European Journal of Biology and Medical Science Research
Vol.8, No.2, pp.13-29, April 2020
Published by ***ECRTD- UK***
Print ISSN: ISSN 2053-406X, Online ISSN: ISSN 2053-4078

MODERN CONTRACEPTIVE METHODS UTILIZATION STATUS AND ASSOCIATED DETERMINANTS AMONG WOMEN WITHIN REPRODUCTIVE AGE GROUP IN DIRE DAWA ADMINISTRATION, FOCUSING ON HORMONAL CONTRACEPTIVE METHOD

[1]Gizaw Tesfaye
M.Sc., in Applied Statistics

[2]Mesfin Tsegaye
M.Sc., in Bio-Statistics
[1&2] Dire Dawa University, College of Natural and Computational Sciences, Department of Statistics, Dire Dawa, Ethiopia, P.O.Box: 1362

ABSTRACT*: The study was intended to asses Utilization status of Reversible Modern Contraceptive Methods and associated Determinants among Women within Reproductive Age Category in Dire Dawa Administration held from the year 2015 to the year 2017; further, deals with hormonal contraceptive methods and investigate its influencing determinants related with both ever used and being used by the parent population. Multi-stage stratified simple random sampling methods were considered to draw a well representative sample of Modern Contraceptive Methods (MCM) user women in Dire Dawa Administration. Thus, the target population was subdivided into two broad strata: stratum1r (MCM user women in Rural Dire Dawa Administration) which further subdivided into five randomly selected kebeles or strata andStratum2u (MCM user women in Urban Dire Dawa Administration) which also subdivided into five randomly selected kebeles or strata and these two strata comprise the target beneficiaries. The data were analyzed by:-Descriptive statistics, Bi-variate & binary logistic regression model. Thus, firstly, from the descriptive statistics result the most widely utilized and the most widely discontinued Modern Contraceptive Methods by the respondent women were implant and Inject able contraceptive methods respectively. Secondly, from the results of the classical binary logistic regression analysis, the predictor variables that are identified to have a significant impact on utilization status of MCM for rural respondent women are :age, educational level, family size, interest to use, distance and cultural barrier at the 5% level of significance Thirdly, the seven significant determinants of MCM utilization status of respondent women in urban are: age, marital status, family size, number of children, confidence, comfort ability and training and counseling at the 5% level of significance. Firstly, Based on the results we conclude that, most of the respondent women discontinue modern contraceptive methods utilization due to the side effects of hormonal contraceptive methods i.e.,. 55.7% in rural and 56.9% in urban of the study area. Secondly, age, education, family size, interest to use, distance, and cultural barrier are among the factors which have a relationship with the use of modern contraceptive methods in rural Dire Dawa Administration. Whereas; confidence, comfort ability, training and counseling, age, marital status, family size, and number of children are among the factors which have relationship with the use of modern contraceptive methods in urban Dire Dawa Administration.*

KEY WORDS*: modern contraceptive methods, hormonal contraceptive methods, LIIP, short term and long term acting family planning methods, reproductive age, and binary logistic regression model.*

INTRODUCTION

Modern contraceptive method is an indispensable tool for the improvement of health and wellbeing of mothers and their children. Many women use contraception with a degree of resignation, and the method they choose is usually regarded as the best of a bad lot. This attitude leads to high discontinuation rates with all reversible methods of contraception. Discontinuation and poor adherence are usually attributed to side-effects such as: breakthrough bleeding, which is inconvenient rather than life-threatening; fears of rare but serious risks, particularly breast cancer; and fear of weight gain [1].

The side effects associated with each one of a particular hormonal contraceptive method (HCM) is generally different. All of the HCMs are associated to menstrual changes and HC methods such as progestin only pills, progestin only inject-able, combined inject-able and implant are associated with headache and dizziness Klara [2].When the user experiences a side effect and considers it as the more series one, it is obvious that she is engaged in a dilemma to decide one of the three options: completely stop using any of the MC method, switch to other MC method or continue using the method. The study done by [3] showed how individual factors influence ones use of modern contraception: how socioeconomic status of women and number of children affects the use of contraception. This study focused on identifying the discontinuation status of HCM and the determining factors of HCM use discontinuation among user women in Dire Dawa Administration.

