



THE EFFECT OF DAILY TEXT MESSAGE INTERVENTION ON ANTIRETROVIRAL (ARV) TREATMENT COMPLIANCE IN PREGNANT WOMEN INFECTED WITH HIV

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ABSTRACT

Compliance Antiretroviral (ARV) treatment in mothers pregnant women infected with HIV are component important in prevent HIV transmission from Mother to children and achieve viral load suppression. However, various factor like effect side medication, lack of knowledge, stigma, and duration treatment can lower compliance patients. Objective to know influence Daily Text Message intervention on compliance ARV treatment in mothers HIV-infected pregnant women at the Community Health Center Sentani Jayapura Regency. Research use design Quasy Experimental with Pretest-Posttest with Control Group Design on 30 selected respondents through consecutive sampling. Compliance measured use Morisky Medication Adherence Scale (MMAS-8) questionnaire. Analysis using the Wilcoxon test, Spearman correlation, and multiple linear regression. The content validity of the instrument was ensured through the use of a standardized and previously validated MMAS-8. Instrument reliability was supported by prior studies reporting a Cronbach's alpha of ≥ 0.80 . Although reliability was not re-tested due to the limited sample size, consistent use of the same instrument during pretest and posttest supported measurement reliability. The majority respondents own level compliance high (44%). There is difference significant between mark compliance before and after intervention in groups treatment ($p=0.000$). The Daily Text Message intervention increased compliance ARV treatment compared group control. Educational factors, effects side medication, and duration of treatment participate influence change MMAS-8 scores. Effective increase compliance ARV treatment in mothers pregnant women infected with HIV. Message text daily can become a supporting strategy for the PPIA program strengthen compliance treatment term long.

Keywords: antiretroviral; daily text message; HIV AIDS; ibu hamil; MMAS-8

How to cite (in APA style)

Astutik, E. D. W., Pratami, Y. R., Hasnia, H., Lestari, S., Handayani, E. P., & Candra, P. K. (2026). The Effect of Daily Text Message Intervention on Antiretroviral (ARV) Treatment Compliance in Pregnant Women Infected with HIV. *Indonesian Journal of Global Health Research*, 8(1), 531–538. <https://doi.org/10.37287/ijghr.v8i1.1003>.

INTRODUCTION

Efforts to end the Human Immunodeficiency Virus (HIV) – Acquired Immune Deficiency Syndrome (AIDS) epidemic by 2030 or commonly called “ending AIDS by 2030” have been mandated by the AIDS Response. The Global AIDS update report emphasizes how antiretroviral (ARV) treatment, which was too expensive and complicated for populations with limited resources, is now accessible to 27.5 million people living with HIV (PLHIV), 152,525 of whom are in Indonesia (Ministry of Health of the Republic of Indonesia, 2022). At least 8 (eight) countries with various geographical, epidemiological, and socio-economic conditions have succeeded in achieving the 95-95-95 target, namely a condition where 95% of people living with HIV know their HIV status – 95% who know their HIV status access ARV treatment – and 95% who access HIV treatment have suppressed viral load. Globally, according to the United Nations Program on HIV and AIDS (UNAIDS), 84% (31.6 million) of people living with HIV know their HIV status, 73% (27.4 million) are accessing ARV treatment, and 66% (24.8 million) have suppressed viral loads. All efforts and strategies are focused on achieving these goals. (UNAIDS, 2022).

The target achievement conditions in Indonesia are 71-40-14 or 71% (387,210) of people with HIV who know their status, 40% (152,525) who know their HIV status are on ARV treatment, 14% (20,747) who are on ARV treatment have suppressed viral load (Kementerian Kesehatan RI, 2022). Nearly a decade after the World Health Organization (WHO) introduced Option B+, a strategy to initiate lifelong antiretroviral therapy (ART) for all pregnant women living with HIV, regardless of their CD4 count. (World Health Organization, 2020). There is 150,000 children were still infected with HIV in 2020 (Nordberg et al., 2023).

HIV is a chronic infectious disease that requires long-term, lifelong treatment with ARVs. This treatment is also intended to prevent transmission. Adequate ARV treatment will suppress the amount of virus in the blood to an undetectable level. (Kementerian Kesehatan RI, 2020). The amount of HIV virus in the blood can be measured from an HIV viral load test which must be carried out in the first 6 (six) months of ARV treatment, 12 months of ARV, and then annually as an evaluation of the ARV treatment being carried out. (Kementerian Kesehatan RI, 2019) However, current ARV treatments cannot affect the virus in the organs, which is why HIV is incurable. If a person with HIV stops treatment, the virus in the organs, which is normally dormant, will reactivate and produce viruses that are resistant to the ARVs previously administered (Tchakoute, 2022).

