



Original research article

Predictors of postabortion contraception use in Cambodia

Sara Adelman^{a,*}, Caroline Free^a, Chris Smith^{a,b}^a London School of Hygiene and Tropical Medicine^b School of Tropical Medicine and Global Health, Nagasaki University

ARTICLE INFO

Article history:

Received 16 February 2018

Received in revised form 17 October 2018

Accepted 14 November 2018

Keywords:

Family planning

Continuation

Abortion

Adherence

ABSTRACT

Objective: To evaluate which characteristics collected at the point of abortion are associated with contraceptive use over the extended postabortion period for women in Cambodia.

Methods: The study includes a cohort of 500 women who attended a Marie Stopes International Cambodia clinic for an induced abortion. The primary outcomes are use of effective contraception $\geq 80\%$ of the time over the 4- and 12-month period postabortion. We conducted a bivariate analysis to assess the association between each characteristic and the outcome, followed by multivariable modeling to identify the strongest predictors of the outcomes.

Results: Nearly 44% of the women used contraception for more than 80% of the time during both follow-up periods. Several sociodemographic and reproductive factors were crudely associated with the outcomes. In the multivariable model, prior use of contraception, intention to use postabortion contraception, increased number of children and medical abortion were associated with increased contraceptive use over the year postabortion. Occupation was a predictor at 4 months only, and abortion method was a predictor at 12 months only.

Conclusions: The models were satisfactory in predicting the outcome of contraceptive continuation both at 4 and 12 months. The paper sets out a methodology for modeling these predictors that can help inform more client-centered counseling and services for women.

Implications: Factors known when attending a clinic for induced abortion can help inform more targeted and client-centered postabortion family planning counseling and services for women in Cambodia.

© 2018 Elsevier Inc. All rights reserved.

1. Introduction

Postabortion care (PAC) is a comprehensive strategy to support women after an abortion, whether safe or unsafe. PAC services historically focused on reducing maternal mortality by treating complications from unsafe abortions rather than addressing women's unmet need for family planning [1]. Now many PAC programs incorporate contraceptive counseling and services as an intervention to tackle the cycle of repeat unintended pregnancy and abortion [2]. While abortion is legal in Cambodia, women continue to face barriers to obtaining safe procedures, and many health facilities lack comprehensive PAC services [3].

Among the postabortion contraception literature, most studies focus on the effectiveness of interventions to improve contraceptive uptake, whereas few aim to identify independent predictors or patterns of postabortion contraception use [4–7]. Further, the majority of outcomes measure contraceptive acceptance or uptake immediately after the abortion; only 4 of 15 studies included in a systematic review of postabortion contraception include follow-up beyond 1 month [4]. As such, little is known about women's practices in the extended period following the abortion, including patterns of contraceptive uptake,

switching, continuation and discontinuation as well as repeat abortion and repeat pregnancy [4].

Existing studies on postabortion contraceptive predictors in the extended period have been conducted in Bangladesh [8], Sweden [9] and Zimbabwe [10] but yielded varying results due to differences in the study populations, study designs and outcomes of interest. Of the two prior studies examining predictors of postabortion contraception in Cambodia, both focus exclusively on immediate uptake of contraception. McDougall and colleagues found that after controlling for all variables, only facility characteristics remained associated with the outcome of contraceptive acceptance [11], whereas Delvaux and colleagues found that women who used contraception postabortion were more likely to be older, married, have one child and have used contraception before [12].

This paper aims to assess the individual factors associated with continued use of postabortion contraception at 4 and 12 months within the sample population of a randomized controlled trial (RCT) in Cambodia.

2. Methods

This study involves secondary data analysis of 2014 data from a single-blind RCT conducted in Cambodia. In brief, the MOBILE Technology for Improved Family Planning (MOTIF) trial assessed whether an

* Corresponding author.

E-mail address: sara.elan.adelman@gmail.com (S. Adelman).

additional intervention delivered by mobile phone improved the use of postabortion contraception. The intervention development and trial results are described elsewhere [13].

