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Original Research Article

Adherence of Option B+ prevention of mother-to-child transmission program and its associated factors among pregnant and lactating mothers in public health facilities of East Gojjam zone, Amhara region, Ethiopia, 2017

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ABSTRACT

Background: Adherence of antiretroviral treatment (ART) among women on prevention of mother-to-child transmission (PMTCT) program is a central component to reduce viral loads and achieve elimination of mother to child transmission of human immunodeficiency virus (HIV) to Ethiopia. Option B+ PMTCT program is a recently introduced approach to eliminate new HIV infection among child. There is limited evidence on the drug adherence of women on ART in the Option B+ strategy. The aim was to assess adherence of Option B+ PMTCT drug and its associated factors among pregnant & lactating mothers in health facilities of East Gojjam zone, Amhara, Ethiopia, 2017.

Methods: Institution based cross-sectional study design was conducted from randomly selected three public health facilities in East Gojjam zone. Data was entered in to Epi data 3.1 and cleared then transferred to SPSS version 20 for analysis. To assess the associated factors, logistic regression model was employed. A p value <0.05 was considered statistically significant.

Results: Adherence on Option B+ PMTCT drug was 75%. The likelihood of being adherence found to be significant association with the following variables: Mother's educational status (AOR=2.03; 95%CI: 1.465, 8.918), partner occupation (AOR=4.73; 95%CI: 1.12, 19.87), time to reach to health facility (AOR=0.21; 95%CI: 0.05, 0.824), and maternal HIV knowledge (AOR=0.13; 95%CI: 0.03, 0.44).

Conclusions: Adherence to Option B+ PMTCT drug in East Gojjam zone, Amhara region was low compared to the national goal. Effort should be made both governmentally as well as non- governmentally to advance the knowledge about Option B+ PMTCT program so as to improve the long term maternal and child health.

Keywords: AIDS, Adherence, Antiretroviral

INTRODUCTION

Human immuno deficiency virus/acquired immune-deficiency syndrome (HIV/AIDS) is one of the most destructive epidemics that the world has ever witnessed. Globally, an estimated 36.7 million peoples living with HIV; 34.5 million adults, women age above 15 years were 17.8 million and 2.1 million children under the age of 15 years were living with HIV in the year 2016. Sub-Saharan Africa accounts for the greatest share.[1,2] The nationwide prevalence of HIV/AIDS infection among exposed infants through mother-to-child transmission (MTCT) was 17% in 2014. HIV prevalence in children under 5 years of age is increasing due to MTCT which

accounts over 90% of the cases.[3,4] In 2012, over 900 000 women living with HIV globally received anti retro viral prophylaxis. In order to address children born free from HIV/AIDS; WHO has started to implement different strategies for the optimization of prevention of mother to child transmission (PMTCT) care and support. Option A, Option B, and Option B+.[5,6]

The federal ministry of health of Ethiopia was adopted the Option B+ PMTCT program in August 2012 and started its implementation after wards.[7] Although efforts to eliminate MTCT in Ethiopia is good; data from 2010 up to 2013 showed ARV treatment for HIV positive pregnant women was 55% and also MTCT of HIV after the breast feeding period in 2012 and 2013 were 32% and 25% respectively.[8] The importance of studying on adherence of Option B+ PMTCT drugs and its associated factors help the country to contribute on the progress of the Option B+ PMTCT program in the assistance to eliminate MTCT in future pregnancies since the country's main productive resource is the future young generation. The objective of this study was to assess adherence of Option B+ PMTCT drug and its associated factors among pregnant and lactating mothers in public health facilities of East Gojjam zone, Amhara region, Ethiopia, 2017.

METHODS

Institutional based cross sectional study design was conducted in public health institution in East Gojjam zone, Amhara region, Ethiopia from December 2016 to February 2017. Selected HIV positive pregnant and lactating mothers who visit ANC and PNC unit and on ART at least for 4 weeks in the selected public health facilities in the East Gojjam zone got PMTCT service during the study period were included but seriously sick individuals during interview were excluded.

To determine sample size, a single population proportion formula using the proportion of pregnant women who live in rural area which adhere to Option B+ PMTCT drug was 80%, confidence level of 95% and a 5% degree of precision then the final the sample size was 269.[9]

There are four hospitals and eighteen health centers in the zone. Using simple random sampling method one hospital and two health centers were selected which were providing Option B+ PMTCT service in east Gojjam zone during the study period. Debremarkos referral hospital, Bichena and Motta health centers were selected with random sampling method.

