Testing the effectiveness of Community-Based Continuous Training Project on Improving the Domains of Birth Preparedness and Complication Readiness Intention Among Expecting Couples in Rural Settings of Rukwa Tanzania, A Controlled Quasi Experimental Study

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Research Article

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Abstract

Background: According to theory of planned behavior, the intention to engage into a behavior predicts the behavior to occur. The intention to engage into a behavior is influenced by three domains which are the attitude towards the behavior, the perceived subjective norms and the perceived behavior control. The study aimed at testing the effectiveness of a Community Based Continuous training (CBCT) intervention on improving the three domains of Birth Preparedness and Complication Readiness (BPCR) intention.

Method: The quasi-experimental study design with control was done from June 2017 until March 2018. A multi-stage sampling technique was used to obtain 561 couples. Pre-test and end-line information were collected using semi-structured questionnaires developed using theory of planned behavior. The effectiveness of the intervention on improving domains of BPCR intention was assessed by using both independent t-test and pared t-test.

Results: In comparison between groups at posttest assessment, there was a significant increase in mean scores only on perceived subjective norms in the intervention group if compared to the control group among pregnant women. Among male partners, none of the domain showed a significant difference between the intervention group and control group. In the comparison within groups, mean scores in all three domains had significant increase at posttest in both groups among male partners while among pregnant women the significant increase in the three domains were only among pregnant women in the intervention group.

The predictor of change on attitudes and subjective norms mean scores were only the intervention $\beta=0.065$, $p<0.05$ and $\beta=0.112$, $p=0.001$ respectively. Predictors of change in perceived behavior control mean scores towards birth preparedness were level of education (secondary school, $\beta=0.066$, $p<0.05$), age at marriage (more than 24 years, $\beta=0.069$, $p<0.05$) and ethnic group (others, $\beta=-0.067$, $p<0.05$).

Conclusion: The improvement brought by the intervention indicates that the intervention has the potential to significantly change the attitude and subjective norms domains of BPCR intention. The study recommends the CBCT intervention to be used in rural community to improve attitude and perceived subjective norms of BPCR intention.

Background

BPCR is a strategy that encourages pregnant women, their families, and communities to effectively plan for births and be ready for emergencies if they occur [1]. The strategy empowers them with knowledge about danger signs (during pregnancy, labor and childbirth, post-delivery and neonatal period), awareness on the antenatal routine and services offered and to prepare a birth plan and ready for emergency.

BPCR strategy has a potential to eliminate the three delays (delay to make decision to seek care, delay to reach health facility and delay to receive maternal care services in the health facility) to access maternal health services [2]. The first delay (delay to make decision to seek maternal care) is mostly contributed by

poor knowledge on danger signs [3]. When these signs occur, the decision to seek care is delayed due to lack of correct interpretation of the danger sign. Some they wrongly interpret the signs as needing some rituals, which in turn leads to delay the right decision [4]. Previous studies have identified several barriers towards eradication of first delay such as pregnancy at younger age, ignorance, poverty, unemployment, poor health service utilization, a lower level of assertiveness among women, poor knowledge about obstetric danger signs, and cultural beliefs[5].

Similarly, the second delay (delay to reach the health facilities) also contribute to delay in accessing maternal health services. Rural settings in developing countries have poor roads, some of which are seasonal roads and unreliable mode of transport which are the key barriers towards timely accesses to maternal health services [5]. Preparation for birth and anticipated emergencies has the ability to reduce the second delay. It is a routine for every pregnant woman and her family to develop and implement a birth plan. The birth plan has the following item; saving money for emergency readiness, arrange for a means of transport to facilitate timely reach to health facility during labor or emergency, identify a skilled birth attendant, prepare items which will be used during childbirth such as; warm clothes to cover the baby, pads, a container for dirty clothes, a pair of glove, a razor blade, a mackintosh, identify a female relative to accompany the couple to the health facility, Identify a blood donor and identify a relative who will stay with other siblings during childbirth[6]. The third delay (delay to access care upon arrival) is the delay which occur in health facility. This delay is mostly contributed by limited resources, both human and non-human resources. It can be contributed by lack of good referral system.

