Effectiveness of the ARCHES intervention in improving reproductive autonomy and reproductive health: Results from a cluster-randomized controlled trial in urban Bangladesh

Summary

The Addressing Reproductive Coercion in Health Settings (ARCHES) intervention is a single counseling session that is designed to address reproductive coercion (RC) and connect clients with available intimate partner violence (IPV) services. Adaptation of ARCHES for use with menstrual regulation (MR) and postabortion care (PAC) clients in Bangladesh resulted in increased use of modern contraception without interruption or interference. The ARCHES intervention should be implemented with MR/PAC clients in facilities with sufficient privacy for counseling.

Background

Gender-based violence, including RC and IPV negatively impacts women's health and well-being and is strongly associated with poor reproductive health and unintended pregnancy [1-3]. In Bangladesh, RC has not previously been measured, but IPV is prevalent with an estimated 50-60% of women having experienced physical and/or sexual IPV in their lifetimes and 30% having experienced such violence in the past year. IPV experience is associated with a 50-60% increase in unwanted pregnancy and over two times higher odds of abortion (AOR=2.60) in Bangladesh [4]. Women reporting IPV are more likely

to access abortion outside the health system and less likely to access post-abortion contraception, especially if accompanied to the clinic by their partner, which suggests additional intervention is needed to support clients' reproductive autonomy [5]. ARCHES was originally developed for use with family planning clients and has been shown to reduce RC in the United States [6]. The ARCHES intervention model has been adapted and tested in the Kenyan context to address RC and IPV among women and girls seeking contraceptive services. Based on this effective model, another adaptation and small pilot study was recently conducted in Mexico. This study is the first to assess the efficacy of an adaptation of the ARCHES model among MR and PAC clients in Bangladesh and will provide the necessary evidence for implementation of the ARCHES intervention as a low-cost add-on to existing service provision in low- and middle-income countries.

ARCHES Intervention Model

The ARCHES Bangladesh adaptation was based on a qualitative formative phase and developed in partnership with providers from RHSTEP clinics. The intervention was designed for integration within existing MR/PAC client counseling. Key components of the ARCHES model in Bangladesh include:

- Establishing privacy and assuring client of confidentiality
- Counseling on RC and IPV
- Counseling on strategies for using contraception and MR privately, if desired
- Offer of family counseling on post-abortion contraception
- Screening for RC and IPV
- Warm referral for IPV support services among those who screen positive for IPV
- Provision of a mini booklet on RC and IPV that clients can take home and share with others

Methods

A cluster-randomized controlled trial (clinicaltrials.gov: NCT03539315) was conducted from January 2019 to January 2021 to assess the effectiveness of the ARCHES intervention in six tertiary care facilities in urban areas of Bangladesh. The study received ethical approval from the Bangladesh Medical Research Council (protocol number: BMRC/NREC/2016-2019/570) and the University of California, San Diego Human Research Protections Program (protocol number: 171903SX). Facilities were eligible for inclusion in the trial if they had both an RHSTEP clinic (a private NGO-run MR/PAC clinic with sufficient infrastructure to privately conduct ARCHES counseling) and if they had an on-site One-Stop Crisis Center providing violence support services. Only six facilities in the country met these eligibility requirements. The six facilities were matched in pairs based on MR/PAC caseload with three

randomized to offer the ARCHES intervention (intervention group) and three randomized to offer the standard of care (control group). Intervention facilities included RHSTEP Dhaka Medical College Hospital (MCH), RHSTEP Faridpur MCH, and RHSTEP Rajshahi MCH. Control facilities included RHSTEP Chittagong MCH, RHSTEP Rangpur MCH and RHSTEP Sylhet Osmani MCH. Women were eligible for participation in the study if they were between the ages of 18 to 49, received MR or PAC services at a selected facility, were able to provide a safe phone number or address at which they could be contacted for study follow-up, and were able to speak privately with the research assistant and/or provider. A total of 3,187 MR and PAC clients were screened for study eligibility, 2,954 were eligible (92.7%), and 2,729 consented to participate (92.4% of eligible MR/PAC clients) (Figure 1). A total of 43 women withdrew over the course of the study, leaving a final sample of 2,686 women. Trained female research assistants were posted at study facilities and enrolled eligible women to complete a baseline survey before clients met with the MR/PAC provider or counselor, an exit survey after the client received their MR or PAC service, and 3-month and 12-month follow-up surveys conducted in person or via phone.