A structured questionnaire was used. One day training was given to data collectors by the researcher. The collected data were checked manually for its completeness and consistency daily by supervisor. After coded the data entered in to Epi data 3.1 software then was transferred to SPSS version 20 for analysis. Logistic regression model used for analysis by taking adherence of Option B+ PMTCT program as main outcome variable then odds ratio at $p<0.05$ with 95% confidence interval calculated to describe associations between dependent and independent variables. Variables with considering odds ratio if $p<0.05$ at CI: 95% from binary logistic regression analysis was entered to multivariate logistic regression model to identify significant factors. Then odds ratio of multiple logistic regression and p-value less than 0.05 at 95% CI used for statistical significance determination.

Ethical clearance obtained from Debre Markos University School of Medicine Institutional Research Ethics Review Committee. Permission letter obtained from East Gojjam zone health department and from respective health institutions. Informed consent obtained from each respondent. Privacy and confidentiality of the respondents was maintained through orientation which contributed for the quality of the study.

Operational definition

Good adherence

Using both self-report and pill count methods; mothers who did not miss any ARV drugs in the last four weeks prior to the interview and who answered correctly in 2 and more self-report questions from the four.[10]

Knowledgeable on HIV, MTCT and PMTCT Option B+ care

Mothers score ≥mean (0.90) from twenty three questions related with knowledge on HIV, MTCT and PMTCT Option B+ care categorized as knowledgeable on HIV, MTCT and PMTCT Option B+ care. The maximum score was 1 while the minimum score was 0.65.

Favourable attitude of mothers towards Option B+ PMTCT service

Mothers score ≥ mean (0.71) from five questions related with Attitude of mothers towards Option B+ PMTCT service. Minimum and maximum score were 0 and 1 respectively.

Good male partner involvement in Option B+ PMTCT program

Respondents score ≥mean (0.47) from seven questions related with male partner involvement in Option B+ PMTCT program categorized in to good male partner involvement in Option B+ PMTCT program. Minimum score 0 and maximum score 1.

RESULTS

Socio demographic and economic characteristics of the mothers

The total of 269 HIV positive pregnant and breast feeding women who visit ANC as well as PNC unit plus on ART

at least for 4 weeks were included. The mean age of the study participant was 26.12+SD with minimum age of 19 and a maximum of 41. 153 (56.9%) of study participants were married, 197 (73.2%) were Orthodox Christians and 72 (26.8%) Muslim, 158 (58.7%) house wives and regarding educational status 176 (65.4%) cannot read and write. 189(70.3%) of respondent were resides in the urban area. About 114 (42.4%) of women took more than thirty minute to reach the health facility (Table 1).

Table 1: Socio demographic and economic characteristics.

Variables	Frequency	Percentage (%)	Level of adherence to Option B+	
			Good	Poor
Age (in years)				
≤29	129	48	89	40
≥30	140	52	113	27
Place of residence				
Rural	80	29.7	57	23
Urban	189	70.3	145	44
Marital status				
Single	51	19	40	11
Married	153	56.9	114	39
Divorced	45	16.7	34	11
Widowed	20	7.4	14	6
Educational level				
Can't read and write	176	65.4	129	47
can read and write	51	19	44	7
Grade 1-8	20	7.4	14	6
Grade 9-12	22	8.2	15	7
Mothers occupation				
Housewife (no job)	158	58.7	112	46
Government employee	28	10.4	22	6
Private employee	41	15.2	34	7
Merchant	18	6.7	17	1
student	24	8.9	17	7
Others	4	1.5		
Study participants				
Pregnant mother	139	51.7	99	40
Breastfeeding mother	130	48.3	103	27
Time to reach the health facility (in minutes)				
<5	11	4.1	8	3
5-15	42	15.6	23	19
15-30	102	37.9	83	19
>30	114	42.4	88	26
Distance from home to health facility				
Very far	39	14.5	35	4
Far	62	23	50	12
Near and very near	168	62.5	117	51

Knowledge of mothers on HIV, MTCT, PMTCT Option B+ drug

All of the respondents knew about all ways of HIV transmission (unsafe sexual intercourse, contact with infected blood, MTCT and contaminated sharps). Regarding to MTCT majority of the respondents known as MTCT during delivery 242 (90%), during breast feeding 235 (87.4%) and during pregnancy 226 (84%) (Table 2).