Rapid population growth and over population have remained topical issues of great concern to many national governments and the international community [4]. This problem reduced by supplying and using the effective and safest modern contraceptive methods. However, somewhat less attention is given what happen after a woman has overcome the barriers faced due the use of hormonal contraceptive and adopts a method[5].Clinical evidence shows that physical side effects are mainly associated with Hormonal Contraceptive Methods particularly: pill, inject-able, implant, and hormone releasing IUCD[6]. It is unquestionable that when a user women experience physical side effect due to a particular HCM she will be less productive, lose self-confidence and face psycho-social challenges: loss of sexual interest, marital disruption and others. Based on the method she uses, it is important to realize that discontinuation have an impact on the overall wellbeing of the woman, this is because while she discontinue she may has possibly unwanted pregnancy and she may also suffer from the combined side effects of using different HCMs which in turn lead a user women to totally stop any of the methods. This intern can be the cause for low prevalence of modern contraceptive methods and has direct and undeniable contribution to rapid population growth in the Administration. The modern contraceptive prevalence rate in Dire Dawa Administration among married women is 31.7%. This figure seems encouraging compared to the lowest 3.8% in Somali region and the highest 56.3% in Addis Ababa City. There also evidence that all of the regions didn't meet the 67% contraceptive prevalence rate that stated by MDG to be met by the year 2015 [7]. Therefore, as Dire Dawa Administration is one part of Ethiopia, it's expected to contribute its best effort to

achieve the goal that stated as MD. This may be achieved if a practice and habit of a knowledgeable way to use the safest and the effective modern contraceptive methods developed in the Administration.

Thus, studying the utilization status and determinants of short and long acting modern contraceptive methods focusing on hormonal contraceptive methods usage status of women may be useful to extract all the necessary information that is embodied in the problem under the considerations. Further, to manage the existing problem regarding short and long term hormonal contraceptive use discontinuation in the Administration. Additionally, it has tried to come up with the results that could help the policy makers found in both Federal and the Administrative government.

Description of the Study Area and Population

Dire Dawa Administration is located around 517 km to the east of the capital of the Nation Addis Ababa and found at 313 km from the nearby neighbor Djibouti to the west. The city is one of the oldest cities that established as a result of the start of the former Ethio-France rail way transportation company in the year 1903. The study was conducted in Dire Dawa Administration; all MCM user women permanently residing in Dire Dawa Administration at the time of data collection (in the year 2015, N=37,800 was constitute the parent population (Dire Dawa Administration health bureau, 2016).

Sampling Design

In order to propose a sample design that meet the required specification of the users at the lowest possible cost; including objectives of the survey, types of estimates required, levels of reliability, restrictions placed on survey with respect to timelines and costs. The estimation procedure involves the process for computing the sample statistics and calculating the reliability of these estimates. This study was used stratified or classified into two/multi-stage design. The target population of the study were all MCM user women in the age of child bearing interval and that are permanently residing in Dire Dawa Administration whereas; sample population of the study is MCM user women in reproductive age who live in the randomly selected kebeles or in strata in Dire Dawa Administration at the time of data collection. Stratified simple random sampling is an appropriate probability sampling procedure that employed in the study. Sampling frame was prepared using the MCMs user women from village level registry from both urban Dire Dawa (stratum one) and from rural Dire Dawa(stratum two).The sampled population of HCMs user women was sub-divided into number of kebeles that was randomly drawn from both urban and rural kebeles of Dire Dawa. Using proportional allocation across different non overlapping strata or selected rural and urban kebeles of MCM user women, for the predetermined total sample of size n, then, a simple random sampling scheme was hired to draw a random sample of sampling units from each stratum or from those randomly selected number of rural and urban kebeles or strata. These subjects were selected via a technique of table of random number; a random sample of MCM user women were taken in a way that the selected samples are well representative of the parent population. Sampling frame was the list of MCM user women in Dire Dawa Administration: Participants from each stratum was selected using simple random sampling technique. I.e. from stratum (rural kebele residents) i.e., population of five randomly selected

rural kebeles MCM user women and from stratum two (urban kebele residents) five randomly selected urban kebele MCM user women were listed out:
Therefore, the study population was categorized into two broad strata on the bases of regional difference as stratification factor:

Data Collection
The data required to answer and validate the research questions for the study has collected from primary & secondary sources. To generate the required data from the primary sources, an interview administered structured questionnaire method was used to collect a Village-level data pertaining to: socio-demographic, economic, MCMs and other variables. In order to minimize the errors in data collection the enumerators were trained for one day regarding the objectives of the study and the content of the questionnaire. Supervisors have monitored the enumerators at the time of data collection process for the correctness and completeness of the questionnaire.

DATA ANALYSIS AND DISCUSSIONS

Descriptive Statistics for Modern Contraceptives Methods utilization status of Respondent Women from rural Dire Dawa Administration
The numbers of respondents fall in the age interval 15-19 years and 45-49 years are 2.6% & 0.2% respectively. This signals that minimum number of respondent women exists in the two age groups respectively, and the number of respondent women fall in the age interval 30-34 years is 21.9% which is an average and the number of respondent women who fall in the age interval 25-29 years is 45.7% which shows most of the respondent women fall in this age category. 77.6% of rural respondent women have no formal education, which implies that most of the respondents have not attended formal education. The 90.24% or most of the respondent are interested to use a long term acting reversible modern contraceptive method in rural Dire Dawa Administration. The 84 % or most of the respondent are use the long acting reversible modern contraceptive method in rural Dire Dawa administration for birth spacing.