The primary outcomes of interest included past 3-month use of modern contraception without interruption or interference and past 3-month incidence of RC. Secondary outcomes included unintended pregnancy and unsafe abortion within 12 months of the index pregnancy. All outcomes were ascertained at the 3-month and 12-month follow-up surveys. Loss to follow-up was 10.6% at the 3-month follow-up (3-month analytic sample is 2401 women) and 13.6% at the 12-month follow-up (12-month analytic sample is 2319 women). To evaluate the effectiveness of the ARCHES intervention, we conducted intent-to-treat analysis using mixed-effects logistic regression models, which adjusted for month fixed effects and include random intercepts for facilities to account for clustering at the facility level. Fully adjusted models of the outcomes at the 3- and 12-month follow-up surveys include socio-demographic characteristics and baseline report of RC in the past three months. Significance was assessed at $p < 0.05$.

Results

Baseline Sample Characteristics

Table 1 presents the socio-demographic characteristics of MR/PAC clients in the sample. Almost all were married, most were living with their husbands, and one-third were living with their in-laws. Most women were age 25 or older, and approximately two-thirds had less than secondary education. Almost half of respondents lived in rural areas and 25% worked for pay in the past 12 months. The only

statistically significant differences between the intervention and control groups at baseline were in religion and number of living children. The intervention group had a larger proportion of Muslim respondents (95.3% compared to 88.3% in the control group) and the control group had a higher proportion of respondents with three or more living children (34.1% compared to 19.2% in the intervention group). For approximately 85% of respondents, the index pregnancy ended in induced abortion or MR. At baseline, 10% of clients reported ever experiencing RC, and 6-7% experienced RC in the past three months. Almost 50% of clients reported ever experiencing physical or sexual IPV, and 10% experienced IPV in the past three months.

ARCHES Implementation

Fidelity of implementation was high in the intervention facilities with approximately 80% of enrolled MR/PAC clients exposed to all intervention components. Women in intervention facilities were more likely to report talking with their provider or counselor privately, compared to women in the control facilities (98.8% intervention, 65.4% control). In the intervention facilities, disclosure of RC and IPV to the RHSTEP provider or counselor was high among those who reported RC and IPV at baseline (80% and 55%, respectively), in contrast to control facilities where disclosure was minimal (Figures 2a and 2b). Women who reported RC or IPV at baseline but did not disclose to their provider were asked why they did not disclose, and the primary reasons for non-disclosure were that they did not think the RC or IPV was a problem (~50%), that they were not asked (~25%), and that it happened long ago (~15%). Very few women reported that they did not disclose because they did not feel comfortable, did not have time, or did not think the provider would help. Family counseling is available in all RHSTEP facilities, but explicitly offering family counseling through the ARCHES intervention led to higher uptake of family counseling (54.0% intervention, 2.6% control).

Effectiveness of the ARCHES Intervention

Past 3-month modern contraceptive use without interruption or interference was higher in the intervention group compared to the control (3-month follow-up: 90.8% intervention, 87.4% control; 12-month follow-up: 83.2% intervention, 79.6% control). In the fully adjusted model (Table 2), women in the intervention facilities had 1.60 times higher odds of modern contraceptive use without interruption or interference at the 3-month follow-up (95% CI: 1.17 – 2.19) and 1.48 times higher odds at the 12-month follow-up (95% CI: 1.15 – 1.90).