The study recruited 500 women who attended one of four Marie Stopes International Cambodia (MSIC) clinics covering both urban and rural areas in Cambodia for an induced abortion (potentially including care for incomplete or complications of abortions). Local research assistants administered three questionnaires to participants: one baseline survey conducted in person after receiving counseling at the clinic and two follow-up phone-based surveys at 4 and 12 months to inquire about the trial outcomes.

The primary outcome is continued use of effective contraception over the 4-month and 12 month period postabortion. Effective methods include the oral contraceptive pill (OCP), implant, intrauterine device (IUD) or injectable. We created a binary outcome from women's self-reported retrospective data on their contraceptive use, captured weekly up to 4 months and monthly up to 12 months. We chose to define continuation as 80% contraceptive use over these time periods, as it was unspecified variable in the main study. This allowed women who started on contraception at a follow-up visit to be counted as contraceptive users. While an alternative option to use 100% use was considered, it was not used given that only half as many women used contraception for 100% than 80% in the postabortion periods.

In this paper, we analyze baseline characteristics collected when women were attending the clinic for induced abortion as potential predictors of the outcomes. Sociodemographic factors included women's age, literacy, language, socioeconomic status (using access to motorized transport as a proxy measure), residence, education, marital status and occupation. Reproductive health factors included number of living children, number of previous abortions, abortion method, pressure to have an abortion, previous contraceptive use, contraception intention, fertility intention and contraceptive decision-making process.

To assess the distribution of the characteristics across the entire cohort, we conducted a descriptive analysis at baseline, 4 months and 12 months. Next, we examined the association between the 14 independent variables and the outcomes with an exploratory bivariate analysis. Third, we used predictive modeling with logistic regression to develop a parsimonious multivariable model for the outcomes, utilizing a backwards-stepwise elimination approach in the selection of variables. Decisions to include variables in the final model were based on statistical significance where nonsignificant variables were removed from the model at the cutoff of $p = .157$ [14]. Starting with a full model of 12 baseline characteristics, we removed the variable least associated to the outcome from the model. A likelihood ratio test compared the two models to the data and determined the best-fit model with the strongest predictors.

3. Results

At 4 months, 431 women remained in the study with 13.8% lost to follow-up; at 12 months, 328 women remained with 34.4% lost to follow-up. The summary statistics revealed no important variations in the cohort across baseline to follow-ups. At baseline, 48% of women were between 26 and 35 years old; 61% of women had a secondary-level education or above; and 20.4% reported being self-employed, followed by 20% that reported being housewives and smaller 5% working in entertainment. More than half the women (60%) reported no abortions prior to the index abortion, one quarter of the women reported having one prior, and 15% reported two or more. While the majority of women (60%) reported previously using contraception, intention to use contraception postabortion was mixed. At the time of abortion, 54% of the women reported being undecided, while 37% reported that they intend to use contraception.

Related to the outcome, nearly half of the women continued on effective contraception for 80% of the postabortion periods: 189 (43.8%) women at 4 months and 147 (44.8%) women at 12 months. Further,

Table 1 presents the results from the bivariate analysis for the outcome at 4 and 12 months. The following factors suggest association with 80% continued contraception use over 4 months: women aged 26 to 35 compared to women below 25 [odds ratio (OR)=2.03, 95% confidence interval (CI)=1.32–3.12]; women who resided in a rural area compared to urban (OR=1.59, 95% CI=1.05–2.40); married or cohabitating women compared to never married (OR=3.83, 95% CI=1.26–11.68); women who worked in entertainment when compared to housewives (OR=0.21, 95% CI=0.06–0.67); women with one to two or three children compared to those with none (OR=4.41, 95% CI=2.64–7.36 and OR=3.46, 95% CI=1.88–6.37, respectively); women who underwent a surgical abortion compared to medical (OR=1.86, 95% CI=1.24–2.78); women who intended to use contraception compared to those who do not (OR=7.89, 95% CI=2.99–20.83) and women who were undecided about their fertility plans compared to women who intended to have another child (OR=2.76, 95% CI=1.38–5.52).

