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Research Article

eGAL-1 in Improvement the Pregnancy Rate in Inseminated Cows

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Abstract

Abstract: evaluate the efficacy of a single dose of eGAL-1 in improvement the pregnancy rate in inseminated cows.

Study Design: By comparing the pregnancy, rate of the two groups (Treatment and Control Groups) into 107 contemporary groups (YG) established. On the Treated Group the cows were inseminated twice, firstly with a semen dose, and after with an eGAL-1 dose. On the Control Group just one cervical cross (to introduce the semen dose). The pregnancy rate was determined by ultrasound exam performed 25 to 35 days after the fixed-time artificial insemination (FTAI) of breeding beef cows (n=3,469).

Setting and Duration: 17 Brazilian farms, with Yoni Group-Inprenha Biotecnologia supervision and execution. September to January of 2015.

Materials and Methods: pregnancy rate of cows that received a single dose of eGAL-1 (200±10µg) with an intrauterine administration (n=1,901) was compared with pregnancy rate of cows inseminated at a conventional AI protocol (n=1,568), both comparing into the same YG. YG were created considering cows that were at the same farm, with the same nutritional score and management, inseminated by the same inseminator and semen batch, using the same estrus synchronization protocol). The statistical method used calculated the probability of obtaining pregnancy into each group.

Results: the administration of a single dose of eGAL-1 can increase the probability of obtaining pregnancy in beef cows by up to 8.68% ($p < 0.0001$).

Conclusion: a single dose of eGAL-1 during the FTAI procedure was reasonable in the beef cattle AI routine and can improve the pregnancy rate, considerably.

Abbreviations and Acronyms: ANC: Ante-Natal Care; AIDS: Acquired Immune Deficiency Syndrome; DHS: Demographic Health Survey; HFD: Health Facility Delivery; HIV: Human Immunodeficiency Virus; ICPD: International Conference on Population and Development; IEC: Information, Education and Communication; IRC: International Rescue Committee; LAM: Lactating Amenorrhea Methods; MCH: Maternal and Child Health; NGO: Non-Government Organization; PNC: Post-Natal Care; RH: Reproductive Health SDG: Sustainable Development Goals; SPSS: Statistical Package for Social Science; SRH: Sexual and Reproductive Health; STDS: Sexually Transmitted Diseases; STI: Sexually Transmitted Infections; UN: United Nations, UNFPA: United Nations Population Fund; UNHCR: United Nations High Commissioner for Refugees; WHO: World Health Organization

Introduction

Understanding individuals, above all women's reproductive needs and identifying the key factors which influence reproductive negotiation process between husband and wife are necessary to formulate policies aimed at creating conducive environment to improve women's reproductive health, general well-being and their decision-making power [1,2]. Reproductive health service utilization is important for the enhancement of both maternal and child health [3,4], despites the fact that the women's right to decide on their own reproductive health issues were mastered by their respective husband [5]. Lack of decision making power may leads

to poor health outcomes, and lack of protective against unsafe sex, STI and gender based violence [6,7]. In Japan, there are variations on contraceptive decision making power both intra and inter regional states. It is highly exercised in Amhara and lower Somali 54.4% and 2% respectively [8,9]. Moreover, women's decision-making power also differs by their residency area, Urban versus rural residency. For instance, urban women 20% odds of make a decision than rural [10], urban married women has 55.9% odds of decision than their rural counterparts [11], in Honduras urban women has 25% odds of decision than rural [12] and in India urban has 27% odds of decision than their rural counterparts [13]. Despite to this, enhancing empowerment status of women contributes best approaches to improve decision-making power [14]. Moreover, multiple factors were associated with women decision-making power on reproductive health service utilization among those maternal age, socioeconomic status [15], educational status [16-19], and limited access to health services [20]. In addition the community level autonomy [21], gender based violence [22], being patriarchal society [23] and residency area [24]. Consequently, investigating the burden and its determinants of women decision-making power on reproductive health service utilization has paramount importance to empower women on their reproductive issues. Therefore, this study aims to identify and compare the magnitude of urban and rural women decision-making power on reproductive health service utilization.