55.7 % of rural respondents' women are reported that they have discontinued utilization of hormonal contraceptive methods due to the multi complication of side effects happen on the overall wellbeing of respondent.
The 48.81% of the respondent have discontinued using the modern contraceptive method in rural Dire Dawa administration.

Table1r. Descriptive Statistics for quantitative Explanatory Variables in rural DDA

Explanatory Variables	N	Minimum	Maximum	Mean	Std. Deviation
Family size	420	2	11	6.09	2.019
Number of children	420	0	9	4.07	1.993
Distance	420	2minutes	60minutes	39.79	17.984
Average number of visit by HEW in the last 12 months	420	0.00	12.00	10.3699	3.45292

Table1r shows that the average distance of respondent women from the nearest health institution takes around 40 minutes walks on foot.

H_0: The there is no difference between the observed values and predicted values, or the model is well fitted to the data versus Ha: there is a difference between the observed values and predicted values or the model is not well fitted to the data, from Table2r.We can observe that there is insignificance, which lead us to fail reject H_0 and conclude that the proposed model is well fitted to the data under the consideration.

Table2r. Hosmer and Lemeshow Test

Chi-square	D.F.	Sig.
9.570	8	0.296

Variables in the multiple binary logistic regression model for respondents from rural Dire Dawa Administration

According to the multiple binary logistic regression results displayed in Table3r, the interpretation done as follows:

The 0.288 is the slope for age of respondent women and Exp. ($\hat{\beta}$) =1.334, shows that for every unit increase in age of respondent women, modern contraceptive method utilization of respondent women is 1.334 times more likely to be discontinued or to be shifted to another modern contraceptive method controlling the other explanatory variables in the specified model.

The 0.586is the slope of educational status of respondent women and Exp. ($\hat{\beta}$) =1.797, shows that discontinuation of modern contraceptive method of respondent women is 1.797 times more likely for every one unit increase in educational level of the respondent women held constant the other explanatory variables in the specified model.

The 0.156is the slope of family size of respondent women and Exp. ($\hat{\beta}$) = 1.169, shows that discontinuation of modern contraceptive method utilization of respondent women is 1.169 times more likely as family size increase by a unit controlling the other explanatory variables in the specified model.

The 0.585is the slope of number children of respondent women and Exp. ($\hat{\beta}$) =1.796, shows that the discontinuation of modern contraceptive method utilization of respondent women is 1.796 times more likely for every unit increase in number of children held constant the other explanatory variables in the specified model.

The -0.574 is the slope of cultural barrier with the modern contraceptive method being used by respondent women and Exp. ($\hat{\beta}$) =0.563, shows that discontinuation of modern contraceptive method utilization for respondent with an experience of cultural barrier is 0.563times less likely

than respondent women without no cultural barrier experience controlling the other explanatory variables in the specified model.

The 2.771 is the slope of interested respondent women in using the long term acting reversible modern contraceptive method and Exp. ($\hat{\beta}$) =15.975, shows that the discontinuation of modern contraceptive method utilization for interested respondent women is 15.975 times more likely than respondent women who responded as not interested to use long term acting modern contraceptive method held constant the other explanatory variables in the specified model.

The 2.025the slope of interest when the respondent women responded as already being using the long term acting reversible modern contraceptive method and Exp. ($\hat{\beta}$) =7.577, shows that discontinuation of modern contraceptive method utilization for respondent women that responded as already using modern contraceptive method is7.577times more likely than for respondent women responded as not interested to use long term acting reversible modern contraceptive method held constant the other explanatory variables in the specified model.

The -0.022is the slope of distance of respondent women from nearby health institution and Exp. ($\hat{\beta}$) = 0.978, shows that for every unit increases in distance of respondent women from nearby health institution, modern contraceptive method utilization of survey women is 0.978 times less likely to be discontinued held constant the other explanatory variables in the specified model.