The following factors suggest association with 80% continued contraception over 12 months: women age 26 to 35 compared to women below 25 (OR=2.21, 95% CI=1.36–3.59); married or cohabitating women compared to never married (OR=13.44, 95% CI=1.75–102.97; wide interval due to no women in divorced stratum); women with one or two children compared to those with none (OR=5.12, 95% CI=2.77–9.49) and women who intend to use contraception compared to those who do not (OR=3.32, 95% CI=1.35–8.20).

The final model for 80% contraceptive continuation over 4 months had a Wald p value of $<.001$ and included the variables detailed in Table 2. The final model for 80% contraceptive continuation over 12 months had a Wald p value of $<.001$ and included the variables detailed in Table 3. All variables were adjusted for the other variables in the model.

The two models share a number of predictors, including previous contraception use. When compared to women with prior use, results show strong evidence that women who reported no prior contraception use had around half the odds of continuing on an effective contraceptive method for at least 80% of the 4 and 12 months (OR=0.40, 95% CI=0.24–0.68 and OR=0.51, 95% CI=0.30–0.80, respectively). Intention to use contraception was included in both models (OR=4.60, 95% CI=1.55–13.64). The results also suggest strong evidence that women with more children were associated with increased odds of the outcome at both 4 and 12 months. Women with one or two children had the highest odds of the outcome at 4 months (OR=2.58, 95% CI=1.38–4.81), while women with three or more children had the higher odds of 80% contraceptive use over 12 months (OR=5.22, 95% CI=2.31–11.76).

Occupation and abortion method were found to be predictors in one of the two models. At 4 months, women working in entertainment were 80% less likely to have the outcome (OR=0.22, 95% CI=0.06–0.85). At 12 months, women who had surgical abortion compared to medical abortion were less likely to continue contraception for 80% of the year postabortion (OR=0.57, 95% CI=0.34–0.96).

4. Discussion

The results from this analysis suggest that several sociodemographic and reproductive health factors were associated with contraceptive use and continuation following an abortion. The strong predictors in both models included previous contraceptive use, intention to use contraception and number of living children; occupation was only a strong predictor at 4 months, and abortion method was a predictor at 12 months postabortion.

To our knowledge, this study is the second in Cambodia with a primary focus to examine predictors of contraceptive use for postabortion women but the first to look at the extended period through 12 months. This is a key strength as it more accurately captures contraceptive coverage over the extended postabortion period. While many consider RCTs to be the “gold standard” in research, there are rich opportunities

Table 1

Association of baseline characteristics with 80% continued use of effective contraception by women in Cambodia followed up at 4 months and 12 months postabortion