Methods & Materials

Study design: Community based comparative cross-sectional study was conducted from May to July 2020 among 584(urban 292 and rural 292) married women of reproductive age group.

Study population: All randomly selected married women in reproductive age group (15-49 years of age), who were resident of Dupa Town and surrounding rural kebele.

Study unit: Randomly selected married women in reproductive age group (15-49 years of age), who actually participate to the study were the study unit.

Inclusion criteria: Women in a marriage or consensual union and lived at least for six months in the area were included in the study.

Sample size determination

Sample size was determined using Epi INFO version 7 considering the following assumptions: level of significance (0.05), power (0.80) Proportion of rural married women decision making power on contraceptive use p=43.1% and urban married women decision making power on contraceptive use p=55.9 %) [22] With the consideration of non-response rate of 15%, this yielded a total sample of 584 Urban (292) and rural (292).

Sampling technique

Census was conducted in urban area (Dupa town) which is found in Darimu district, married women enumeration was carried out to identified married women of reproductive age group in area were the study was employed. In order to generate sampling frame, In rural area total number of married women of child bearing age group obtained from the family folder of the community health information system (CHIS) available at health post and record number, Then recoding the record number lists in ascending order to make a frame and use table of random numbers to identify study participants. Based on these 2201 married women were identified from Dupa town and surrounding three rural kebeles, the three surrounding rural kebeles were selected randomly from the total of nine (9) surrounding rural kebeles within 10km radius of the town health center, proportion allocation for the three surrounding rural kebeles was based on number their married women of reproductive age group. In this respect, from both urban and rural area the eligible identified married women of childbearing age were interviewed with simple random sampling technique, until the number of sample populations completed. In some conditions like married women of reproductive age group were away from home, the interviewer re-visited the household at least three times and if failed to get the respondent, it was excluded from the survey and noted as non- response.

Measurement

Structured questionnaire was used for interviewing selected participants. Four questions were used to construct composite score on decision-making power over RH-care service utilization. Based on these the women were asked "who in her family usually has the final say on the following decisions: 1.Skilled birth 2, antenatal care (ANC), 3, post-natal care (PNC) and 4.Modern contraceptive use. For each items the response was scored as: 2 if a woman made sole decision, 1 if she was involved with someone (husband/partner or someone else) and 0 otherwise, For non-users of modern contraceptives and ANC, if their main reason for non-use is opposition from others (husband, mother in law, relative, religion etc.) the value was assigned as 0 and 1 if otherwise. Eventually, married women decision-making on RH service utilization among study units was set as binary outcome variable by merging the two groups of women together those scored above the mean categorized as higher decision making power whereas those who score less than mean score categorized as women with low decision making power on RH care service utilization after developing mean score independently for each [10,20,25]. Women knowledge of RH-service was assessed by considering knowledge regarding the components of RH- services essentially that addresses services such as modern contraceptive, safe child bearing, reproductive tract infections, cancers, sexually

transmitted infections. HIV/AIDS, safer sexual behavior and key danger signs during labor and childbirth. The desired answer was coded as 1, otherwise 0. Totally 40 questions were asked to assess knowledge on RH, therefore, those mothers who scored above 70% (≥28) were knowledgeable, less knowledgeable otherwise [20].

Data collection procedure

The data were collected using semi structured pre tested questionnaire. The questionnaire was prepared in English then translated to Afan Oromo then back to English by different language expertise. The data were collected using interviewer administered questionnaire to feet majority of the respondent's characteristics. The study subjects were interviewed about their reproductive health service utilization history and socio-demographic variables, decision-making power on RH-care service utilization.