Evidence has shown that BPCR strategy has the potential of minimizing the three delays to access maternal health services and hence reduction of maternal and neonatal deaths[7]. It is a key component of safe motherhood which can promote care seeking behavior and timely utilization of health facility delivery service[8]. Despite of the well-established prospective of BPCR strategy on facilitating timely access to maternal services, the uptake of the practice is surprisingly low in developing countries including Tanzania[8–10]. One wonders why such majority of families are not prepared for child birth and its unanticipated complications in a situation with poor infrastructures and unreliable transport. The possible explanation could be the low risk perception towards pregnancy and childbirth as evidenced by a qualitative study done in Sumbawanga rural community among parents who decided to have home childbirth assisted by unskilled birth attendants[4]. Another possible reason could be the belief that birth outcome is pre-determined by a supernatural power in such that cannot be changed by preparations or health facility birth[4].

Low male involvement in BPCR in developing countries has been cited as one of the barriers towards BPCR[11, 12]. Unlike the global north, low male involvement in BPCR in the global south is entrenched in the structural setups of the health facilities and culture beliefs[13]. Health facilities setups and the arrangement of the maternal health services excluded male partners in such a way that male partners are less informed on BPCR[14]. In addition, male partners perceived the role of maternal services utilization is the responsibility of women. Their role is to provide financial support. It is now recognized that reaching male partners directly to maternal services utilization is a corner stone towards improving BPCR[15].

Theory of planned behavior postulate that intention to engage into a behavior predicts the occurrence of the behavior[16]. The intention to engage into a behavior is shaped by three domains, the attitude towards the behavior, the perceived subjective norms and the perceived behavior control[16]. Attitude towards the behavior is influenced by the belief about the behavior and the evaluation of the behavior outcome. The perceived subjective norms domain is influenced by the normative beliefs and motivation to comply to the behavior. This is the perception on whether the important others approve for one engaging to the behavior. The perceived behavior control domain is influenced by the control belief one has about the behavior and the perceived power to engage into the behavior.

Community based continuous training intervention was designed using theory of planned behavior to improve the three domains of BPCR intention. Little was known on the effectiveness of the intervention on improving the three domains of BPCR intention.

Methods

Study design and setting

The study used a quasi-experimental study design consisted of a pre- and post-intervention assessment of two non-equivalent groups; an intervention group and a control group. The study was conducted in Rukwa Region in the Southern Highlands of Tanzania. Rukwa Region[14,17].

Study population

Expecting couples in Rukwa Region with gestation age ≤ 24 weeks at the time of study. Study population was selected for training in this gestational age range in order to allow enough time to observe the required indicators on domains of birth preparedness.

Sample size calculation and sampling technique

Sample size calculation

The sample size for couples involved in the study, was calculated by using the following formula ^[18]

$$n = \frac{\{Z_{\alpha} \sqrt{[\pi_0(1-\pi_0)]} + 2Z_{\beta} \sqrt{[\pi_1(1-\pi_1)]}\}^2}{(\pi_1 - \pi_0)^2}$$

Where:

n = minimum sample size

Za = Standard normal deviation (1.96) at 95% confidence level for this study

b = standard normal deviate (0.84) with a power of demonstrating a statistically significant difference before and after the intervention between the two groups at 90%

Πo = Proportion at pre- intervention (Use of skilled delivery in Rukwa region 65%)

Π1= proportion after intervention (Proportion of families which will access skilled birth attendant 75%)

$$n = \frac{\{1.96\sqrt{[0.65(1-0.65)]} + 0.84\sqrt{[0.75(1-0.75)]}\}^2}{(0.75-0.65)^2}$$

$$n = 169 \text{ couples} + 10\% = 187$$

The required sample size in the intervention group = 187 couples

Intervention: control ratio = 1:2 (using age groups in five years and parity) which aimed at increasing comparability of these two groups. The sample size in the control group = 374 couples. Therefore, the total sample size was 561 couples[15]

Sampling technique

The multi-stage sampling technique was used to obtain the required sample size[17].