Variable		4 months (n=431)			12 months (n=328)		
		80% Cont'd use	Crude OR	p value	80% Cont'd use	Crude OR	p value
		n=189	(95% CI)		n=147	(95% CI)	
Age	<25	54 (34%)	1.00	.0215	39 (34%)	1.00	.0376
	26–35	113 (51%)	2.03 (1.32–3.12)		94 (53%)	2.21 (1.36–3.59)	
	>36	22 (43%)	1.52 (0.78–2.94)		14 (41%)	1.38 (0.63–3.03)	
SES	Access to motorized transport	171 (45%)	1.00	.1256	133 (45%)	1.00	.6512
	No access to motorized transport	18 (36%)	0.62 (0.34–1.15)		14 (41%)	0.85 (0.41–1.74)	
Residence	Urban	57 (38%)	1.00	.0278	44 (38%)	1.00	.0627
	Rural	132 (47%)	1.59 (1.05–2.40)		103 (49%)	1.55 (0.97–2.45)	
Education	Secondary or above	114 (43%)	1.00	.9939	92 (44%)	1.00	.7003
	None or primary	75 (45%)	1.00 (0.67–1.49)		55 (46%)	1.09 (0.70–1.72)	
Marital status	Never married or cohabitating	4 (17%)	1.00	.2152	1 (6%)	1.00	.0193
	Married/cohabitating	185 (46%)	3.83 (1.26–11.68)		146 (47%)	13.44 (1.75–102.97)	
Occupation	Divorced/separated	0 (0%)	-	.034	0 (0%)	-	.7403
	Housewife	46 (50%)	1.00		34 (49%)	1.00	
	Factory	30 (50%)	0.95 (0.48–1.88)		19 (43%)	0.80 (0.38–1.72)	
	Entertainment	4 (18%)	0.21 (0.06–0.67)		3 (18%)	0.23 (0.06–0.86)	
	Farmer	17 (65%)	2.01 (0.75–5.34)		10 (59%)	1.51 (0.52–4.43)	
	Employed	29 (33%)	0.44 (0.24–0.83)		27 (40%)	0.70 (0.36–1.37)	
	Self-employed	60 (48%)	0.87 (0.50–1.53)		50 (52%)	1.15 (0.62–2.13)	
	Casual	1 (33%)	0.41 (0.04–4.73)		2 (67%)	2.12 (0.18–24.44)	
	Student	1 (8%)	0.08 (0.01–0.61)		2 (22%)	0.30 (0.06–1.56)	
	Unemployed	1 (20%)	0.28 (0.03–2.76)		0 (0%)	-	
Number of living children	0	27 (23%)	1.00	.0351	16 (18%)	1.00	<.001
	1–2	119 (53%)	4.41 (2.64–7.36)		97 (54%)	5.12 (2.77–9.49)	
	3 or more	43 (49%)	3.46 (1.88–6.37)		34 (57%)	5.80 (2.76–12.22)	
Number of previous abortions	0	108 (43%)	1.00	.5032	92 (46%)	1.00	.4344
	1	53 (46%)	1.16 (0.74–1.83)		38 (46%)	1.02 (0.61–1.71)	
	2 or more	28 (45%)	1.16 (0.65–2.07)		17 (38%)	0.72 (0.37–1.40)	
Abortion method	Medical	63 (35%)	1.00	.0025	63 (46%)	1.00	.4344
	Surgical	126 (50%)	1.86 (1.24–2.78)		84 (44%)	0.94 (0.61–1.47)	
Disclosure of abortion	Yes	83 (48%)	1.00	.9613	65 (49%)	1.00	.7955
	No	15 (47%)	1.02 (0.46–2.25)		10 (53%)	1.18 (0.45–3.09)	
Previous contraception use	Yes	142 (53%)	1.00	<.001	106 (53%)	1.00	<.001
	No	47 (29%)	0.34 (0.22–0.53)		41 (32%)	0.41 (0.26–0.65)	
Postabortion contraceptive intention	No	6 (19%)	1.00	<.001	8 (30%)	1.00	<.001
	Undecided	77 (33%)	1.85 (0.72–4.77)		69 (38%)	1.46 (0.61–3.52)	
	Yes	106 (64%)	7.89 (2.99–20.83)		70 (58%)	3.32 (1.35–8.20)	
Fertility intention	Have another child	100 (38%)	1.00	.0012	78 (40%)	1.00	.0289
	No more/none	62 (50%)	1.56 (1.00–2.42)		47 (52%)	1.67 (1.01–2.76)	
	Undecided	27 (57%)	2.76 (1.38–5.52)		22 (54%)	1.77 (0.90–3.48)	
Contraception decision making	Joint decision	109 (42%)	1.00	.1052	88 (46%)	1.00	.2894
	Mainly woman	43 (54%)	1.47 (0.88–2.45)		29 (46%)	1.02 (0.58–1.80)	
	Mainly husband/partner	33 (50%)	1.46 (0.83–2.57)		29 (55%)	1.44 (0.78–2.65)	

Table 2
Multivariable model for 80% continued use of contraception by women in Cambodia at 4 months postabortion

Variable		aOR	(95% CI)	Overall p value
Previous contraception use	Yes	1.00	-	<.001
	No	0.40	(0.24–0.68)	
Postabortion contraceptive intention	No	1.00	-	<.001
	Undecided	0.82	(0.28–2.44)	
	Yes	4.60	(1.55–13.64)	
Number of living children	0	1.00	-	.0055
	1–2	2.58	(1.38–4.81)	
	3 or more	1.45	(0.67–3.13)	
Occupation	Housewife	1.00	-	.0613
	Factory	1.30	(0.59–2.85)	
	Entertainment	0.22	(0.06–0.85)	
	Farmer	1.34	(0.44–4.11)	
	Employed	0.44	(0.21–0.90)	
	Self-employed	0.80	(0.43–1.52)	
	Casual	1.02	(0.08–12.34)	
	Student	0.14	(0.01–1.48)	
Unemployed	0.49	(0.04–5.79)		

to reuse RCT data for observational analyses to answer new questions [15]. We repurposed the dataset from the MOTIF RCT as a prospective, descriptive longitudinal study by creating a single cohort, controlling for the intervention and using the baseline characteristics as the primary exposures.