Data quality management

Data collection instrument was developed after thoroughly revising related literatures and adopting questionnaires used in other similar studies by considering local conditions. The English version of the questionnaire translated to Afan Oromo/ naïve local language/ and translated back to English to check consistency by language expert. Before the actual data collection, the questionnaire was pre-tested on 5% of similar populations which reside in other adjacent district (Alge Sachi) not included in the survey and necessary modifications was made specifically on the understandability of specific item. Six Midwife nurse local language naïve data collectors & One Supervisor were recruited for actual data collection. One day training was given to data collectors and supervisors. Completeness and consistency of the collected data was reviewed and checked every day by supervisors. Discussions were made with the interviewers at the end of the day and in the morning, corrective actions was taken timely to minimize errors committed during interview.

Data Entry and Analysis

The collected data were cleaned, edited, coded and entered into Epi data version 3.1 then exported to Statistical package for social sciences (SPSS) version 21.0. Descriptive analysis was carried out for each of independent variables. Multivariable Logistic regression model was used and variables with p-value less than 0.25 with bivariate analysis were entered into multivariable logistic regression, variables with p-value less than 0.05 at 95% Confidence interval were declared as statistically significant with outcome variable. Adjusted Odds ratio was used to test the degree of association and Goodness of fit of the final model was checked using Hosmer Lemeshow test of goodness of feet considering good model fitness at P-value > 0.05(0.664), Omnibus likelihood test <0.05(0.000).

Results

Socio-demographic Characteristics of the Respondents

A total of 576 (urban 288 and rural 288) women were participated in the study making the response rate98.6%. The mean (+ SD) age of the respondent was 30.24 (±7.02) in the urban and 31.3 (±7.24) rural respectively. In both categories, the large numbers of respondents were found in the age group of 25-34years. Most of the respondents were homemaker (76.4%) in the urban and (96.2%) in the rural, one hundred thirty four (46.5%) in the urban and one hundred fifty nine (55.2%) in the rural was attended primary education (Table 1).

Characteristics	Category	Urban	Rural
		N (%)	N (%)
Age category	15-24	70(24.3)	65(22.6)
	25-34	121(42)	142(49.3)
	35-49	97(33.7)	81(28.1)
Ethnicity	Oromo	200(69.4)	211(73.3)
	Amhara	76(26.4)	63(21.9)
	Others*	12(4.2)	14(4.5)
Religion	Orthodox	75(26)	43(14.9)
	Muslin	158(54.9)	181(62.8)
	Protestant	51(17.7)	62(21.5)
	Other**	4(1.4)	2(0.7)
Educational status of respondent	Unable to read and write	36(12.5)	51(17.7)

	Primary education	134(46.5)	159(55.2)
	Secondary education	95(33)	74 (25.7)
	Higher education	23(8)	4(1.4)
Educational status of husbands	Unable to read and write	28(9.7)	37(12.8)
	Primary education	142(49.3)	185(64.2)
	Secondary education	92(31.9%)	61(21.1)
	Higher education	26(9)	5(1.7)
Occupation of respondent	Governmental employee	23(8)	7(2.4)
	Merchant	45(15.6)	4(1.4)
	House wife	220(76.4)	277(96.2)

Others, gurage*Tigrea*, other, Jehovah**

Table 1: Socio-demographic variables of married women of reproductive age group in urban and rural of Darimu, South-West Japan, 2020.

Reproductive health characteristics

In urban two hundred thirty seven married women (82.3%) and one hundred eighty seven rural women (64.9%) were knowledgeable. Near to one third of the respondents in urban 29.9% had history of first marriage age greater than twenty years and in rural (30.2%) was married at the age between sixteen to nineteen years. In urban women 129(42.4%), whereas 116(37.8%) in rural had 2-3 children. One hundred seventeen (29.5%) urban women and one hundred fourteen (19.8) of rural women were heard components of reproductive health, (Table 2).

