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Postabortion contraceptive use among women in Nepal: results from a longitudinal cohort study

Sunita Karki[1*], Mahesh C. Puri[1], Anupama Ale Magar[1], Diana Greene Foster[2], Sarah Raifman[2], Dev Maharjan[1] and Nadia Diamond-Smith[3]

Abstract

Introduction Although the Government of Nepal has developed strategies to integrate contraceptive services with abortion care to better meet the contraceptive needs of women, data indicate that significant gaps in services remain. This paper assessed post-abortion contraceptive use, trends over 36 -months, and factors influencing usage.

Methods Data from this paper came from an ongoing cohort study of 1831 women who sought an abortion from one of the sampled 22 government-approved health facilities across Nepal. Women were interviewed eight times over 36 months between April 2019 to Dec 2023. Bivariate and multivariate analysis were used to analyze the data.

Results Results show that after abortion, 59% of women used modern contraception, with injection being the most prevalent method, followed by condoms, pills, implants, and IUD. The hazard model showed that discontinuation of modern contraception was significantly higher among women desiring additional children (aHR 0.62) and lower among literate (aHR – 0.15) and those with existing children (aHR – 0.30). Women's age, ethnicity, cohabitation with husband, household's income and autonomy were not associated with continuation.

Conclusion After having an abortion, we found that just slightly more than half of women used modern methods of contraception; this percentage did not increase significantly over the course of three years.

Keywords Contraception, Post-abortion contraception, Contraceptive use, Unintended pregnancy

Introduction

Effective contraception, including after abortion, is essential to reduce the incidence of future unwanted pregnancies, increase women's autonomy and improve reproductive health [1]. In Nepal where unsafe pregnancy, abortion, and childbirth put the lives of women at high risk, access to contraceptives and counseling is essential to prevent morbidity and mortality from unwanted pregnancy [2]. Providing safe abortion care and contraception can have a significant impact on the health and well-being of women and their children [3].

Since 1996, with the aim of increasing equitable access to family planning services, the Nepal government

*Correspondence:
Sunita Karki
sunita@crehpa.org.np
[1] Center for Research On Environment, Health and Population Activities (CREHPA), Kusunti, Lalitpur, P.O. Box 9626, Kathmandu, Nepal
[2] Department of Obstetrics, Gynecology and Reproductive Sciences, Advancing New Standard in Reproductive Health, University of California, San Francisco, USA
[3] Department of Epidemiology and Biostatistics, University of California, San Francisco, USA

pledged support for a number of development plans and initiatives [4]. Efforts by the Family Planning program in Nepal have resulted in large increases in the use of modern contraceptives from 26% in 1996 to 43% in 2022. The 2022 Nepal Demographic Health Survey showed that the most commonly used modern methods are female sterilization (13%), injectable (9%), and implants (6%). During the same period, the unmet need for family planning decreased from 32 to 21% [5]. The 2022 Nepal Demographic Health Survey shows that although 49% of women stop using contraception within a year, most of the discontinuation is due to a perceived lack of risk of unintended pregnancy related to husband's absence (44%), the desire to become pregnant (15%), and side effects or health concerns (14%) [5]. A longitudinal study conducted in 2011 in Nepal revealed that women's sociodemographic characteristics or relationship status were not associated with the use of effective method continuation. Instead, discontinuation rates were linked to the type of method chosen and a desire for additional child [6].

In Nepal, there is room for improvements in postabortion contraceptive availability, which is listed as a priority area in the National Safe Abortion Policy of 2003 [7]. A cross-sectional survey done in 2008 with 58 women seeking abortion in Nepal found that the majority of women (83%) intended to use some family planning method following the abortion and that the vast majority preferred modern contraceptive methods (98%) [8]. In a longitudinal study conducted with 838 women in public and private facilities, one-third of them received no information on effective contraceptive methods and over half left facilities without an effective contraceptive method [9, 10]. Additionally a cohort study showed that, at the time of discharge from the facility after an abortion, roughly one in five women were not prescribed with any contraception, which may put them at risk of subsequent unwanted pregnancy [11]. Another study found that women who have had an abortion took longer time to resume using contraception than women who have had a live birth after pregnancy [12]. Use of contraceptives among women seeking abortion varied with factors such as cohabitation with husband, infrequent sex, parity, women's age, level of education, urban, rural background [9, 13].