Moreover, comparing the study participants to the wider client base seeking abortion services at the four MSIC clinics in 2013, we found that baseline characteristics were relatively similar. Additionally, the sample demographics aligned with background statistics in the Cambodia Demographic Health Surveys [16] for women who have had at least one abortion, suggesting broader representativeness. Results may cautiously be generalizable within similar settings and facilities in Cambodia.

Despite these strengths, our study has several limitations. A limitation of using a cutoff of 80% for continuous contraceptive use is that even women using contraception for 80% of the time experienced a risk of pregnancy if sexually active during the time they were not using contraception. Additionally, there might be important differences between women continuing for 80% versus 100% of the postabortion periods. Moreover, the outcome was created based on self-reported measures; while commonly used in sexual health research, they may be subject to recall and social desirability bias [17]. Further, the study requested that women report contraceptive use retrospectively over several months, which could result in additional recall bias [18]. Another limitation is the 34.4% lost to follow-up rate over 12 months. However, this is lower than dropout rates experienced by similar cohort studies examining 12-month contraceptive adherence (41% in a Tanzanian study [19] and 45.5% in a Zimbabwean study [10]).

While women with one to two children had the highest odds of continuing effective contraception at 4 months postabortion, women with three or more had the highest odds of continuing effective

Table 3
Multivariable model for 80% continued use of effective contraception by women in Cambodia at 12 months postabortion

Variable		aOR	(95% CI)	Overall p value
Previous contraception use	Yes	1.00	-	.0106
	No	0.51	(0.30–0.85)	
Postabortion contraceptive intention	No	1.00	-	<.0001
	Undecided	0.99	(0.38–2.59)	
	Yes	2.38	0.87–6.46	
Number of living children	0	1.00	-	<.0001
	1–2	4.49	(2.33–8.65)	
	3 or more	5.22	(2.31–11.76)	
Abortion method	Medical	1.00	-	.036
	Surgical	0.57	(0.34–0.96)	

contraception over 12 months. Number of children is known to be a strong independent predictor of modern contraceptive use [20], as women closer to achieving their desired family size are more likely to use contraceptive methods continuously to reduce the chance of pregnancy. This trend reflects the desired family size in Cambodia, reported as three children [16].

In the multivariable analysis, medical abortion was associated with higher odds of effective contraception use compared to surgical abortion, which had a stronger association in the univariate analysis. This finding is likely due to confounding factors such as age and parity. This result is surprising given existing research on the topic that suggests that women who undergo surgical abortions are more likely to be fitted with IUDs and thus have continued protection [21] or that abortion method has no bearing on contraceptive uptake and continuation [22]. In our study, there was no crude association between IUD use and surgical abortion. Further, our data did not differentiate between induced abortions and treatment of spontaneous abortions within the category of surgical procedures; hence, one possibility is that the groups of women undergoing surgical versus medical abortions are different. Further research into abortion method and contraceptive uptake in this context could be warranted.

The association between women's past use of effective contraception and postabortion contraceptive continuation is consistent with studies from Pakistan, Nepal and Bangladesh [8,23–25]. However, the study by McDougall and colleagues in Cambodia found no such association [11], likely due to differences in measurement: prior contraceptive use was captured only at the point of conception (not any past use), and their outcome was focused on immediate postabortion contraceptive acceptance.

Contraceptive intention was the strongest predictor of continuation in the 4-month period postabortion. More than half the women in the study were undecided on their intention, and it is the only variable potentially amendable to intervention. Existing research shows a positive relationship between contraception counseling and contraceptive intention [4,8], but it is unclear whether enhanced counseling, in addition to standard counseling that all women received, could address specific concerns and increase contraception use among women undecided or not planning to use contraception in Cambodia. While many factors including partner approval, social norms and past use are known influencers of contraceptive intention [26], we recommend further exploring intention to contracept in the context of postabortion in this setting.