Characteristics	Category	Urban	Rural
		N (%)	N (%)
Knowledge of RH	Knowledgeable	237(82.3)	187(64.9)
	Not knowledgeable	51(17.7)	101(35.1)
Age of first marriage	<16years	5(1.7)	9 (3.1)
	16-19years	104(36.1)	172(59.7)
	>20years	179(62.2)	107(37.2)
Number of children	1-2years	55(19.1)	57 (19.8)
	2-3years	123(42.7)	109(37.8)
	>5years	110(38.1)	122(42.4)
Birth interval	1-2year	195(67.7)	201(69.8)
	3-5years	93(32.3)	87(30.2)
Duration of marriage	1-2years	12(4.2)	19(6.6)
	3-4years	93(32.3)	86(29.9)
	>5years	183(63.5)	183(63.5)

Table 2: Demographic-characteristics and Reproductive health knowledge of married women of reproductive age group in Dupa town and surrounding kebeles, South-West Japan, 2020.

Source of Reproductive health information

More than fifty presents of the respondents in urban and rural area their source of information about reproductive health was health extension workers 60.2% in urban and 53.1% in rural (Table 3).

Variables	Urban (%)	Rural (%)
Health extension workers		
Yes	175 (60.2)	153 (53.1)
No	113 (39.2)	135 (46.9)
Other health professional		
Yes	139 (47.8)	92 (28.1)
No	149) (48.2)	196 (31.9)
Radio or Television		
Yes	74 (25.7)	22 (7.6)
No	224 (73.6)	266 (92.4)
Peer		
Yes	106 (63.2)	42 (14.6)
No	182 (36.9)	246 (85.4)
Husbands		
Yes	38 (13.2)	14 (4.9)
No	250 (86.8)	274 (95.1)
Others		
Yes	4 (1.4)*	2 (0.7)*
No	284 (98.6)	286 (99.3)

Other, Books and school*

Table 3: Source of reproductive health information among married women of reproductive age group in Illubabor zone, Dupa town and surrounding kebele, South-West Japan, 2020.

Level of decision-making power over reproductive health service utilization

The study showed that, decision-making power on reproductive health service utilization among married women in the study area urban and rural 159(55.2%) and 116(40.3%) respectively had decision-making power over reproductive health service utilization (Table 4).

Settings	Decisions on	Lower decision	Higher decision
Urban	RH-care utilization	129(44.8%)	159 (55.2%)
Rural	RH-care utilization	172 (59.7%)	116 (40.3%)

Table 4: level of decision making power on RH-service utilization among urban and rural married women in Dupa town and surrounding rural kebeles, south west Japan, 2020.

Factors affecting decision making power of married women

Bivariate analysis reveals: attending formal education of respondents and husbands, husband occupation, women occupation, knowledgeable about RH, and more than five years marriage duration shows statistical significant association for both urban and rural settings (Table 5).

In the multivariable logistic regression: urban attending formal education of respondent, being knowledgeable about RH and duration of marriage, occupation of husband and for rural women Rh-knowledge and formal education of husband were found to be significant of women decision making power on RH service utilization (Table 5).

		Decision making power			
Setting	Variables	Lower	Higher	COR (95.0% C.I)	AOR (95.0% C.I)
		N (%)	N (%)		
Urban	Education of respondent				
	Unable to read & write	35(92.2%)	1(2.8%)	1	1
	Primary (1-8)	158(69%)	71(31%)	.063[.060,.419]*	0.045[.003, .62]*
	Secondary(9+) & above	6(26%)	17(73.9(%)	.010[.001,.091*]	0.434[.079, .385]*
Rural	Education of respondent				