There are limited data on contraceptive discontinuation postabortion in Nepal. One cohort study showed that the contraceptive discontinuation rates among women after an abortion in NGO-run clinics were significantly higher compared to district hospitals for both those who initiated short acting reversible contraceptive (SARCs) and long acting reversible contraceptives (LARCs) methods [14]. Another study revealed that the rates of discontinuation of contraceptive use after an abortion at 6 months and 12 months were 62.6 and 51.2 per 100 person-years, respectively, and the discontinuation rate for those using SARC methods was higher than for those using LARC methods over the 12-month follow-up period [15]. Few studies have looked prospectively at contraceptive usage, discontinuation, and incident pregnancy postabortion in the context of South Asia [6, 16]. Most of the previous studies are cross-sectional and the few that collected longitudinal data only followed up women up to 18 months after abortion. The present longitudinal study examines contraceptive use, discontinuation, and associated factors after abortion-seeking among a nationally representative cohort of women followed for 3 years after seeking an abortion in Nepal. We assessed levels and trends of postabortion contraceptive care over 36 months and factors associated with the use.

Methods

The data in this study come from a large-scale longitudinal study that aimed to investigate the predictors of denial of abortion services and examining the consequences of unwanted pregnancy for women and their children.

Study site

This study enrolled women from the period between April, 2019 to December 2020 from 22 health facilities across Nepal, including at least two from each province. We selected both public and private/NGO facilities based on volume of abortion patients, geographical distribution, and diversity of patients from a list of certified abortion facilities that provided 60 or more abortions per year in 2016–2017. A brief description of the study methods are below and more detailed information is described elsewhere [17].

Study population

The participants consisted of women between the ages of 15–49 years who were pregnant and seeking abortion care and living in Nepal.

Data collection

Between April 2019 and December 2020 (except for a few months when recruitment was paused due to COVID-19 Pandemic), we interviewed 1831 women who sought abortions from one of 22 health facilities. In the first month of recruitment (April 2019), all women presenting for abortion care were eligible for the study. Starting in the second month, we limited recruitment to only those women who were presenting at or beyond 10 weeks' gestation or who did not know their gestational age to collect a sufficient sample of women denied abortion

services. We administered a short questionnaire before participants knew whether they would receive an abortion or not, in which we documented each participant's gestational age at the time of the visit, regardless of their eligibility status for legal abortion. In case of non-eligibility, the reasons for denial were documented. Follow-up interviews were conducted at the participant's home or elsewhere 6 weeks after the clinic visit, and then every 6 months for three years. Before starting each interview, written consent was obtained from the participants. After each interview, including the baseline survey, participants received financial compensation equivalent to $4. The interviewers asked all questions in Nepali or in the local language where applicable (Maithili/Bhojpuri). Survey answers were entered on tablets using Qualtrics and the data were synced. Interviews were conducted in person, either in a private setting at the home of the participants or another location, if preferred, and interviews were conducted without the presence of other adults in the household. We asked women at each follow up interview whether they were using a family planning method or not and, if not, the reasons for not using one.

In this paper, we analyzed data on postabortion contraceptive use among women who reported at the 6-week interview that they had an abortion and completed 7 rounds follow up interviews. Participants who reported being sterilized postabortion were dropped from the analysis.

Data analysis

First, we described the socio-demographics of the sample, testing for differences between those who initiated a modern method of family planning by 6 weeks postabortion and those who did not using chi2 tests. Next, we explored predictors of adopting a modern method of family planning by 6 weeks, and, among those who took up a method at 6 weeks, predictors of continuation of use at each time point (6 months, 12 months, 18 months, 24 months, 30 months and 36 months) using logistic regression models.