Every drug, including ARVs, has a half-life and a minimum tolerance level in the body that remains effective in controlling the HIV virus. Maintaining ARV levels at the optimum dose and not exceeding the minimum tolerance level is crucial. The only way to ensure this limit is by ensuring ARVs are taken on time (always at the same time), in the prescribed dosage, and using the correct method. This ensures viral load suppression, allowing people with HIV to maintain an optimal quality of life. Therefore, it is crucial to ensure that everyone with HIV adheres to their treatment (Hutahaeen et al., 2023).

To ensure that people with HIV adhere to lifelong ARV treatment. Life is influenced by various factors such as the ability to understand the importance of treatment for oneself and others, how ARVs work in the body, ARV management, the ability to access ARV treatment services, the impact of ARV side effects on daily activities, stigma and discrimination, and the support received (Davtyan et al., 2023). As the length of treatment period increases, boredom also occurs, which affects ARV treatment adherence. One way is to provide reminder media . drink drug in accordance recommendations / instructions given (Devianti & Waluyo, 2022). As one of the examples of media that can used For become reminder is service Short Message Service (SMS) in form message given text every Daily Text Message (Daily Text Message). The main purpose of providing reminder media in form Daily Text Messages primarily help overcome barriers or meet needs that HIV treatment services cannot provide. (Nurzulaikha, 2023). Research on the effectiveness of message interventions short to level compliance Treatment for HIV patients is often carried out, such as the Nordberg (2023) study conducted in the Kenyan community. Research that generalizes existing research results in the form of systematic reviews, such as the Mmotsa study . et al (2023) who conducted studies to use of media in deterrent HIV transmission from Mother to children in Africa(Mmotsa et al., 2023).

This research uses the method experimental study on the effects of intervention Daily Text Message to compliance ARV treatment in mothers HIV -infected pregnant women . This study is expected to be more representative of diversity when generalized to the population. This generalization is necessary to determine the extent of the intervention's impact and to determine whether it is necessary to focus the development of digital system interventions on ARV treatment services. Generalizing a study to the population is not possible, so several valid studies are needed to draw conclusions about the intervention's impact. Daily Text Message to compliance ARV treatment in mothers pregnant women infected with HIV . Based on the explanation above, this study aims to in conducting research on the "Effect of HIV intervention Daily Text Message to compliance ARV treatment in mothers pregnant women infected with HIV ”.

METHOD

This research uses quasi-experimental approach with pretest–posttest design with control group design. Through this design, researchers compare level compliance ARV treatment between two groups, namely group intervention that receives Daily Text Message every day during One months and groups control that only get regular education from officer health . This design was chosen For see changes that occur after giving treatment as well as ensure existence the difference produced by the intervention. Population study is all over Mother pregnant women who are infected with HIV and undergoing ARV treatment at the Community Health Center Sentani Jayapura Regency , totaling 68 people. Research sample taken use consecutive sampling method , where each Mother pregnant who fulfills criteria inclusion entered as respondents until amount sample fulfilled , namely 30 people. The criteria inclusion covering Mother pregnant with HIV who are willing become respondents, undergoing ARV treatment, has telephone mobile and access network mobile, as well as capable reading and writing. Meanwhile, mother pregnant with infection opportunistic issued from study.

Data collection begins with provide informed consent to all over candidate respondents . After that, a pretest was conducted to measure level compliance treatment use Morisky Medication Adherence Scale (MMAS-8) instrument through interview. The content validity of the instrument in this study was ensured through the use of a standardized instrument that has been tested and widely applied in previous studies. Meanwhile, the reliability of the instrument was based on findings from prior research reporting a Cronbach's alpha value of the MMAS-8 of ≥ 0.80 , indicating good internal consistency. In this study, a re-assessment of instrument reliability was not conducted due to the limited sample size; however, data collection procedures were carried out consistently by using the same instrument for both pretest and posttest to maintain measurement reliability. Therefore, the instrument used was considered appropriate and reliable for measuring antiretroviral (ARV) treatment adherence among pregnant women living with HIV. Respondents in the group intervention Then accept message text daily in the form of reminder time drink drug for 30 days consecutively. Group control only undergo routine education and services standard without message reminder. After period intervention finished, a posttest was conducted for measure return level compliance ARV treatment in both group use the same instrument. The data obtained furthermore analyzed through analysis univariate for describe characteristics respondents as well as distribution compliance. Analysis bivariate done for see difference level compliance before and after intervention using the Wilcoxon test or paired t-test, depending on the distribution of the data. The Spearman test is used For evaluate connection variables confounding factor like education , effects side medication, and duration of treatment. Analysis multivariate in the form of multiple linear regression used for know influence interventions and factors confounding factor to change score ARV compliance.

RESULT

Analysis Univariate

Analysis descriptive characteristics respondents

In this study, the characteristics respondents studied is education , fek side medication , and the duration of treatment which amounts to as many as 30 respondents . Characteristic results the served in table the following.