Attitude of mothers towards Option B+

Regarding to attitude of mothers towards Option B+ PMTCT, 259 (96.5 %) of mothers agreed on taking PMTCT drugs benefits not only for the mother but also for the baby. 237 (88.1) of mother did not agree on the question of taking PMTCT drugs in every day is tiresome. In this study 129 (47.9%) of participants had favorable attitude (Table 3).

Table 2: Knowledge on HIV, MTCT, PMTCT.

Variable	Frequency	Percentage(%)
Know about how HIV is transmitted		
Yes	269	100
Ways HIV/AIDS is transmitted unsafe sexual intercourse		
Contact with infected blood MTCT	269	100
Contaminated sharps	269	100
Can a pregnant women living with HIV/AIDS transmit the disease to her un born baby		
Yes	269	100
Time of HIV transmission		
Pregnancy	226	84
Delivery	242	90
Breast feeding	235	87.4
Have you ever heard about life long Rx for any HIV positive pregnant and lactating mothers		
Yes	269	100
Benefit of PMTCT Option B+ for pregnant and lactating women		
To prevent transmission to her husband	184	68.4
To improve mothers health	241	89.6
To prevent transmission to her baby	252	93.7
Condom use prevent HIV transmission during sex with HIV infected partner		
True	265	98.5
False	4	1.5
HIV positive women can reduce risk of HIV transmission to their babies if theytakePMTCT drugs		
True	267	99.3
False	2	0.7
Omitting to take some of PMTCT drugs has effect on the effectiveness of PMTCT care and support		
True	269	100
Adhering to ARV drugs can reduce the risk of opportunistic infections		
True	229	85.1
False	40	14.9
Partner support toPMTCT care doesn'thave effect on mothers adherence		
True	69	25.7
False	200	74.3

Table 3: Attitude of mothers.

Variables	Disagree (%)	Different (%)	Agree (%)
Do you think it is tiresome to take PMTCT drugs every day	237 (88.1)	1 (0.4)	31 (11.5)
Do you believe taking PMTCT drugs benefits not only mother but also baby	10 (3.7)		259 (96.3)
Do you think starting ART treatment earlier can help to improve quality of life and survival of the mother	32 (11.9)	9 (3.3)	228 (84.8)
Do you believe involving male partner in care and support increases the effectiveness of PMTCT services	67 (24.9)	2 (0.7)	200 (74.3)
I would not like to give birth taking PMTCT drugs	145 (53.9)	26 (9.7)	98 (36.4)

Male partner involvement

Regarding to male partner involvement 146 (54.3%) supports his wife financially to visit ANC/PNC to PMTCT and know the frequency of taking PMTCT drug. 140 (52%) reminds his wife about ANC/PNC appointment. In this study 191 (71%) mothers got good male partner support (Table 4).

ART treatment

127 (47.2%) were initiated lifelong ART before pregnancy, 106 (39.4%) were initiated lifelong ART (Option B+) during pregnancy, and 36 (13.4%) during breast feeding. All of the mothers reported as they got counseling about how to take Option B+ drugs as prescribed. 126 (46.8%) of respondents got counseling for more than three times and 110 (40.9%) took 20-29

minute duration of counseling per each session before drug initiation (Table 5).

Factors associated with adherence to Option B+ drugs

Age, mothers educational status, partner occupation, time to reach to health facility, HIV status at PMTCT enrolment, health status before treatment, drug side effects, knowledge, attitude and male partner involvement were found to be significant factors of adherence to Option B+ in binary logistic regression model. Variables with considering odds ratio if $p<0.05$ at CI: 95% from binary logistic regression analysis was entered to multivariate logistic regression model to identify significant factors. In multivariate regression analysis mothers' educational status, partner occupation, time to reach to health facility and knowledge were significantly association with adherence to option B+ drugs. HIV+ pregnant and lactating mothers who could read and write were two times more likely have good adherence to Option B+ drug than mothers who could not read and write (AOR=2.03; 95%CI: 1.465, 8.918). HIV+ pregnant and lactating mothers whose partners were merchant was four times more likely to have good adherence for Option B+ drugs than mothers whose partners were daily laborers (AOR=4.73; 95%CI: 1.12, 19.87). HIV+ pregnant and lactating mothers who spend about 5-15 minutes to reach to health facility were 0.2 times less likely adherent than those who spend greater than 30 minutes (AOR=0.21; 95%CI: 0.05,0.824). Not knowledgeable mothers about HIV and Option B+ had 0.1 times less likely adherent than knowledgeable mothers (AOR=0.13; 95%CI: 0.03-0.44) (Table 7).