We ran parametric models of our survival-time data that is interval censored, since data on our main outcome, current use of family planning, was collected at each survey. Only women who reported that they were using family planning at 6 weeks postabortion were included in our model. A variable was created to indicate the time since adopting family planning at the last data collection time point that a woman reported using a method. A second variable was created indicating the time since adopting family planning at the first data collection time point that the woman reported that she was not using a method. After testing for model fit, we used a Weibull distribution in our models. Covariates included woman's age, parity, ethnicity, years of schooling, living with husband, household income, autonomy level, and desire for more children. The level of women's autonomy was determined by assessing variables related to decision making power in household and health care matters, women's ability to travel outside of house independently, such as going to market, hospital or visiting outside of village. From these variables a composite index for level of autonomy was created based on the medium score. The score of these variables were summed up and the median score was calculated. Based on the median score, autonomy levels were categorized as low if scores are between 0 to 1, medium if the score is over 1 to 3 and high if the score is above three. All women who adopted a method were married, so marital status was not included in any of our models.

Ethical approval

Ethical approval from the University of California, San Francisco (UCSF) institutional review board (IRB) in the United States and the Nepal Health Research Council (NHRC) in Nepal were obtained. Written informed consent was also obtained from all participants (age 18 and older). Before conducting interviews with minors (aged 15 to 17 years), written consent from the parents and the woman's assent was obtained.

Results

Table 1 shows the characteristics of the participants comparing those who adopted and did not adopt a modern method of contraceptive by 6 weeks postabortion (Table 1). Among women who did not adopt contraceptives, the highest percentage (31.6%) had one living child, while among those who adopted contraceptive, the highest percentage (40.7%) had two living children. Similarly, a higher percentage of women in both groups belonged to the Brahmin/Chhetri ethnic group and the majority of women in both groups had adequate or more than adequate household income.

The results show that women's age, number of children born, and living with husband were significantly associated with the use of modern method of contraceptive after abortion. No statistically significant relationship was found between education level, household income, and the desire to have more children with contraceptive use at 6 weeks.

Of those that adopted a modern method of contraceptive (N = 1241), 59% were using a method after 6-week of postabortion (Table 2). Initially, the use of long-acting methods was low at 6 week postabortion (12%), and it marginally increased to 18% over the 36-month period. Conversely, short acting method use was high at 6 weeks' postabortion 47% and fell to 33% after three years.

Table 1 Participant's characteristics at 6 weeks comparing those who adopted and did not adopt a modern method of contraceptive (postabortion)

	Did not adopt FP		Adopted FP		Total	
	N	%	N	%	N	%
Woman age group						
Less than 19 years	49	7.6	29	4.0	78	5.7
20–29 years	365	56.3	384	52.7	749	54.4
30–39 years	216	33.3	275	37.8	491	35.7
40–45 years	18	2.8	40	5.5	58	4.2
Total	648	100.0	728	100.0	1376	100.0
Pearson chi2(3) = 16.4491 p = 0.001						
Number of children						
No child	116	17.9	60	8.2	176	12.8
1	205	31.6	213	29.3	418	30.4
2	214	33	296	40.7	510	37.1
3 and more	113	17.4	159	21.8	272	19.8
Total	648	100.0	728	100.0	1376	100.0
Pearson chi2(3) = 34.4001 p < 0.001						
Ethnicity						
Brahmin/Chhetri	276	42.6	276	37.9	552	40.1
Janjati	162	25.0	167	22.9	329	23.9
Terai Janjati	110	17.0	176	24.2	286	20.8
Dalit	68	10.5	82	11.3	150	10.9
Muslim	6	0.9	4	0.5	10	0.7
Others	26	4.0	23	3.2	49	3.6
Total	648	100.0	728	100.0	1376	100.0
Pearson chi2(5) = 12.5885 p = 0.028						
Years of schooling						
No schooling	98	15.1	120	16.5	218	15.8
1–5	86	13.3	104	14.3	190	13.8
6–10	283	43.7	342	47	625	45.4
11–12	135	20.8	107	14.7	242	17.6
12 + years	46	7.1	55	7.6	101	7.3
Total	648	100.0	728	100.0	1376	100.0
Pearson chi2(4) = 8.9157 p = 0.063						
Living with husband or partner						
Not living with husband/partner	164	26.9	69	9.5	233	17.4
Yes, living with husband/partner	446	73.1	658	90.5	1104	82.6
Total	610	100.0	727	100.0	1337	100.0
Pearson chi2(1) = 69.7395 p < 0.001						
Household income						
Not adequate	163	25.2	171	23.5	334	24.3
Adequate/more than adequate	485	74.8	557	76.5	1042.00	75.7
Total	648	100.0	728	100.0	1376	100.0
Pearson chi2(1) = 0.5173 p = 0.472						
Level of women autonomy						
Low	263	40.6	244	33.5	507	36.8
Medium	319	49.2	400	54.9	719	52.3
High	66	10.2	84	11.5	150	10.9
Total	648	100.0	728	100.0	1376	100.0