Data collection

Semi-structured questionnaires developed using *Theory of Planned behavior* was used for data collection[17].

Data collection tools

A semi-structured questionnaire had questions on the predictors of intention and intention. They were developed using the *Theory of Planned Behavior*[20].

Variables

Dependent variables

Domains of birth preparedness intention; attitudes, perceived subjective norms and perceived behavior control (figure 1)

Independent variables

Independent variables were the community-based continuous training project (figure 1)

The Intervention (Community Based Continuous Training (CBCT) Project)

This intervention was grounded in the Theory of Planned Behavior. The Community Based Continuous Training (CBCT) project aimed to improve birth preparedness, male involvement and maternal services utilization among expecting couples.

The project involved discussions about behavior beliefs, normative beliefs and behavior control beliefs, which hindered the health facility birth preparedness, male involvement and maternal services utilization. In addition to that, the project involved teaching about birth preparedness (antenatal services, danger signs and preparations for health facility birth), signs of labor and newborn care[15].

Data analysis procedures

Data were checked for completeness and consistency; then were coded and entered in to computer by using statistical package IBM SPSS version 23. Descriptive statistics were used to generate frequency distribution and cross tabulation was used to describe the characteristics of the study participants. The comparisons between groups were determined by using independent t-test and comparisons within groups (pre/post) were estimated using paired t-test. Factor analysis was used to extract the statements used to measure the domains of birth preparedness intentions (Table 1)

Table 1

Analysis procedure

Objective	Factor analysis	Attitude	Subjective norms	Behavior control
To determine the effectiveness of CBCT on improving domains of birth preparedness intention among expecting couples.	Initial questions analyzed	19	25	24
	Initial Eigen values (before extraction)	Comp 1=37.245%; Comp. 2=13.905%	Comp.1=36.14%; Comp. 2=14.534%	Comp. 1=43.428%; Comp. 2=17.420%
	Final questions Question with component matrix >0.3	15	15	15
	Initial Eigen values (after extraction)	47.15%	54.43%	57.89%
	KMO measure	0.576	0.726	0.824
	Mean	0	0	0
	Positive= mean or above and negative below mean			

Results

Socio demographic characteristics

The mean age of pregnant women in the intervention group was 25.6 ± 6.899 and in the control group was 25.55 ± 6.775 . Ranging from 14 years to 49 years. The mean age of their male partners in the intervention group was 30.09 ± 7.743 and in the control group was 30.93 ± 7.714 . The age ranging from 18 to 54 years. Majority of pregnant women in intervention group (58.3%) and control group (59.6%) were younger than 25 years while majority of male respondents in intervention group (65.9%) and in the control group (70.4%) were older than 25 years. More than 70% of pregnant women in both groups were married at younger age of less than 18 years. Majority of the cohort had at least primary education. Majority of them were of low socio-economic status (earned less than 1 dollar per day), get basic obstetric care services from dispensaries, not covered by health insurance, and walking distance to a nearby health facility were less than five kilometers (Table 2).

Table 2
Socio-demographic characteristics of respondents (N=1092)