Past 3-month incidence of RC was lower in the intervention group compared to the control group at the 3-month follow-up (1.8% intervention, 2.3% control), but at the 12-month follow-up, incidence of RC was lower in the control group (2.3% intervention, 1.9% control). Unintended pregnancy within 12

months of the index pregnancy was also lower in the intervention group compared to the control group (2.8% intervention, 3.3% control). Only three unsafe abortions were reported – one in the intervention group and two in the control group. We were not powered to assess significance of the effects of the intervention on incidence of RC, unintended pregnancy or unsafe abortion due to the lower rates of these outcomes than anticipated when planning the trial.

Women enrolled in intervention facilities were significantly more likely to know about available IPV support services (3-month follow-up: 71.1% intervention, 31.4% control; 12-month follow-up: 88.8% intervention, 69.5% control) and to have shared information with others about RC (45.1% intervention, 0.1% control), about strategies for private use of contraception (50.6% intervention, 0.3% control), and about IPV support services (48.2% intervention, 1.5% control), compared to women in control facilities.

Conclusions

The ARCHES intervention was effective in increasing modern contraceptive use without interruption or interference, and this effect persisted to 12 months post-intervention. Intervention implementation was high, suggesting feasibility and acceptability of implementing ARCHES in facilities with appropriate infrastructure for privacy. Screening clients for RC and IPV led to disclosure of experiences that were not shared in routine clinic encounters in control facilities. Providing information and counseling on RC and IPV in a single session during MR/PAC services led to increased knowledge of available violence support services, and increased sharing of information on these services and on RC with others, suggesting reach of ARCHES beyond the clinic setting. Promisingly, results showed decreases in unintended pregnancy but our power was insufficient to assess statistical significance for this rarer than anticipated event.

Recommendations

The ARCHES intervention should be integrated in MR/PAC services in health facilities that have infrastructure to accommodate privacy for counseling. Scale-up of the ARCHES intervention to other settings, including other types of facilities would require an assessment of infrastructure and adaptations to ensure privacy during counseling.

Acknowledgements

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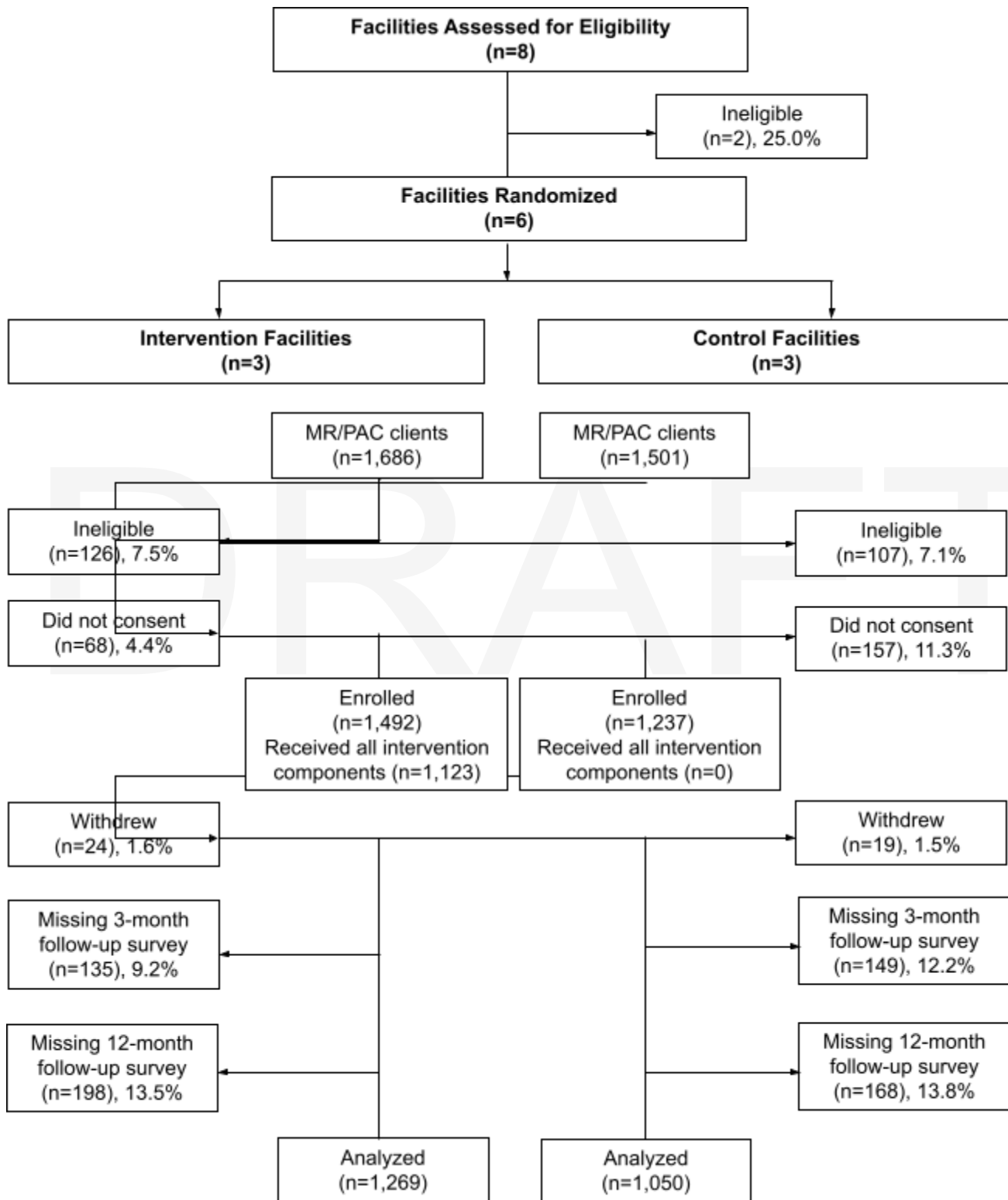
Figure 1. CONSORT Flow Diagram