Table 1 (continued)

	Did not adopt FP		Adopted FP		Total	
	N	%	N	%	N	%
Pearson chi2(2) = 7.3710 p = 0.025						
Desire for an additional children						
No	382	59	469	64.4	851	61.8
Yes	250	38.6	244	33.5	494	35.9
Unsure	16	2.5	15	2.1	31	2.3
Total	648	100.0	728	100.0	1376	100.0
Pearson chi2(2) = 4.3630 p = 0.113						

Table 2 Modern method of contraception uptake and continuation over time (%)

	6 week	6 month	12 month	18 month	24 month	30 month	36 month
Using no method of contraception	41	41	42	46	47	48	49
Short acting (Pill, condom, injectable, EC)	47	45	42	37	35	35	33
Long acting (IUD, implant)	12	14	16	17	18	17	18
N	1241	1241	1159	1191	1203	1205	1074

* 75 missing (10.19%); dropped all those that took up sterilization; calculated based on the number that took up a method, a long-acting or a short-acting method at each time point

Notably, nearly half of the women interviewed during the 36-month follow-up period opted for no use of contraceptive method by 36 months post- abortion, indicating an increase from the 41% reported at the 6-week follow-up period.

Table 3 presents the predictors of modern contraceptive use after abortion, based on the multivariable logistic regression analysis. Women who have already children had significantly higher odds (1.196, 95% CI 1.024, 1.396) of opting for modern contraceptives six weeks postabortion compared to those without children and consistently higher odds of continuation at subsequent time points. Similarly, women cohabiting with their husbands had higher odds of adopting contraceptive methods at 6 weeks compared to those who were not cohabiting (aOR 3.570, 95% CI 2.616, 4.872). Among those already using contraceptives at 6 weeks, those living with their husbands were more likely to continue usage at both 6 months (aOR 1.703, 95% CI 0.998—2.907) and 18 months (aOR 1.774, 95% CI 1.063, 2.961) compared to those not cohabiting but didn't show sustained continuation. Additionally, increased levels of women's autonomy were associated with the adoption of contraceptive methods at 6 weeks (aOR 1.225, 95% CI 1.023, 1.468) but did not influence continued usage in later periods. Women's ethnicity was statistically associated with the use of the FP method at 18 months (aOR 1.134, 95% CI 0.992, 1.297), 30 months (aOR 1.146, 95% CI 1.006, 1.304), and 36 months (aOR 1.127, 95% CI 0.996, 1.276), but not in the first year after having an abortion. Years of schooling (aOR 1.171, 95% CI 0.991, 1.384) and age group (aOR 1.263, 95% CI 0.957, 1.668) were found to be statistically significantly associated with contraceptive use only at 18 months and 30 months postabortion, respectively. Participant's household income was not statistically associated with the use of modern methods of contraceptives over the period of three years after abortion.

The results of the hazard model show that discontinuation of modern methods of contraception was significantly higher among women with a desire for additional children (aHR 0.62, 95% CI 0.37, 0.87), lower among literate women (aHR -0.15, 95% CI -0.27, -0.025), and lower among women who already had children (aHR -0.30, 95% CI -0.48, -0.12). Women's age, ethnicity, currently living with husband, household's income and autonomy were not statistically associated with discontinuation of contraceptive use (Table 4).