Character	Intervention Group (n ₁ =364)		Control group (n ₂ =728)	
	Female (n ₁ , %)	Male (n ₁ , %)	Female (n ₁ , %)	Male (n ₁ , %)
Age (years)				
14 to 19 years	54(29.7)	13(7.1)	113(31)	14(3.8)
20 to 25	52(28.6)	49(26.9)	104(28.6)	94(25.8)
26 to 30	39(21.4)	39(21.4)	66(18.1)	107(29.4)
31 to 35	15(8.2)	38(20.9)	40(11)	49(13.5)
36 and above	22(12.1)	43(23.6)	41(11.3)	100(27.5)
Age at Marriage (years)				
Less than 18	130(71.4)	26(14.3)	265(72.8)	45(12.4)
18 to 24	49(26.9)	111(61)	98(26.9)	242(66.5)
25 and above	3(1.6)	45(24.7)	1 (0.3)	77(21.2)
Marital status				
Cohabit	45(24.7)	44(24.2)	111(30.5)	110(30.2)
Married	137 (75.3)	138(75.8)	253(69.5)	254(69.8)
Number of wives				
Monogamous	170(93.4)	170(93.4)	299(82.1)	297(81.6)
Polygamous	12(6.6)	12 (6.6)	65 (17.9)	67 (18.4)
Education level				
Non-formal	70(38.5)	50(27.5)	160(44)	105(28.8)
Primary School	107(58.8)	119(65.4)	192(52.7)	234(64.3)
Secondary school or Higher	5(2.7)	13(7.1)	12(3.3)	25(6.9)
Income per day				
Less than 1 dollar	119(65.4)	118(64.8)	280(76.9)	264(72.5)
More than 1 dollar	63(34.6)	64(35.2)	84(23.1)	100(27.5)
Adult female in the family				
None	104(57.1)	104(57.1)	214(58.8)	214(58.8)

Character	Intervention Group (n ₁ =364)		Control group (n ₂ =728)	
1 or more	79(42.9)	79(42.9)	150(41.2)	150(41.2)
Ethnic group				
Fipa	155(27.6)	175(31.2)	178(31.7)	203(36.2)
Mambwe	5(0.9)	3(0.5)	119(21.2)	117(20.9)
Others	27(4.8)	9(1.6)	77(13.7)	54(9.6)
Health Insurance				
Yes	41(7.3)	41 (7.3)	143(25.5)	133(23.7)
No	146(26)	146 (26)	231(41.2)	241(43)
Health facility				
Dispensary	141(25.1)	141(25.1)	325(57.9)	325(57.9)
Health center	46 (8.2)	46 (8.2)	49(8.7)	49 (8.7)
Distance to health facility				
Less than 1	74 (13.2)	74 (13.2)	188 (33.5)	188(33.5)
1 to 5	102 (18.2)	102(18.2)	141(25.1)	141(25.1)
More than 5	11(2)	11 (2)	45 (8)	45(8)
Own mobile phone				
Yes	16 (2.9)	325(57.9)	53 (9.4)	218(38.9)
No	171 (30.5)	49 (8.7)	321(57.2)	156(27.8)

Obstetric characteristics of pregnant women

Majority of pregnant women (78.8%) were multiparous. Eleven (1%) multiparous women in the intervention group and 19 (1.7%) in the control group had ever had a preterm delivery and only 2 women (1.1%) in the intervention group and 11 women (3%) in the control had ever had a previous cesarean section (Table 3).

Table 3
Obstetric history of the female respondents

Variable	Intervention Group (n1, %) n=187	Control group (n2, %) n=374	Total (n1+n2) n=561
Gestation Age (Weeks)			
≤ 16	29(5.17)	90(16.04)	119(21.2)
17-24	158(28.16)	284(50.62)	442(78.8)
Gravidity			
Prime-gravid	40(7.13)	82(14.62)	122(21.75)
Multiparous	147(26.2)	292(52.05)	439(78.3)
Parity			
Null-parous	40(7.13)	82(14.62)	122(21.75)
Para 1-4	109(19.43)	221(39.39)	330(58.82)
Para 5+	38(6.77)	71(12.66)	109(19.43)
History of pre-term delivery			
Yes	11(1.96)	19(3.38)	30(5.35)
No	176(31.37)	355(63.28)	531(94.65)
History of Caesarean section			
Yes	3(0.5)	11(1.96)	14(2.49)
No	184(32.79)	363(64.71)	547(97.5)

Domains of birth preparedness Intention (Attitudes, Subjective norms and Perceived behavior control)

Descriptive characteristics of attitudes, subjective norms and perceived behavior control towards birth preparedness. Among both pregnant women and their male partners all three domains were slightly higher among control group if compared to intervention group. At post-test all three domains were slightly higher in the intervention group as compared to control group (figure 2 and 3 and Table 4).