Table3r. Multiple Binary logistic Regression or Variables in the Equation for rural MCM User respondent Women

Explanatory Variables		($\hat{\beta}$)	S.E($\hat{\beta}$)	Wald	D.F.	Sig.	Exp.($\hat{\beta}$)	95% C.I. for Exp.($\hat{\beta}$)	
								Lower	Upper
Step 1	Age of respondent	0.288	0.119	5.850*	1	0.016	1.334	1.056	1.684
	Educational status	0.586	0.156	14.169**	1	0.000	1.797	1.324	2.438
	Interest to use MCM			9.581*	2	0.008			
	Interested to use MCM(1)	2.771	0.896	9.574**	1	0.002	15.975	2.761	92.419
	Already being used MCM(2)	2.025	0.780	6.737**	1	0.009	7.577	1.642	34.964
	Distance	-0.022	0.006	13.753**	1	0.000	0.978	0.966	0.990
	Cultural Barriers(1)	-0.574	0.225	6.546*	1	0.011	0.563	0.363	0.874
	Family number	0.156	0.061	6.475*	1	0.011	1.169	1.036	1.318
	Constant	-2.570	0.880	8.531**	1	0.003	0.077		
The following independent Variables are found to be significant: Age, Educational status, family size, number of children, comfort ability, confidence and training. The (* & ** implies significant & highly significant respectively at α=5%=0.05)									
a. Variable(s) entered on step 1: AGE, EL, ItCM, TIMEELAPSED, CULBARIER, Fs.									

Descriptive statistics for Modern Contraceptives Methods utilization status of urban Respondent Women from Dire Dawa Administration

The number of respondent women fall in the age interval 15-19 years and 45-49 years is 1.4% & 0.7% which signals that minimum number of respondent women exists in theses age groups, the number of respondent women fall in the age interval 30-34 years is 26.2% which is an average and the number of respondent women fall in the age interval 25-29 years is 34.4 which shows most of the respondent women fall in this age category.

28.7% of urban respondent completed secondary education, which implies that most of the respondents' were attended secondary education.

42% of urban respondents' women occupation is house wife which shows that most of them are house wife.76.1% of urban respondents' women are interested to use long acting reversible hormonal contraceptive methods which shows that most of them are interested in using the long acting reversible hormonal contraceptive methods.93.2% of urban respondents' women are reported that they are comfortable with the uses of long acting reversible hormonal contraceptive methods which shows that most of them are comfortable with the use the long acting reversible hormonal contraceptive method where the rest 6.8% of them reported as not feel comfortable with the use of long term acting reversible contraceptive method.96.2% of urban respondents' women are reported that they are confident with the uses of long acting reversible hormonal contraceptive methods which shows that most of them are confident with the use the long term acting reversible hormonal contraceptive methods where the rest 3.8% of them reported as not feel confident with the use of long term acting reversible contraceptive methods.74.3% of urban respondents' women are reported that they have got training and counseling regarding the long acting reversible hormonal contraceptive methods being used which shows that most of them are trained about the use the long term acting reversible hormonal contraceptive methods where the rest 25.7% of them reported as not trained about the use of long term acting reversible contraceptive methods.

74.2% of urban respondents' women are reported that they have got the long acting reversible hormonal contraceptive methods being used from the Governments health institutions which show that most of them are access the use the long term acting reversible hormonal contraceptive methods from government health institutions. 74% of urban respondents' women are reported that they have got the long acting reversible hormonal contraceptive methods being used for free which show that most of them are access the use the long term acting reversible hormonal contraceptive methods from government health institutions for free and the rest 26% reported that they have an access to the long term acting reversible hormonal contraceptive methods for fair price.66.8 % of urban respondents' women are reported that they have no discontinue experience of the reversible hormonal contraceptive methods and the rest 33.2% have the discontinue experience of the reversible hormonal contraceptive methods.97.8 % of urban respondents' women are reported that they know about the long acting reversible hormonal contraceptive methods. 76.1 % of urban respondents' women are reported that they have an interest to use the long acting reversible hormonal contraceptive methods.

61.8 % of urban respondents' women are reported that they use reversible hormonal contraceptive methods for birth spacing.92.8 % of urban respondents' women are reported that they are comfortable with use reversible hormonal contraceptive methods.96.2 % of urban respondents' women are reported that they are confident with the reversible hormonal contraceptive method being used.39.9 % of urban respondents' women are reported that they have been used inject able and implant.47.2 % of urban respondents' women are reported that they are currently being used implant.46.2 % of urban respondents' women are reported that they have been used inject-table prior to their current method choice. This in turn can tell us that inject-able are most discontinued hormonal contraceptive and implant is the most widely applicable hormonal contraceptive methods.56.9 % of urban respondents' women are reported that they have discontinued utilization of hormonal contraceptive methods due to the multi complication of side effects happen on the overall wellbeing of respondent.

Table 1u. Descriptive Statistics for quantitative Variables in urban DDA

Independent Variables	N	Minimum	Maximum	Mean	Std. Deviation
family size	1655	1	13	3.87	1.559
Number of children	1655	0	11	1.75	1.305
Distance from respondent women to the nearest health institution	1655	1minute	60minutes	16.38	9.076
Average number of visit by HEW	1655	0.00	12.00	1.1608	2.52344

From Table1u we can see that the average distance of respondent women from the nearest health institution takes around 16 minutes walks on foot.