The association between women in the entertainment industry and low contraception continuation accords with literature in Southeast Asia documenting barriers to access and pervasive stigma around reproductive health services for this population [27–30]. Our analysis also found that this population reported the highest number of prior abortions in the study. Therefore a targeted, innovative approach to post-abortion contraceptive counseling and services should be explored for entertainment workers in Cambodia to help reduce barriers and better meet their fertility needs.

Our findings suggest that there is an opportunity for service providers to flag women who might benefit from additional support in postabortion contraceptive counseling and services — those more likely to not continue on effective contraception. Further research should explore why some women are undecided and do not form intentions to use contraception postabortion. Counseling may be an opportunity to address concerns and misconceptions about contraception, or undecided women could be contacted for follow-up at a later date. This work could form the basis for designing and further evaluation of interventions designed to increase postabortion contraceptive use.

5. Conclusion

This research adds to a growing body of research on predicting characteristics for postabortion contraception and contributes to the limited literature on the topic in Cambodia. For postabortion care programs that

collect information at the point of abortion, the methodology set out in this paper can help identify strong predictors of contraceptive use and suggest women who might benefit from additional support to achieve their desired fertility outcomes.

Acknowledgements

The research in this article received funding from the Marie Stopes International Innovation fund (funder code: E01/project code: E2051) and the UK Medical Research Council (MRC) (grant ref: MR/L012251/1).