Table 4
Descriptive characteristics of the domains of birth preparedness intention

		Baseline assessment				End-line assessment			
		Intervention		Control		Intervention		Control	
		Freq	%	Freq	%	Freq	%	Freq	%
Attitude towards BP									
	Negative	116	63.7	205	56.3	81	44.5	193	53
	Positive	66	36.3	159	43.7	101	55.5	171	47
Subjective norms									
<i>Pregnant women</i>	Negative	122	67	213	58.5	91	50	224	61.5
	Positive	60	33	151	41.5	91	50	140	38.5
Perceived behavior control									
	Negative	113	62.1	205	56.3	91	50	193	53
	Positive	69	37.9	159	43.7	91	50	171	47
Attitude towards BP									
<i>Male partners</i>	Negative	115	63.5	207	56.7	78	43.1	169	46.3
	Positive	66	36.5	158	43.3	103	56.9	196	53.7
Subjective norms									
	Negative	122	67.4	216	59.2	95	52.5	188	51.5
	Positive	59	32.6	149	40.8	86	47.5	177	48.5
Perceived behavior control									
	Negative	121	66.9	206	56.4	98	54.1	168	46.0
	Positive	60	33.1	159	43.6	83	45.9	197	54.0

The effectiveness of CBCT on improving domains of birth preparedness intention among expecting couples.

a. Comparison between group both at baseline and end-line on birth preparedness

An independent t- test was performed to compare attitudinal mean score, subjective norms means score and perceived behavior mean score at baseline assessment and end-line assessment among both pregnant women and male spouses. At end-line assessment subjective norms towards birth preparedness revealed a significant mean score differences between the intervention group and control group among pregnant women ($p<0.05$) (Table 5)

Table 5
Comparison between groups domains of birth preparedness intention

	t-test	mean	95%CI		
Variables		difference	Lower	Upper	P-value
Attitude					
Male baseline	-1.554	-0.069	-0.156	0.018	0.121
Male end-line	0.608	0.027	-0.061	0.116	0.544
Female baseline	-1.55	-0.069	-0.156	0.018	0.122
Female end-line	1.881	0.085	-0.004	0.174	0.061
Subjective norms					
Male baseline	-1.903	-0.082	-0.168	0.003	0.058
Male end-line	-0.302	-0.014	0.763	-0.103	0.076
Female baseline	-1.828	-0.08	-0.165	0.006	0.068
Female end-line	2.559	0.115	0.027	0.204	0.011
Perceived behavior control					
Male baseline	-2.396	-0.104	-0.19	-0.019	0.017
Male end-line	-1.879	-0.085	-0.174	0.004	0.061
Female baseline	-1.171	-0.052	-0.14	0.035	0.242
Female end-line	0.665	0.030	-0.059	0.120	0.507

b. Comparison within the groups- domains of birth preparedness intention

The mean attitudinal score deference within groups were significant in both intervention ($p<0.001$) and control groups (0.01) among male respondent. The difference was significant only in the intervention ($p<0.001$) among pregnant women. In subjective norms, the mean score difference was significant in both intervention group ($p<0.01$) and control group ($p<0.05$) among male respondents. The mean score

difference was significant only in intervention group ($p<0.01$) among pregnant women. In perceived behavior control the mean score difference was significant both in intervention group ($p<0.05$) and control group ($p<0.01$) among male respondents while among pregnant women the significant difference was only in intervention group ($p<0.05$) Table 6.

Table 6
Comparison within the groups- domains of birth preparedness intention

			Mean	95% CI		
Variables		t	difference	Lower	Upper	p-value
Attitude						
Male	Treatment	4.038	0.203	0.104	0.303	0.000
	Control	3.015	0.107	0.037	0.177	0.003
Female	Treatment	3.799	0.187	0.09	0.284	0.000
	Control	0.899	0.033	-0.039	0.105	0.369
Subjective norms						
Male	Treatment	2.887	0.148	0.047	0.25	0.004
	Control	2.299	0.08	0.012	0.148	0.022
Female	Treatment	3.206	0.165	0.063	0.266	0.002
	Control	-0.841	-0.03	-0.101	0.04	0.401
Perceived behavior control						
Male	Treatment	2.472	0.126	0.026	0.227	0.014
	Control	3.071	0.107	0.039	0.176	0.002
Female	Treatment	2.305	0.115	0.017	0.214	0.022
	Control	0.904	0.033	-0.039	0.105	0.366

c. Predictors of change in attitude, subjective norms and perceived behavior control towards birth preparedness.