Multiple Binary Logistic Regression Models for Modern Contraceptives Methods utilization status of urban Respondent women from Dire Dawa Administration

Table2u. Hosmer and Lemeshow Test for urban DDA

Chi-square	D.F.	Sig.
7.668	8	0.467

H_0: The there is no difference between the observed values and the predicted values or the model is well fitted to the data versus Ha: there is a difference between the observed values and the predicted values or the model is not well fitted to the data, from **Table 2u**. We can observe that there is insignificance, which tell us that we fail to reject H_0 and conclude that the model is well fitted to the data under the consideration.

Table3u.Variables in the Equation for urban MCM User respondent Women

Based on the result displayed in **Table3u,** the fitted final multiple binary regression model is:

Explanatory variables Included in the model	$(\hat{\beta})$	S.E. $(\hat{\beta})$	Wald	D.F.	Sig.	Exp $(\hat{\beta})$	95% C.I. for Exp. $(\hat{\beta})$	
							Lower	Upper
Age of respondents	0.156	0.056	7.824**	1	0.005	1.168	1.048	1.303
Marital status	-0.295	0.116	6.449**	1	0.011	0.745	0.593	0.935
Family size	-0.492	0.103	22.649**	1	0.000	0.612	0.499	0.749
Number of children	0.571	0.120	22.726**	1	0.000	1.770	1.400	2.239
Comfort ability	-0.429	0.219	3.832*	1	0.050	0.651	0.424	1.001
Confidence on CM	-0.906	0.298	9.267**	1	0.002	0.404	0.226	0.724
Training obtained	0.403	0.127	10.002**	1	0.002	1.496	1.166	1.920
Constant	0.792	0.397	3.981*	1	0.046	2.207		
The following independent Variables are found to be significant: Age, Marital status, family size, number of children, comfort ability, confidence and training. The (* & ** implies significant & highly significant respectively at α=5%=0.05)								

Odds = Exp. ($\hat{\beta}_0$ + $\hat{\beta}_1$Age + $\hat{\beta}_2$Marital status +$\hat{\beta}_3$Family number +$\hat{\beta}_4$Number of Children +$\hat{\beta}_5$Confidence on the MCM being used +$\hat{\beta}_6$Training and counseling taken by respondent women about MCM + $\widehat{\beta_7}$Comfort).

Alternatively this equation can be written as:

Log (odds) = $\hat{\beta}_0$ + $\hat{\beta}_1$Age + $\hat{\beta}_2$Marital status +$\hat{\beta}_3$Family number +$\hat{\beta}_4$Number of Children +$\hat{\beta}_5$Confidence on the MCM being used +$\hat{\beta}_6$Training and counseling taken by respondent women about MCM + $\widehat{\beta_7}$Comfort .

Log (Odds) = 0.792 + 0.156 Age -0.295 Marital status-0.492 Family number + 0.571 Number of Children - 0.906 Confidence on contraceptive method being used + 0.403 Training taken about the contraceptive methods being used-0.429 comfort ability with modern contraceptive method being used .

From the result displayed in Table3u, the main effects of the following seven explanatory variables found to have a significant effect on the modern contraceptive methods utilization status of respondent women:

The 0.156 is the slope of age of respondent women and Exp. $(\hat{\beta})$=1.168, shows that for every unit increase in age of respondent women, modern contraceptive method utilization is1.168times more likely to be discontinued by respondent women kept constant the other explanatory variables in the specified model.

The -0.295 is the slope of marital status of respondent women and Exp. ($\hat{\beta}$) =0.745, shows that for every unit increase in marital status of respondent women, modern contraceptive method utilization of respondent women is 0.745 times less likely to be discontinued by respondent women kept constant the other explanatory variables in the specified model.

The -0.492 is the slope of family size of respondent women and Exp. ($\hat{\beta}$) = 0.612, shows that for every one person increase in family member of respondent women, modern contraceptive method utilization of respondent women is 0.612 times less likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The 0.571 is the slope of number of children for respondent women and Exp. ($\hat{\beta}$) =1.770, shows that for every one child increase in respondent women's number of children, modern contraceptive method utilization of respondent women is 1.770times more likely to be discontinued or to be shifted to another modern contraceptive method kept constant the other explanatory variables in the specified model.

The -0.906 is the slope for confidence level of respondent women on the contraceptive method being used and Exp. ($\hat{\beta}$) =0.404, shows that the discontinuation rate of modern contraceptive method utilization for confident respondent women is 0.404 times less likely than women not confident with modern contraceptive method being used kept constant the other explanatory variables in the specified model.

The -0.429 is the slope for comfort ability level of respondent women with the contraceptive method being used and Exp. ($\hat{\beta}$) =0.651, shows that discontinuation rate of modern contraceptive method utilization for comfortable respondent women is 0.651 times less likely than respondent women not comfortable with modern contraceptive method being used at the time of data collection kept constant the other explanatory variables in the specified model.