Table 1. Baseline sample characteristics and outcomes

	Control Group (n=1218)		Intervention Group (n=1468)		
	n	%	n	%	p-value
Baseline Sample Characteristics					
Ever experienced RC	122	10.0%	190	12.9%	0.284
Past 3-month incidence of RC	75	6.2%	107	7.3%	0.446
Ever experienced physical or sexual IPV	543	44.6%	689	46.9%	0.840
Past 3-month incidence of physical or sexual IPV	102	8.4%	145	9.9%	0.559
Married	1196	98.2%	1449	98.7%	0.393
Living with husband	1085	89.1%	1265	86.2%	0.280
Living with in-laws	398	32.7%	471	32.2%	0.935
Age					
18-19 years	64	5.3%	97	6.6%	0.296
20-24 years	253	20.8%	327	22.3%	0.187
25+ years	900	74.0%	1043	71.1%	0.147
Education					
None/less than primary	318	26.1%	270	18.4%	0.227
Primary	527	43.3%	675	46.0%	0.698
Secondary or higher	373	30.6%	523	35.6%	0.626
Religion					
Islam	1075	88.3%	1399	95.3%	0.034
Hinduism	133	10.9%	64	4.4%	0.025
Another religion	10	0.8%	5	0.3%	0.487
Number of living children					
None	138	11.3%	185	12.6%	0.763
1	259	21.3%	360	24.5%	0.134
2	406	33.3%	641	43.7%	0.075
3+	415	34.1%	282	19.2%	0.045
Worked in past 12 months	314	25.8%	358	24.4%	0.863
Rural residence	461	37.8%	744	50.7%	0.522
Index pregnancy ended in induced abortion/MR	1032	84.7%	1290	87.9%	0.500

Note: Standard errors clustered on study site.