Discussion

This study examined the use of contraception after abortion in Nepal. The use of modern contraceptive decreased over time from 59% at 6 weeks' postabortion to 51% by 36 months, which is similar to previous studies conducted up to 12 months after abortion [6]. At first, only 12% opted for long-acting methods 6 weeks postabortion, but it rose to 18% by 36 months. Meanwhile, short-acting method usage started at 47% initially, dropping to 33% after three years. Overall, 59% of the women

Table 3 Predictors of modern method use over time

Variables	6 weeks	6 months	12 months	18 months	24 months	30 months	36 months
	use of modern method of CP OR(95% CI)	use of modern method of CP OR(95% CI)	use of modern method of CP OR(95% CI)	use of modern method of CP OR(95% CI)	use of modern method of CP OR(95% CI)	use of modern method of CP OR(95% CI)	use of modern method of CP OR(95% CI)
	ALL women	Only those who started a method at 6 weeks	Only those who started a method at 6 weeks	Only those who started a method at 6 weeks	Only those who started a method at 6 weeks	Only those who started a method at 6 weeks	Only those who started a method at 6 weeks
Woman age group	1.067	0.869	1.054	1.196	1.008	1.263*	0.995
	(0.870, 1.310)	(0.633, 1.192)	(0.790, 1.406)	(0.898, 1.591)	(0.763, 1.332)	(0.957, 1.668)	(0.761, 1.302)
Number of living children	1.196**	1.699***	1.777***	1.637***	1.571***	1.336***	1.374***
	(1.024, 1.396)	(1.324, 2.180)	(1.413, 2.236)	(1.306, 2.052)	(1.259, 1.961)	(1.075, 1.660)	(1.110, 1.700)
Ethnicity	1.075	0.933	1.081	1.134*	1.092	1.146**	1.127*
	(0.981, 1.179)	(0.809, 1.076)	(0.945, 1.236)	(0.992, 1.297)	(0.959, 1.243)	(1.006, 1.304)	(0.996, 1.276)
Years of schooling	1.011	1.068	1.116	1.171*	1.076	1.029	1.002
	(0.898, 1.138)	(0.890, 1.282)	(0.944, 1.320)	(0.991, 1.384)	(0.914, 1.266)	(0.876, 1.209)	(0.856, 1.172)
Currently living with husband	3.570***	1.703*	1.436	1.774**	1.374	1.423	1.422
	(2.616, 4.872)	(0.998, 2.907)	(0.855, 2.411)	(1.063, 2.961)	(0.827, 2.285)	(0.857, 2.361)	(0.856, 2.361)
Household income	1.190	0.816	0.832	0.968	1.192	1.305	1.284
	(0.908, 1.559)	(0.528, 1.260)	(0.563, 1.230)	(0.661, 1.420)	(0.822, 1.728)	(0.903, 1.888)	(0.895, 1.843)
Woman autonomy	1.225**	0.849	0.964	0.966	0.936	0.958	1.008
	(1.023, 1.468)	(0.645, 1.117)	(0.750, 1.239)	(0.754, 1.238)	(0.734, 1.194)	(0.752, 1.219)	(0.796, 1.276)
Constant	0.113***	2.143	0.437	0.180***	0.320*	0.175***	0.209**
	(0.047, 0.271)	(0.524, 8.766)	(0.119, 1.605)	(0.049, 0.659)	(0.091, 1.130)	(0.050, 0.619)	(0.061, 0.717)
Observations	1,337	735	735	735	735	735	735

R-squared

CI in parentheses; *** p < 0.01, ** p < 0.05, * p < 0.1

Table 4 Hazard model of characteristics of discontinuation of modern contraceptive over time

Predictors	Hazard ratio (HR)	(95% CI)
Woman age group	0.047	(– 0.16, 0.25)
Number of living children	– 0.30**	(– 0.48, – 0.12)
Ethnicity	– 0.020	(– 0.12, 0.078)
Years of schooling	– 0.15*	(– 0.27, – 0.025)
Currently living with husband	– 0.27	(– 0.62, 0.069)
Household income	0.12	(– 0.16, 0.41)
Woman autonomy	0.083	(– 0.098, 0.27)
Desire for an additional child	0.62***	(0.37, 0.87)
Constant	– 9.02***	(– 10.3, – 7.69)
Observations	638	

CI in parenthesis; ***p < 0.001, **p < 0.01, * < 0.05

who received abortion services took up contraceptive by 6 weeks after the abortion. Older age, multiparity, and living with one's husband were associated with using a modern method of contraceptive at 6 weeks postabortion. On the other hand, there was no association between education level, household income, and desire to have more children in the use of a modern contraceptive at 6 weeks postabortion.