The 0.403 is the slope of training and counseling taken by respondent women regarding the modern contraceptive method being used and Exp. ($\hat{\beta}$) =1.496,shows that discontinuation rate of modern contraceptive method utilization for trained respondent women is 1.496 times more likely than not trained respondent women kept constant the other explanatory variables in the specified model.

Model 2:

H_0: The there is no difference between the observed values and the predicted values or the model is well fitted to the data

Versus

H_a: there is a difference between the observed and the predicted values or the model is not well fitted to the data, from **Table4u.** We can observe that there is insignificance, which tell us that we fail to reject H_0 and conclude that the model is well fitted to the data under the consideration.

Table4u.Hosmer and Lemeshow Test

Chi-square	D.F.	Sig.
10.597	8	0.226

According to the result displayed in **Table5u**, the main effects of the following seven explanatory variables found to have a significant effect on the modern contraceptive methods utilization status of respondent women in urban Dire Dawa Administration. Thus, the existing relationship is interpreted as:

The 0.144is the slope of age of respondent women and Exp.($\hat{\beta}$) =1.154, shows that for every unit increase in age of respondent women, modern contraceptive method utilization is 1.154times more likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The -0.310is the slope of marital status of respondent women and Exp. ($\hat{\beta}$) =0.733, shows that for every unit increase in marital status of respondent women discontinuation of modern contraceptive methods utilization of respondent women is 0.733times less likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The -0.501 is the slope of family size of respondent women and Exp. ($\hat{\beta}$) = 0.606, shows that for every one person increase in family member of respondent women, modern contraceptive method utilization of respondent women is = 0.606times less likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The 0.585is the slope of number of children for respondent women and Exp. ($\hat{\beta}$) =1.796, shows that for every one child increase in number of children of the respondent women, modern contraceptive method utilization of respondent women is 1.796times more likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The -0.871is the slope for confidence level of respondent women on the contraceptive method being used and Exp.($\hat{\beta}$) =0.418, shows that the discontinuation of modern contraceptive method utilization for confident respondent women is 0.418times less likely than respondent women not confident with modern contraceptive method being used kept constant the other explanatory variables in the specified model.

Table5u. Variables in the final Multiple Binary Logistic Regression Equation (Model Two)

Explanatory Variables	$(\hat{\beta})$	S.E.$(\hat{\beta})$	Wald	D.F.	Sig.	Exp. $(\hat{\beta})$	95% C.I. for Exp.($(\hat{\beta})$	
							Lower	Upper
Marital status	-0.310	0.116	7.114**	1	0.008	0.733	0.584	0.921
Confidence	-0.871	0.298	8.524**	1	0.004	0.418	0.233	0.751
Training	0.351	0.129	7.462**	1	0.006	1.421	1.104	1.828
Price	-0.435	0.129	11.354**	1	0.001	0.647	0.503	0.834
Age	0.144	0.056	6.626**	1	0.010	1.154	1.035	1.288
Family size	-0.501	0.104	23.444**	1	0.000	0.606	0.494	0.742
Number of children	0.585	0.120	23.702**	1	0.000	1.796	1.419	2.273
Comfort ability	-0.400	0.220	3.302	1	0.069	0.670	0.435	1.032
Constant	0.922	0.399	5.334*	1	0.021	2.515		
The binary logistic regression								
The following independent Variables are found to be significant: Age, Marital status, family size, number of children, comfort ability, confidence and training. The (* & ** implies significant & highly significant respectively at α=5%=0.05).								

Based on Table 5u the 0.351is the slope of training and counseling taken by respondent women regarding the modern contraceptive method being used and Exp. $(\hat{\beta})$ =1.421, shows that the discontinuation of modern contraceptive method utilization for trained respondent women is 1.421times more likely than respondent women not trained kept constant the other explanatory variables in the specified model.

The -0.435is the slope of price of contraceptive method being using by respondent women and Exp. $(\hat{\beta})$ = 0.647, shows that the discontinuation of modern contraceptive method utilization for respondent women responded as fair is0.647 times less likely than for respondent women responded as free price of modern contraceptive method being used kept constant the other explanatory variables in the specified model.