Table 4: Male partner involvement.

Characteristics	Frequency	Percentage (%)
Shares his wife decisions on household issues	139	51.7
Discusses with his wife on use of condom	138	51.3
Knows the frequency of taking PMTCT drug	146	54.3
Visits PMTCT clinic with his wife to bring ARV drugs	125	46.5
Supports his wife financially to visit ANC/PNC PMTCT	146	54.3
Attends PMTCT with his wife	125	46.5
Reminds his wife about ANC/PNC appointment	140	52

Table 5: ART treatment.

Characteristics	Frequency	Percentage (%)
Time of initiation of Option B+		
During pregnancy	106	39.4
During breast feeding	36	13.4
Previously started	127	47.2
Challenges faced in same day of Dx and initiating B+		
Yes	93	34.6
No	176	65.4
Got counseling about how to take ART drugs		
Yes	269	100
Duration of the counseling (in minutes)		
<10	14	5.2
10-19	86	32
20-29	110	40.9
≥30	59	21.9
Number of pills taken per day (including non ARV1 pill)		
1	40	14.9
2-4	179	66.5
5-7	45	16.7
>7	5	1.9
Experienced any ARV side effects		
Yes	240	89.2
No	29	10.1
Regimen changed after side effect		
Yes	46	17.2
No	223	82.8

Table 6: Level of adherence with self-report.

Characteristics	Frequency	Percentage (%)
Do you sometimes find it difficult to remember to take your medication?	56	83.6
When you feel better, do you sometimes stop taking your medication?	31	46.6
Many patients have troubles in taking their ARV doses as prescribed; did you miss any ARV doses in the last 3 days?	9	13.4
Sometimes if you feel worse, do you stop taking ARV drugs?	11	16.4

Table 7: Factors associated with adherence.

Variables	Adherence level		P value	COR (95% CI)	AOR (95% CI)	P value
	Good	Poor				
Age (years)						
≤29	89	40	0.022	0.15 (0.291-0.902)	0.78 (0.291-2.093)	0.450
≥30	113	26		1	1	
Mothers educational status						
Cannot read and write	128	48	0.047	1	1	
Can read and write	45	6	0.034	2.81 (1.127-7.016)	2.04 (1.465-8.918)*	0.034
Grade1-8	14	6	0.888	0.87 (0.318-2.408)	0.91 (0.229-3.577)	0.888
Grade 9-12	15	7	0.820	0.80 (.309-2.091)	0.82 (0.145-4.621)	0.820
Husband occupation						
Government employee	16	11	0.065	0.57 (0.239-1.338)	0.21 (0.039-1.103)	0.650
Private employee	16	6	0.172	1.04 (0.375-2.865)	0.32 (0.062-1.646)	0.172
Daily laborer	90	35	0.025	1	1	
Merchant	47	6	0.034	3.05 (1.196-7.760)	4.73 (1.124-19.87)*	0.022
Farmer	33	9	0.380	1.43 (0.619-3.283)	1.76 (0.498-6.219)	0.380
Time to reach the health facility (in minutes)						
<5	8	3	0.893	0.79 (0.195-3.186)	0.85 (0.076-9.416)	0.930
5-15	23	19	0.026	0.36 (0.169-0.756)	0.21 (0.051-0.824)*	0.011
15-30	83	19	0.393	1.29 (0.169-0.756)	0.59 (0.180-1.964)	0.333
>30	88	26	0.142	1	1	
HIV status at PMTCT enrolment?						
Previously known	177	42	0.038	1	1	
Pregnancy	19	21	0.019	0.02 (0.106-0.435)	0.50 (0.173-1.442)	0.190
Breast feeding	6	4	0.804	0.36 (0.096-1.318)	1.27 (0.190-8.525)	0.804
Health status before treatment						
Excellent	5	9	0.03	0.08 (0.025-0.265)	0.18 (0.027-1.229)	0.111
Good	53	37	0.021	0.21 (0.112-0.389)	0.49 (0.164-1.462)	0.620
Poor and not sure	202	67	0.163	1	1	
Side effects						
Yes	190	50	0.04	1	1	
No	12	17		0.19 (0.083-0.414)	0.22 (0.044-1.154)	0.421
Knowledge						
Not knowledgeable	67	58	0.001	12.98 (6.068-27.789)	0.13 (0.036-0.446)*	0.001
Knowledgeable	135	9		1	1	
Attitude						
Good attitude	52	26	0.035	0.55 (0.305-0.980)	2.25 (0.868-5.823)	0.123
Poor attitude	150	41		1	1	
Male partner involvement						
Good partner involvement	88	52		1	1	
Poor partner involvement	114	15	0.025	4.49 (2.372-8.502)	1.34 (0.500-3.621)	0.111