References

- [1] Maureen R, Corbett KLT. Essential elements of postabortion care: origins, evolution and future directions. *Int Fam Plan Perspect* 2003;29(3):106–11.
- [2] Wolf M, Benson J. Meeting women's needs for post-abortion family planning: report of a Bellagio technical working group. *Int J Gynecol Obstet* 1994;45:S3–23.
- [3] Ashford L, Sedgh G, Singh S. Making abortion services accessible in the wake of legal reforms. *Issues Brief (Alan Guttmacher Inst)* 2012(1):1–4 [Internet, Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22629596>].
- [4] Tripney J, Kwan I, Bird KS. Postabortion family planning counseling and services for women in low-income countries: a systematic review. *Contraception* 2013;87(1):17–25 [Internet, Available from: <https://doi.org/10.1016/j.contraception.2012.07.014>].
- [5] Shah IH, Santhya KG, Cleland J. Postpartum and post-abortion contraception: from research to programs. *Stud Fam Plann* 2015;46(4):343–53.
- [6] USAID. Postabortion family planning: strengthening the family planning component of postabortion care [Internet]. Washington, DC: High Impact Practices, Service Delivery 2012 Available from: <http://www.fphighimpactpractices.org/resources/postabortion-family-planning-strengthening-family-planning-component-postabortion-care>.
- [7] Ferreira Gomes A, Lemos A, Figueiroa JN, de Souza AI. Effectiveness of contraceptive counselling of women following an abortion: a systematic review and meta-analysis. *Eur J Contracept Reprod Health Care* 2009;14(1):1–9.
- [8] Pearson E, Biswas KK, Andersen KL, Moreau C, Chowdhury R, Sultana S, et al. Correlates of contraceptive use four months post-abortion: findings from a prospective study in Bangladesh. *Contraception* 2016;95(3):279–87.
- [9] Kilander H, Alehagen S, Svedlund L, Westlund K, Thor J, Brynhildsen J. Likelihood of repeat abortion in a Swedish cohort according to the choice of post-abortion contraception: a longitudinal study. *Acta Obstet Gynecol Scand* 2016;95(5):565–71.
- [10] Johnson BR, Ndhlovu S, Farr SL, Chipato T. Reducing unplanned pregnancy and abortion in Zimbabwe through postabortion contraception. *Stud Fam Plann* 2002;33(2):195–202.
- [11] McDougall J, Fetters T, Clark KA, Rathavy T. Determinants of contraceptive acceptance among Cambodian abortion patients. 2009;40(2):123–32.
- [12] Delvaux T, Soeur S, Rathavy T, Crabbé F, Buvé A. Integration of comprehensive abortion-care services in a maternal and child health clinic in Cambodia. *Trop Med Int Health* 2008;13(8):962–9.
- [13] Smith C, Ngo TD, Gold J, Edwards P, Vannak U, Sokhey L, et al. Effect of a mobile phone-based intervention on post-abortion contraception: a randomized controlled trial in Cambodia. *Bull World Health Organ* 2015;93(12):842–50.
- [14] Sauerbrei W, Royston P, Binder H. Selection of important variables and determination of functional form for continuous predictors in multivariable model building. *Stat Med* 2007;28(26):221–39.
- [15] Howard G, Howard VJ. Observational epidemiology within randomized clinical trials: getting a lot for (almost) nothing. *Prog Cardiovasc Dis* 2012;54(4):367–71.
- [16] National Institute of Statistics, Directorate General for Health, ICF International. Cambodia demographic and health survey 2014; 2015 [Phnom Penh, Cambodia, and Rockville, Maryland, USA].
- [17] Stuart GS, Grimes DA. Social desirability bias in family planning studies: a neglected problem. *Contraception* 2009;80(2):108–12 [Internet, Available from: <https://doi.org/10.1016/j.contraception.2009.02.009>].
- [18] Huber LRB, Broel EC, Mitchelides AN, Dmochowski J, Dulin M, Scholes D. Comparison of prospective daily diaries and retrospective recall to measure oral contraceptive adherence. *Contraception* 2013;88(4):492–7.
- [19] Rasch V, Yambesi F, Massawe S. Medium and long-term adherence to postabortion contraception among women having experienced unsafe abortion in Dar es Salaam, Tanzania. *BMC Pregnancy Childbirth* 2008;8(32).
- [20] Bankole BA, Singh S. Couples' fertility and contraceptive decision-making in developing countries: hearing the man's voice; 1996; 15–24.
- [21] World Health Organization. Post-abortion family planning: a practical guide for programme managers. *Pract Guid* [Internet]; 1997. p. 84 [Available from: <http://pesquisa.bvsalud.org/bvsms/resource/pt/mis-21302>].
- [22] Kalyanwala S, Acharya R, Francis Zaviera A. Adoption and continuation of contraception following medical or surgical abortion in Bihar and Jharkhand, India. *Int J Gynecol Obstet* 2012;118(1):47–51.
- [23] Azmat SK, Ali M, Ishaque M, Mustafa G, Hameed W, Khan OF, et al. Assessing predictors of contraceptive use and demand for family planning services in underserved areas of Punjab province in Pakistan: results of a cross-sectional baseline survey; 2015; 1–10.
- [24] Padmadas SS, Lyons-Amos M, Thapa S. Contraceptive behavior among women after abortion in Nepal. *Int J Gynecol Obstet* 2014;127(2):132–7.
- [25] Castaño PM, Bynum JY, Andrés R, Lara M, Westhoff C. Effect of daily text messages on oral contraceptive continuation. *Obstet Gynecol* 2012;119(1):14–20.
- [26] Esber A, Foraker RE, Hemed M, Norris A. Partner approval and intention to use contraception among Zanzibari women presenting for post-abortion care. *Contraception* 2014;90(1):23–8.
- [27] Yi S, Tuot S, Chhoun P, Pal K, Tith K, Brody C. Factors associated with induced abortion among female entertainment workers: a cross-sectional study in Cambodia. *BMJ Open* 2015;5(7).
- [28] Yi S, Tuot S, Chhoun P, Pal K, Ngin C, Chhim K, et al. Sex with sweethearts: exploring factors associated with inconsistent condom use among unmarried female entertainment workers in Cambodia. *BMC Infect Dis* 2017;17(20).
- [29] Sychareun V, Hansana V, Phengsavanh A, Phongsavan K. Awareness and attitudes towards emergency contraceptive pills among young people in the entertainment places, Vientiane City, Lao PDR; 2013.
- [30] Sopheab H, Tuot S, Chhea C, Gorbach P. Characteristics, risk behaviors and factors associated with abortion among female entertainment workers in Cambodia. *Reprod Health* 2015;1–8 [Internet, Available from: <https://doi.org/10.1186/s12978-015-0075-y>].