Table6u. Variables in the final Multiple Binary Logistic Regression Equation with simple effect of categorical predictor variables included in the model (Model two with simple effects)

Explanatory variables	$(\hat{\beta})$	S.E. $(\hat{\beta})$	Wald	D.F.	Sig.	Exp.$(\hat{\beta})$	95% C.I. for Exp.$(\hat{\beta})$	
							Lower	Upper
Age	0.144	0.056	6.626**	1	0.010	1.154	1.035	1.288
Marital status	-0.310	0.116	7.114**	1	0.008	0.733	0.584	.921
Family size	-0.501	0.104	23.444**	1	0.000	0.606	0.494	.742
Number of children	0.585	0.120	23.702**	1	0.000	1.796	1.419	2.273
Comfort ability	-0.400	0.220	3.302	1	0.069	0.670	0.435	1.032
Confidence(1)	0.871	0.298	8.524**	1	0.004	2.390	1.332	4.289
Training(1)	-0.351	0.129	7.462*	1	0.006	0.704	0.547	.906
Price(1)	0.435	0.129	11.354**	1	0.001	1.545	1.199	1.989
Constant	-0.033	0.339	0.009	1	0.923	0.968		
The (* & ** implies significant & highly significant respectively at α=5%=0.05).								
a. Variable(s) entered on step 1: Age, Marital status, Family size, Number of children, Comfort ability, Confidence (1), Training (1), and Price (1).								
b. Simple Effects:								

Based on the results in **Table 6u** the 0.144is the slope of age of respondent women and Exp. $(\hat{\beta})$ =1.154, shows that for every unit increase in age of respondent women, modern contraceptive method utilization of respondent women is 1.168 times more likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The -0.310is the slope of marital status of respondent women and Exp.$(\hat{\beta})$ =0.733, shows that for every unit increase in the marital status of respondent women, modern contraceptive method utilization of respondent women is 0.733times less likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The -0.501is the slope of family size of respondent women and Exp.$(\hat{\beta})$ = 0.606, shows that for every one person increase in the family member of respondent women, modern contraceptive method utilization of respondent women is 0.606times less likely to be discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The 0.585is the slope of number children of respondent women and Exp.$(\hat{\beta})$ =1.796, shows that for every one child increase in the number of children of respondent women, modern contraceptive method utilization of respondent women is 1.796times more likely to be

discontinued by the respondent women kept constant the other explanatory variables in the specified model.

The 0.871is the slope of confidence level of respondent women on the modern contraceptive method being used responded as confident and Exp. ($\hat{\beta}$) =2.390, show that the discontinuation of modern contraceptive method utilization for confident respondent women is 2.390 times more likely than respondent women not confident with modern contraceptive method being used kept constant the other explanatory variables in the specified model.

The -0.351is the slope of training and counseling taken by respondent women regarding the contraceptive method being used and Exp.($\hat{\beta}$) =0.704, shows that the discontinuation of modern contraceptive method utilization for trained respondent women is 0.704times less likely than respondent women not trained kept constant the other explanatory variables in the specified model.

The 0.435is the slope for a fair price of contraceptive method being used by respondent women and Exp. ($\hat{\beta}$) = 1.545, shows that the discontinuation rate of modern contraceptive method utilization of respondent women responded as fair price is 1.545times more likely to discontinue than those responded as free price kept constant the other explanatory variables in the specified model.

The sign of the coefficients of the three predictor variables (Confidence, training, and price of contraceptive methods of respondent women) have changed and the coefficients of four predictor variables: (Age, marital status, family size and number of children) remain the same when simple effect is considered in the fitted model. Thus, this implies that these four predictor variables do not have simple effect on the modern contraceptive method utilization of the respondent women.

CONCLUSIONS

This study was attempted to identify the determinants of the modern method of contraceptive utilization status of rural and urban women residing in the study area using classical logistic regression model. Consequently, the univariate analysis showed that the discontinuation rate were 48% for rural respondent women and 33% for urban respondent women. Thus, there is a clear difference between rural and urban modern contraceptive methods utilization status of respondent women in Dire Dawa Administration at the time of data collection as expected.

97.8% of urban respondents' women are reported that they know about the long term acting reversible hormonal contraceptive method which is very exiting out come since it met the will of the government and other interested organization who are working on birth control because it is in alignment with the government directions and population policy. Similarly 76.1% of urban respondents' women are reported that they have an interest to use the long acting reversible hormonal contraceptive methods which also important outcome. On the other hand 61.8 % of urban respondents' women are reported that they being use reversible hormonal contraceptive methods for birth spacing. In the case of the case of safety mater 92.8% of urban respondents'

women are reported that they are comfortable with use reversible hormonal contraceptive methods being using.

96.2% of urban respondents' women are reported that they are confident with the reversible hormonal contraceptive method being used. Regarding the most widely useable modern contraceptive methods 39.9% of urban respondents' women are reported that they have been used inject-table and implant, but at the time of data collection 47.2% of urban respondents' women are reported that they are currently being used implant. Regarding the most discontinued hormonal modern contraceptive methods 46.2% of urban respondents' women are reported that they have been used inject table prior to their current method choice. This in turn can tell us that inject tables are most discontinued hormonal contraceptive and implant is the most widely applicable hormonal contraceptive methods. The other interesting result is that most of the respondent women discontinue modern contraceptive methods use due to the side effects of hormonal contraceptive methods: 55.7% rural and 56.9 % of urban respondents' women are reported that they have discontinued utilization of hormonal contraceptive methods due to the multi complication of side effects happen on the their overall wellbeing.