DISCUSSION

The level of adherence to Option B+ PMTCT drug in this study is low than that was reported from a study conducted in Bwaila Hospital, Malawi (91%) and study done in Nigerian among HIV positive pregnant mothers level of adherence (80.6%).[11,12] The possible explanation for this could be due to low partner involvement (62.9%) for option B+ program in this study. As well in this study a slightly higher number of respondents (65.4%) cannot read and write and almost half of the respondents were not knowledgeable on HIV, MTCT and PMTCT Option B+ drug (47%) so those had negatively associated with adherence to Option B+ PMTCT drug.

Institutional based study on level of adherence to Option B+ PMTCT program in Tigray region showed that the level of adherence to Option B+ PMTCT drugs was 87.1%.[13] While in Yirgalem Hospital, south Ethiopia the adherence level for adult patient was 88.7%.[14] This is higher than this study finding. The possible explanation for this low level of Adherence in this study could be due to study populations who had low knowledge (53.3%) about Option B+ drugs for PMTCT than others study populations. Furthermore, study participants' support from their husband is low which affect their level of adherence for Option B+ PMTCT drug. As well there was a difference in study population in Yirgalem Hospital, adults but the study populations in this study were only pregnant and lactating mothers which might be the reason for the difference in level of adherence within two studies.

Institutional based study on level of adherence and associated factors to Option B+ PMTCT among pregnant and lactating mothers in selected government health facilities of South Wollo Zone in 2016 showed that level of adherence was 87.9%.[10] The possible reason for low adherence level in this study could be due to most mothers educational statuses in this study were can't write and read (65.4%).

Mothers who attend Option B+ PMTCT service in hospitals, HIV-positive pregnant and breast feeding mothers who were lived in the rural area and those HIV-positive pregnant and breastfeeding mothers who faced challenges (difficulties) on the same day HIV diagnosis and initiating lifelong ART were less likely to adhere for Option B+ PMTCT.[14]

Mothers educational status, partner's occupation, time to reach the health facility and knowledge were factors associated with adherence to Option B+ PMTCT drug in this study. Unlike study done in Tigray region reported that, partner's occupation and Knowledge about HIV and to Option B+ PMTCT was no significant association with adherence to Option B+ PMTCT drug.[13] The reason might be due to slightly high number of merchant's involvement (participation) in this study which may have differences in income level with study participants in other study. This discrepancy could be due to all mothers loves their children so; it is a precious agenda to have healthy newborn from HIV positive pregnant mothers who had not determined their happiness to get healthy neonates. Therefore, knowledgeable mothers about the ability of this Option B+ PMTCT drug had better adherence than not knowledgeable about HIV and Option B+ PMTCT drugs and have HIV free child.

CONCLUSION

Level of adherence to Option B+ PMTCT drug in public health facilities of East Gojjam Zone, Amhara region was low compared to the national goal. Promoting adherence to Option B+ drugs in all health facility is important to improve the long term maternal and child health. Mothers educational status, partner occupation, time required to reach to health facility and knowledge found to be significant association with adherence to option B+ drugs. Effort should be made to improve the knowledge about Option B+ PMTCT program to improve adherence to Option B+ PMTCT program.

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