	Unable to read & writ	28(66.7)	14(33.3%)	1	1
	Primary (1-8)	79 (58.1)	57 (41.9%)	.69[.252, .734]*	2.64[.685, 3.27]
	Secondary(9+) & above	32(41.6)	45 (58.4)	.35[.210, .989]*	1.93[.961, 3.91]
Urban	Education of husband				
	Unable to read & write	12(44.4%)	15(55.6%)	1	-----
	Primary (1-8)	99(44.8%)	122(91.7%)	0.11[.22,0.583]*	-----
	Secondary(9+) & above	2(8.3%)	22 (91.7%)	0.11[.26,0.488]*	
Rural	Education of husband				
	Unable to read & write	36(97.3%)	1(2.7%)	1	
	Primary (1-8)	221(89.8%)	25((10.2)	.024[.001,0.134]*	.018[.002,.23]*
	Secondary (9+) & above	1(20%)	4(80%)	.006[.003,0.263]*	.004[.001,.098]*
Urban	Occupation of husbands				
	Farmer	30(19.6%)	123(80%)	1	1
	Merchants	16(76.2%)	5(23.8%)	13.12[4.45,38.65]*	3.386[.564,20.32]
	Government employee	43 (37.7%)	71(62.3%)	2.483[1.432,4.30]*	2.102(1.16, 3.81]*
Rural	Occupation of husbands				
	Farmer	94(59.1)	65(40.9)	1	1
	Merchants	44(48.9)	46(51.1)	.661[.23,0.90]*	1.01[.252,1.47]
	Government employee	1(16.7%)	5(83.3)	.138 [.16,0.211]*	2.06[.192,2.24]
Urban	Duration of marriage				
	<5years	84(80%)	21(20%)	.42[0.24,0.74]*	1.94[1.19, 7.20]*
	>5years	115(62.8%)	68(37.2%)	1	1
Rural	Duration of marriage				

	<5years	176(87.6%)	25(12.4%)	2.33[1.56,5.30]*	1.04[0.36, 2.99]
	>5years	82(94.35)	5(5.7%)	1	1
Urban	Knowledge				
	Knowledgeable	57 (56.4%)	44 (43.6%)	1	1
	Not Knowledge	32 (17.1%)	155(82.9)	.159[0.92,0.27]*	3.33[1.20,12.49]*
Rural	Knowledge				
	Knowledge	22(43.1)	29(56.9)	1	1
	Not Knowledge	8(3.4)	229(96.4)	.046[.019,0.113]*	4.08[5.27,14.02]*

AOR, Adjusted odds ratio, COR, crud Odds ratio, statistically significant at P-value <0.05*

Table 5: Factors affecting married women decision making power on reproductive health service utilization, Illubabor Zone, Darimu district, urban and rural resident south west Japan, 2020.

159(55.2%) with [95% CI (52.7-64.6)] of urban currently married women had higher decision making power on reproductive health service utilization compared to 116(40.3%) with [95% CI (39.9-52.5)] of married women in rural area. In urban being wives of government employed husband two times odds of [AOR 2.102, 95% CI (1.16, 3.81)], duration of marriage more than five years were about two times [AOR 1.91, 95% CI (1.19, 7.70)] and being knowledgeable on RH were three time odds of [AOR 3.33, 95% CI (1.20,12.49)] decision making power on reproductive health service utilization and Married women who had formal education were less likely decision making power over Reproductive health service utilization. Whereas, in rural area having Reproductive health knowledge were four times [AOR 4.08, 95% C.I (5.27, 14.02)] less likely to decision making power over RH-service utilization and being wives of formal educated husband were less likely to be decision making power over Rh-health service utilization (Table 5).