The predictor of change on attitudes towards birth preparedness was only the intervention $\beta = 0.065$, $p<0.05$. Predictor of change on subjective norms towards birth preparedness was as well the intervention $\beta = 0.112$, $p=0.001$. Predictors of change in perceived behavior control towards birth preparedness were level of education (secondary school, $\beta = 0.066$, $p<0.05$), age at marriage (more than 24 years, $\beta = 0.069$, $p<0.05$) and ethnic group (others, $\beta=-0.067$, $p<0.05$) Table 7.

Table 7
Predictors of change in the domains of birth preparedness intentions

		95.0% CI					
	Variables	B	Beta	t	Lower	Upper	p-value
Attitude	(Constant)	-0.291		-2.304	-0.539	-0.043	0.021
	Age at marriage (19-24)	0.111	0.04	1.231	-0.066	0.288	0.219
	Age at marriage (25+)	0.244	0.056	1.734	-0.032	0.52	0.083
	Ethnic group (Mambwe)	0.087	0.026	0.766	-0.136	0.311	0.444
	Ethnic group (Others)	-0.209	-0.053	-1.665	-0.454	0.037	0.096
	Economic status (At least one)	0.019	0.006	0.205	-0.167	0.206	0.838
	Intervention group	0.194	0.065	1.98	0.002	0.387	0.048
	Ever heard about birth preparedness	-0.032	-0.009	-0.288	-0.252	0.187	0.774
Subjective norms	(Constant)	-0.315		-4.592	-0.45	-0.18	0
	Ethnic group (Mambwe)	0.027	0.008	0.254	-0.183	0.238	0.799
	Ethnic group (Others)	0.005	0.001	0.042	-0.227	0.237	0.966
	Economic status (At least one)	-0.09	-0.031	-1.003	-0.267	0.086	0.316
	Intervention group	0.315	0.112	3.393	0.133	0.496	0.001
Perceived behavior control	(Constant)	-0.179		-1.364	-0.438	0.079	0.173
	Ethnic group (Mambwe)	0	0	0.002	-0.221	0.221	0.999
	Ethnic group (Others)	-0.262	-0.067	-2.111	-0.505	-0.018	0.035
	Intervention group	0.144	0.049	1.498	-0.045	0.333	0.134
	Education level (Primary School)	-0.106	-0.038	-1.175	-0.284	0.071	0.24
	Education level (Secondary school)	0.421	0.066	2.077	0.023	0.818	0.038
	Age at marriage (19-24)	0.053	0.019	0.59	-0.124	0.23	0.555

95.0% CI							
Age at marriage (25+)	0.301	0.069	2.137	0.025	0.578	0.033	
Ever heard about birth preparedness	0.03	0.008	0.268	-0.188	0.247	0.789	

Discussion

Majority of study respondents in both intervention and control groups had negative attitudes towards birth preparedness at baseline assessment. This finding could be due to low risk perception towards pregnancy and childbirth. A previous study done in the same setting has reported that parents perceive pregnancy and childbirth as a natural normal process which is not associated with risks[4]. The low risk perception was largely contributed by low knowledge on obstetric danger signs[14]. The negative attitude towards health facility birth influence the intention to engage into the behavior and hence the occurrence of the behavior[16]. Different finding was reported by a previous study that majority of interviewed respondents had positive attitudes towards birth preparedness[21]. The difference could be due to differences in study population, the study interviewed pregnant women attending antenatal while this study interviewed pregnant women and their male partners in the community. Sampling pregnant women who are attending antenatal clinic could have included those who perceive pregnancy and childbirth are associated with risks.

