)	0.12 (0.14–5.45)	1.962 (0.56–6.43)	
Desire to have more children					
No	36 (30)	84 (70)	1.30 (1.24–7.63)	3.90 (1.86–8.17)	0.001*
Yes	91 (24.7)	277 (75.3)	1	1	
Partner support					
Yes	334 (82.7)	70 (17.3)	1.03 (0.75–5.42)	2.755 (0.97–7.84)	0.059
No	69 (82.1)	15 (17.9)	1	1	
Number of alive children					
1–2	121 (74.2)	42 (25.8)	1	1	0.000*
3 and above	221 (68)	104 (32%)	1.36 (1.22–8.64)	4.18 (1.78–9.79)	
Attitude towards PPIUCD					
Positive	148 (54)	126 (46)	1.66 (0.21–2.48)	1.54 (0.85–2.79)	0.062
Negative	90 (42)	124 (58)	1	1	
ANC follow-up					
Yes	193 (75)	278 (25)	1.66 (0.17–2.56)	1.41 (0.716–2.76)	0.097
No	12 (71.2)	5 (28.8)	1	1	
Counseling after delivery					
Yes	30 (25)	90 (75)	1.09 (1.01–5.98)	3.12 (1.52–6.35)	0.023*
No	91 (24.7)	277 (75.4)	1	1	

ANC follow-up, partner support, attitude toward IUCD, and gravidity were adjusted in the final model.

*p < 0.05, 1 = reference.

ANC, antenatal care; AOR, adjusted odds ratio; COR, crude odds ratio; IPPIUCD, immediate postpartum intrauterine contraceptive device

Mothers who had three or more alive children were four times more likely to use IPPIUCD than those mothers who had 1–2 children. This is in line with the study done in Nigeria²⁶ and Jimma, Ethiopia.¹³ This similarity may be due to mothers who had three or more children wanting to limit the number of children; hence, they are more likely to use the method consistently and effectively than their counterparts. Furthermore, having more children may decrease the women's desire for another pregnancy and they might need enough time to recover from their exhaustion.

As a limitation, this study was conducted among mothers who were in their immediate postpartum period (48 h) only. In addition, it did not include private clinics which provide maternal healthcare services. So, the result of this study may not be generalized to all postpartum mothers and facilities providing maternal healthcare services. With this limitation, this study can be used in the local context to plan an implementation program and set strategies to improve PPIUCD utilization.

Conclusion

Immediate postpartum IUCD utilization in the study area was low. Having three or more children, desire to have another

child, counseling after delivery, and having good knowledge about PPIUCD were significant factors for IPPIUCD utilization. The results imply the need for designing appropriate strategies to ensure effective utilization of IPPIUCD.

Acknowledgements

We acknowledge the study participants, data collectors, supervisors, Adama town health office, health facility administrators, and staff for their willingness to give their time and information for this study.

Authors' Contributions

All authors conceived the study, involved in the study design, reviewed the articles for analysis, and drafted the manuscripts. All authors have read and approved the final manuscript.

Consent for publication

Not applicable

Data Availability

All related data are presented fully within the paper. Additional data are available from the corresponding author on reasonable request.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Ethical Consideration

Ethical clearance was obtained from Adama Hospital Medical College Ethical Review Board with the Ref. No. AHMC-IRB/09/2020 and a formal letter was obtained from Oromia regional health bureau and Adama town health office. A letter of cooperation was submitted for those selected health facilities. Informed written signed consent was obtained from study participants, and from legally authorized representatives for illiterate participants. To ensure confidentiality, the questionnaire was coded and the name of participants was not included. The women were counseled to return back to the facility if there were any complications related to PPIUCD insertion and a need for help arose.

Informed consent

Formal letters were written to all concerned authorities and permission was secured at all levels. After explaining the purpose and procedure of the study, informed written signed consent was obtained from study participants, and from legally authorized representatives for illiterate participants. All the basic principles of human research ethics (respect of persons, beneficence, voluntary participation, confidentiality, and justice) were respected.

Trial registration

Not applicable

ORCID iDs

Teshale Mulatu  <https://orcid.org/0000-0002-5134-6701>

Alemayehu Molla  <https://orcid.org/0000-0001-6987-2497>

Supplemental material

Supplemental material for this article is available online.

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