Figure 2a. RC disclosure among those reporting RC at baseline by intervention group (n=2686)
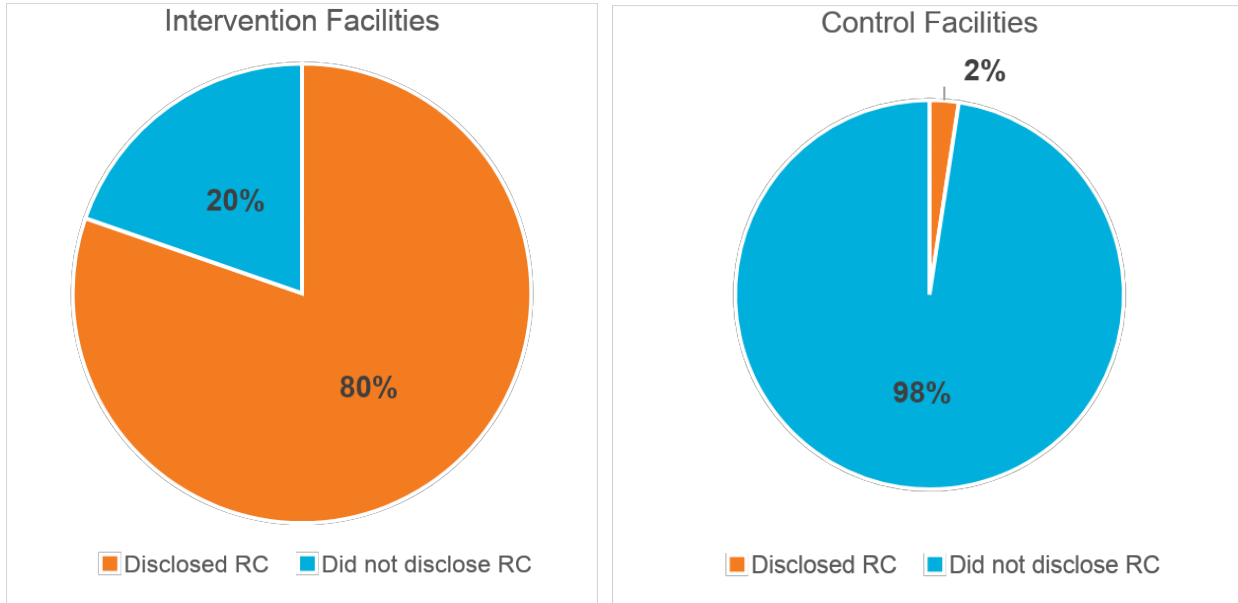

Intervention Facilities

20%

80%

■ Disclosed RC ■ Did not disclose RC

Control Facilities

2%

98%

■ Disclosed RC ■ Did not disclose RC

Figure 2b. IPV disclosure among those reporting IPV at baseline by intervention group (n=2686)
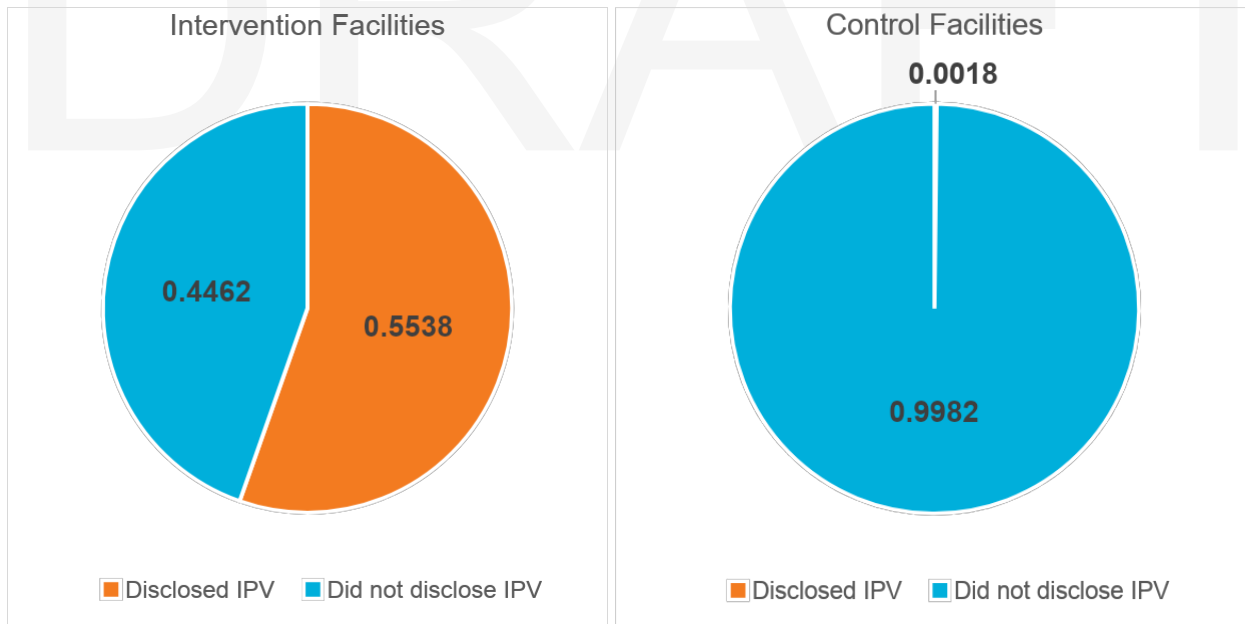
Intervention Facilities