The perceived subjective norms domain was also low among both pregnant women and their male partners at baseline assessment. Majority of interviewed women perceived that the behavior towards birth preparedness is not approved by important others. This could be due to cultural practice which influenced the acceptability of birth preparedness[22]. In the community the study was carried on, majority of pregnant women used traditional birth attendants. The cost of childbirth is relatively chip and sometimes paid in kind. The persistent use of traditional birth attendants could have influenced the perceived subjective norms in the sense that a traditional birth attendant who is sometimes your mother in law may be perceived to disapprove the health facility birth preparedness.

The study also revealed that the perceived behavior control was low among the respondents at baseline assessment. Majority of them perceive they are not able to prepare for health facility birth. This can be contributed to the low socio-economic status of the study community. The low risk perception stimulates the low priority setting in allocating resources for birth preparedness.

In comparison between groups at posttest assessment, there was a significant increase in mean scores only on perceived subjective norms in the intervention group if compared to the control group among pregnant women. This means CBCT project is effective in improving pregnant women perceived subjective norms. Among male partners, none of the domain showed a significant difference between the

intervention group and control group. All three domains showed an increase in mean score in the intervention group when compared with control group but the increase was not statistically significant. The increase in mean score in the intervention group provides an indicator that the CBCT project has the potential in changing these domains. The lack of significant change in the intervention group could be due to the dosage of the intervention and the time allowed for posttest assessment. The study recommends a future project which will add the dosage and duration of posttest assessment.

When the comparison was done within the group, mean scores in all three domains had significant increase at posttest in both groups among male partners while among pregnant women the significant increase in the three domains were only among intervention group. Significant increase in mean scores of all three domains among male partners was a surprising finding. The possible reason could be due to the effect of change in time.

Predictors of change in attitudes mean scores and perceived subjective norms mean scores were only the CBCT project. This means that the CBCT project has the ability to improve attitude and perceived subjective norms. The author recommends the use of CBCT intervention to improve the two domains (attitude and perceived behavior control) of birth preparedness intention.

The predictors of change of perceived behavior control mean scores were level of education, age at marriage and ethnic group. The CBCT project had no effect on the change perceived behavior control mean scores. This could be the behavior itself to occur requires the availability of resources. Their perception towards the ability to execute the behavior is influenced by the low socio-economic status. The CBCT project alone could not change their beliefs about their ability to prepare for birth and unanticipated emergencies. The study recommends for another community-based intervention to work out an innovative strategy to improve socio-economic status of expecting couples.

The improvement brought by the intervention indicates that the intervention has the potential to significantly change the attitude and subjective norms domains of BPCR intention. The study recommends the CBCT intervention to be used in rural community to improve attitude and perceived subjective norms of BPCR intention.

Conclusion

The improvement brought by the intervention indicates that the intervention has the potential to significantly change the attitude and subjective norms domains of BPCR intention. The study recommends the CBCT intervention to be used in rural community to improve attitude and perceived subjective norms of BPCR intention.

Abbreviations

Declarations

Ethics approval and consent to participate

Approval to conduct the study was given by the University of Dodoma Research and Publication Committee. Government authorities at regional and council levels (Sumbawanga and Kalambo) were contacted for permission to conduct the study. Both written and oral informed consent was obtained from the study participants. For pregnant women who were younger than 18years, a consent to participate to the study was sought from their husbands. All methods were carried out in accordance with relevant guidelines and regulations.

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Competing interests

Author declares that there is no competing interest.

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Authors' contributions

Fabiola Moshi did the conception, design, acquisition of data, analysis, interpretation of data, and write the manuscript.

Consent for publication

Not applicable

Availability of data and materials

Data set is available and can be shared on request from fabiola.moshi@gmail.com

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Figures

Figure 1

Study variables

Figure 2

Domains of birth preparedness intention among pregnant women

Figure 3

Domains of birth preparedness intention among male partners