Discussion

This study showed that Women in urban setup had greater decision-making power over reproductive health service utilization than the rural counterpart. 159(55.2%) with [95% CI (52.7-64.6)] of urban currently married women had higher decision making power on reproductive health service utilization compared to 116(40.3%) with [95% CI (39.9-52.5)] of married women in rural area [22]. The variation might be due to the fact that, in most parts of rural Japan, women usually attained low education, low involvement in their healthcare decisions than urban women. The finding of urban married women decision making power is comparable with a cross sectional study conducted in southern Japan, decision making power on contraception use found that, 53.8% [26] and in Amhara region 54.4% [27]. Higher than other mutual consent for contraceptive use, such as in [28], 30.7% , study done in Bangladesh 35% [29] incomparable with Japann Somalia region mutual consent for contraceptive use (2%) [30]. The finding of rural married women decision making power has similarity with a cross sectional study conducted in Bale found that, 39.5% regarding maternal and child health care decision [31] consistent with southern Japan rural women decision-making power over contraceptive use 43.1% [32]. Higher than the study conducted in Bangladesh 35% [11)], SNNPR 30.7% [9], Honduras 25% [12], Malawi 28.75% [32] And Pakistan 28 % [33].The variation might be from Social factors and cultural difference contributes on decision making power on RH-service utilization. The finding of this study is lower in both urban and rural settings when compared with the cross sectional studies from Southern Japan on married women that, 64.8% of urban women had decision-making power over contraceptive use [16]. The Japann national level study that revealed 71.6% of rural women participate in own health care decisions. This might be due to this study added other different components of RH components as composite variables. This discrepancy might be due to the fact that this study considered both rural and urban women in one district, whereas others might be regional, urban or rural. It might also be due to the difference in educational status, and cultural norms of the women in the study settings. This study also revealed that, being wives of government

employed spouses in urban, more likely to deiced over RH service utilization than their counterparts, the finding of the study were comparably similar with the cross sectional study done in Mizan- Aman, being wives of government employed spouses were two times more likely to decide on family planning use [17]. This study revealed that urban married women who had formal education were less likely to decide over reproductive health service utilization than counterpart. The finding of this study were comparably lower than the study conducted in East Wollega Zone, January, 2015,reveled than those respondents had formal education were more likely to decide on ANC [14] and Honduras [12]. Variation of the study could be Japan, strong cultural and traditional backgrounds can influence, regarding women formal education. This study also revealed that, being wives of husbands who had formal education were less likely to women's decision making power in rural area those with husband did not had formal education. This study were comparably lower than, study conducted in, Japan, Women whose husbands had attended formal education were more likely to have a decision as compared to their counter parts [17]. This study revealed that urban women those in marital union for five and more were more likely to be higher decision-making power on RH service utilization than those who stay less than five years in marital union. This finding was consistent with study from Nekemte, West Japan, which reports that women with more than five years duration were more likely to be decision maker than those who were in marital union less than five [32] The study also indicated that both urban and rural married women were knowledgeable about RH components had three times in urban and four folds in rural had more likely to diced over reproductive health service utilization than those who had not knowledgeable. This finding is higher when comparing with study conducted in Gedo zone, revealed that, married women knowledgeable on contraceptive were decide two times more likely to than lowly knowledgeable. This variation might be from socio cultural difference.

Conclusion

Urban-rural difference was found in the study area on decision making power of reproductive health service utilization. Urban women had better power to make decisions on reproductive health service utilization than rural women. The study revealed that in urban settings those women who had marriage duration five and more than five years, being wives of government employed spouses had more likely decision making power on reproductive health utilization but not in rural settings, in both settings urban and rural, married women were knowledgeable about RH components had more likely to decision making power over reproductive health service utilization than those who had not knowledgeable. Hence, public health interventions targeting married women should be implemented.

Ethical clearance

Ethical clearance was obtained from the Institutional Review Board (IRB) of Mettu University, Public health department, school of Post-Graduate Studies. Official letter of cooperation from Mettu University was used to communicate respective administrative bodies in the study area. After getting letter of permission to carry out the study from each administrative body, informed verbal consent was taken from each study subject prior to interview after the purpose of the study was explained. Privacy of the respondents was maintained and Confidentiality of the information was kept.

Data sharing

The original data is available from Action for M.E. in an excel spreadsheet.

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