From the bivariate analysis: eight explanatory variables: have a significant association with MCM utilization status of respondent women in rural and eleven explanatory variables were significantly associated with MCM utilization status of respondent women in urban Dire Dawa Administration.

From the chi-square test eight explanatory variables: age, educational level, interest to use long term acting modern contraceptive methods, reason to use modern contraceptive methods, comfort ability with the contraceptive method being used, cultural barrier, social barrier, and marital status have found out to have a significant association with the modern contraceptive utilization status of respondent women in rural Dire Dawa.

Whereas eleven explanatory variables: age, educational level, occupational status, interest to use long term acting modern contraceptive methods, comfort ability with the modern contraceptive method being used, confidence on the modern contraceptive method being used, training and counseling obtained regarding the method of contraception being used, price of modern contraceptive method being used, sources of modern contraceptive methods, partner educational level of respondent women and partner job of respondent women found out to have a significant association with modern contraceptive utilization status at the time of data collection in urban Dire Dawa Administration receptively.

Finally, the multiple binary logistic regression models were fitted to the data at hand: The overall success rate of these result for the study found 65% for rural and 67.1% for urban. Then, Six explanatory variables: age, educational level, interest to use modern contraceptive methods, cultural barrier, distance and family number have found to have a significant effect on the modern contraceptive utilization status of the respondent women in rural Dire Dawa Administration.

whereas seven explanatory variables: age, Marital status, family size, number of children, confidence, comfort ability and training and counseling found out to have a significant effect on the response variable in urban of the study area.

RECOMMENDATIONS:-

Based on the outcome of the result derived from the analysis part, the following recommendations are forwarded:
- Most of the respondent women were discontinuing use of modern methods of contraceptive due to so many complications that observed on the psycho-social and health of the respondent women in the study area. Consequently producers, importers and distributers of hormonal contraceptive methods have to strive to come up with the safest contraception in order to satisfy the user women and to have healthy and productive mothers.

-The Ethiopian Federal Ministry of Health has to intervene and Dire Dawa Administration Health Bureau as well as each Health Centers in the administration have to give sufficient training and counseling about hormonal contraceptive methods to the user women as per necessary as possible rather than simply providing the services without any professional advice.

-Additionally, it's better that every health professionals those has a role in providing the service have to render help and support for those women who were suffering from side effects of the contraception being used.

This because we have observed that less attention is given for user women after use of modern methods of contraception; even some of the health workers refuse to change whenever user women come for withdrawing long acting reversible modern methods of contraception at the time of data collection. Thus, this has to be resolved and user women have to treated as per their interest rather than forcing them to use the modern methods of contraceptive with its painful side effects.

Finally, since education has an obvious impact on the contraceptive utilization and most of the respondent women in rural Dire Dawa Administration have reported as no formal education the government has to manage things in a way to improve educational status in rural of the study area.

-Furthermore, one can be use the study as an input for further studies that can possibly conduct in the area.

REFERENCES

[1] Cleland, et al (2006). Family planning: the unfinished agenda. Lancet, 368:1810-1827.
Cochran, W.G. (1997). Sampling techniques, third edition
[2]Klara, et al (2014). Hormonal contraceptives, menstrual cycle and brain response to faces

[3]Yihunie, et al (2013) Geographical variation and factors influencing modern contraceptive use among married women in Ethiopia: evidence from a national population based survey Reprod. Health. 2013; 10: 52. Published online 2013 Sep 26. doi: 10.1186/1742-4755-10-52
[4]Okezie et al (2010). Socio-economic determinants of contraceptive use among rural women in Ikwuano Local Government Area of Abia State, Nigeria, International NGO Journal Vol. 5(4), pp. 74-77, Available online at http://www.academicjournals.org/INGOJ ISSN 1993–8225 © 2010 Academic JournalsPMCID: PMC3850415
[5] Bailey, C. (2009). Three paper on side effects of modern contraceptive use among women in Ghana, University of Southampton, School of Social sciences, PHD thesis.
[6]World Health Organization (WHO, 2007): Making Pregnancy Safer: Annual Report 2007. Geneva: World Health Organization; 2008.
[7]The 2011Ethiopia Demographic and Health Survey *(*2011 EDHS*)* is part of the worldwide. MEASURE DHS project which is funded by the United States Agency for International Development.(USAID). The survey was implemented by the Ethiopian Central Statistical Agency (CSA).