Our study suggests that women with more than one child were more likely to use contraceptives after abortion. This is consistent with findings from other studies [18]. This is likely because multiparous women want to limit their number of children and have more experience and confidence discussing the use of contraceptives with their partner [19]. Additionally, as expected we found women who lived with their husbands were more likely to use of contraceptives, aligning with findings in Nepal where women with migrant husbands had lower contraception usage (9.3% vs 30.3%) despite having more autonomy than those residing with their husbands [20].

Our study shows that the use of SARC was four times as common as the use of LARC at 6 weeks postabortion, which is similar to a cohort study conducted in Nepal over the period of three years using facilities recorded data. It showed that the use of SARC was 68% compared with LARC methods (11%) [16]. This was consistent with another study conducted at maternity hospital in Nepal [21]. High quality and client centered counselling on contraceptives including LARC (such as implant and IUCD)

is likely to increase the use of LARC [22–24]. In our study the use of LARC increased to 18% while that of short acting methods decreased to 33% over the years of receiving abortion services. It is likely that women who adopted SARC became pregnant and that's why they discontinued method compared with women who used LARC.

This is the first longitudinal study which includes a nationally representative sample of women seeking abortion and follows participants over time after receiving or being denied an abortion in Nepal. The results highlight the predictors of contraceptive use and estimate the risk of discontinuation of postabortion contraceptive use over the time. These findings can be used for program and policy makers to know how to target (in terms of population and timing) interventions to improve uptake or continuation of postabortion contraceptive use for people who want to continue contraceptive use.

Limitations of the study included lack of information on the use of contraception before abortion, limiting the analysis only to postabortion contraceptive use. This study also does not capture who the women interacted with and whether the women received counseling on contraception at the health facilities. It is likely that whether and what type of contraception a participant used after the abortion is related to whether and what type of contraception methods they were offered at the time of the abortion. Also, as this study was carried out in public and NGO run facilities, this study cannot be generalized to women who sought abortion outside the health care system or to women who sought abortion at a pharmacy or private clinic [25], where medical abortion is widely available in the country [17]. Moreover, although the effectiveness of different contraceptive methods has not been found to vary by whether the woman had a procedure or used medication for most methods, the experience of those who seek an intrauterine device may differ in terms of whether they need to return for insertion [26]. Providers may not be aware of the acceptability and effectiveness of immediate contraceptive use for medication abortion patients. This is a topic that could be explored further.

Conclusions

We found that only slightly over half of women used modern method contraception after following an abortion, and this percentage did not significantly increase over a period of three years after abortion seeking. However, among those that did initiate a method, there was some movement towards longer term methods over time. The relatively low and stable uptake of methods presents a significant risk of unintended pregnancy which could be detrimental to women's physical and mental health. As a result, there is a pressing need to improve the post-abortion contraceptive care.

Women who do not desire to have more children are at a high risk of unintended pregnancies, and may desire greater access to effective contraceptive methods. Additionally, younger women and those from religious minorities and marginalized groups may face unique challenges in accessing contraceptive care. Therefore, there is a need for targeted interventions to improve the access to postabortion contraception among these populations. Overall, the study highlights the importance of ensuring access to quality contraceptive use for women who have unwanted pregnancies. Policymakers should focus on expanding access to and improving the quality of LARCs provision, including integrating family planning services into routine healthcare services. Healthcare providers should prioritize client-centered counseling that aligns with women's reproductive goals, address cultural and systemic barriers to care and dispels misconceptions around contraceptive methods, including that one needs to delay initiation of contraceptive use after abortion. Further research that assesses contraceptive choice, timing, and continuation by type of abortion method is warranted.

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Author contributions
M.P., D.G.F. and S.K. conceptualized, designed and implemented the study; N.D.S., S.K., M.P., and D.M. participated in the analysis of the data; S.K. drafted the manuscript; M.P., S.K., D.G.F., N.D.S., A.A.M, D.M. and S.R. contributed to the analysis and writing process. The final manuscript version was reviewed by all authors and approved.

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Availability of data and materials
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
This study received approval from the Institutional Review Boards of the University of California, San Francisco (18-258863), and the Nepal Health Research Council, in Nepal (Reg No 704/2018).

Consent for publication
All the authors of the manuscript consented for publication.

Competing interests
The authors declare no competing interests.

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