0.4462

0.5538

■ Disclosed IPV ■ Did not disclose IPV

Control Facilities

0.0018

0.9982

■ Disclosed IPV ■ Did not disclose IPV

	3-month follow-up survey						12-month follow-up survey					
	AOR	p-value	95% CI	AOR	p-value	95% CI	AOR	p-value	95% CI	AOR	p-value	95% CI
Intervention group (Ref: Control group)	1.32	0.127	0.92 – 1.89	1.58	0.003	1.17 - 2.13	1.24	0.104	0.96 - 1.60	1.48	0.002	1.15 - 1.90
Past 3 month incidence of RC at baseline (Ref: RC not reported in past 3 months at baseline)				0.46	0.001	0.29 - 0.74				0.67	0.068	0.43 - 1.03
Living with husband at baseline (Ref: Not living with husband at baseline)				5.31	0.000	3.76 - 7.49				2.22	0.000	1.61 - 3.07
Living with in-laws at baseline (Ref: Not living with in-laws at baseline)				1.20	0.257	0.87 - 1.66				1.14	0.337	0.87 - 1.48
Age at baseline (Ref: 18-19 years)												
20-24 years				1.23	0.480	0.70 - 2.16				1.22	0.415	0.75 - 1.99
25+ years				0.95	0.859	0.51 - 1.74				0.83	0.469	0.50 - 1.38
Education at baseline (Ref: None/less than primary)												
Primary				1.16	0.438	0.80 - 1.69				0.83	0.284	0.59 - 1.17
Secondary or higher				1.53	0.055	0.99 - 2.35				1.18	0.395	0.81 - 1.72
Religion (Ref: Another religion)												
Islam				1.26	0.347	0.74 - 2.16				0.77	0.278	0.48 - 1.23
Number of living children at baseline (Ref: None)												
1				2.01	0.002	1.29 - 3.12				3.73	0.000	2.58 - 5.41
2				4.16	0.000	2.46 - 7.04				12.38	0.000	7.93 - 19.33
3+				4.61	0.000	2.55 - 8.32				15.89	0.000	9.49 - 26.60
Worked in past 12 months at baseline (Ref: Did not work in past 12 months at baseline)				1.36	0.096	0.95 - 1.95				1.22	0.192	0.91 - 1.63
Rural residence at baseline (Ref: Urban residence)				0.76	0.079	0.56 - 1.03				1.05	0.739	0.81 - 1.35
Index pregnancy is induced abortion/MR (Ref: Miscarriage)				2.65	0.000	1.86 - 3.76				2.85	0.000	2.12 - 3.83
Constant	5.35	0.000	3.38 – 8.48	0.12	0.000	0.04 - 0.32	4.03	0.000	2.84 - 5.73	0.15	0.000	0.06 - 0.36

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