Table 1.
Characteristics Overview Respondents Based on Education, Effect Saping Medication, and Duration of Treatment

	N	Minimum	Maximum	Mean	Standard Deviation
Education	30	0	2	1.56	1,410
Side effects	30	0	1	0.24	,822
Treatment Duration	30	0	2	1.54	365,007
Valid N (listwise)	30				

Based on table 1 can known that respondents with total of 30 respondents have an average average education of 1.56 or in other words the average education Mother is education medium . While in the characteristics respondents based on effect side medication experienced Mother has an average of 0.24 which means part small mothers who experience effect side from ARV treatment that has been carried out. Meanwhile For characteristics respondents based on the duration of treatment the average body weight was 1.54.

Analysis Descriptive Variables Study

Table 2.
Distribution Frequency of Compliance Level ARV treatment

Variables Level Compliance	f	%
Tall	13	44%
Currently	10	33%
Low	7	23%

Based on table 2 can known that part big respondents own level compliance in ARV treatment in category tall or amounting to (44%). Meanwhile respondents with compliance currently as many as 10 respondents (33%), while respondents with compliance low as many as 7 respondents (23%). Meanwhile for the average value compliance ARV treatment in mothers HIV infected pregnant woman pictured in table 3 below this:

Table 3.
Average compliance ARV treatment in mothers pregnant women infected with HIV exist group intervention

Variables	Average	Elementary School	Min-Max	95%CI
Compliance ARV treatment	72.10	4,080	62-80	70.58-73.62

Table 4.
Average compliance ARV treatment in mothers pregnant women infected with HIV exist group control

Variables	Average	Elementary School	Min-Max	95%CI
Compliance ARV treatment	75.53	6,464	69-80	74.53-76.46

Analysis Bivariate

Influence Intervention *Daily Text Message* To Compliance Treatment *Antiretroviral* (ARV) Treatment in Pregnant Women Infected with HIV. Analysis compliance treatment with variables independent that is Intervention *Daily Text Message* can shown in table 5 below:

Table 5.
Influence Intervention *Daily Text Message* To Compliance Treatment *Antiretroviral* (ARV) in Pregnant Women Infected with HIV

Variables	Mean	Mean Difference	Elementary School	95% CI	N	P value
Compliance Interventional ARV Treatment	72.10					
Compliance Control ARV Treatment	75.23	-3,433	2,967	-4,541 – -2.3225	30	0,000

Based on table 5 above can known that results The P Value is 0.000 so H_a fails rejected or there is The Influence of Daily Text Messages on Compliance Antiretroviral (ARV) Treatment for Pregnant Women Infected with HIV. Based on results direction coefficient correlation so can concluded that Daily Text Message Intervention Text can influence level compliance treatment for mothers pregnant women infected with HIV.

DISCUSSION

Characteristics Respondents

Compliance to ARV circles Woman pregnant with HIV positive varies from One place to other

places based on different factors. In this study, high compliance obtained as many as 13 (44%) respondents. This level of compliance is comparable with research conducted in Ukraine, which showed level compliance by 65%. However this number is more tall compared to findings studies conducted in Kyela District, Tanzania and Addis Ababa, Ethiopia which each reported level compliance by 50% and 61%. More results low in this study may be due to differences understanding patient about importance compliance to treatment and strength compliance that encourages activities carried out in the facility. Facilities in This research may have better performance Good in strengthen compliance and therefore increase understanding patient about compliance treatment. On the other hand, the level of compliance overall to this research is far more low compared to results reported by studies conducted in Tigray state (87.1%) and western Kenya (89%). This may be related with low status of *Daily Text Message* to Compliance Treatment *Antiretroviral* (ARV) in Pregnant Women Infected with HIV education women, so that influence level understanding will importance compliance . Many respondents study in this research only own education base compared to with research conducted in Tigray state and western Kenya.

Study report that Mother pregnant women infected with HIV do not comply the treatment Because effect side medicine, forgot pills, and far away facility health from House If pill finished . Research currently also identifying these factors as one of the obstacle main compliance patient to prescribed medication . Barriers like this can open opportunity development disease and danger health patient . Resistance medicine, one of the challenge in giving service health currently, also can happened and therefore it is necessary get attention. Study currently showing that frequency counseling relate with ART compliance . Respondents who received counseling repeatedly have possibility more big For own good compliance compared to respondents who do not get counseling. These findings are similar with research conducted in Tigray state which underlines counseling patient as one of the factor main influencing factors ART compliance. Relationship between second This variable shows importance counseling patient in increase compliance and therefore facilities expected can take lesson from this relationship and strengthen it activity counseling they.

Daily Text Message is something facility For send and receive something message short in the form of text through device wireless, namely device communication telephone cellular , in matter This device wireless used is telephone cellular. As message text short or "texting". Technology SMS This use for send message in a way wireless up to 160 characters between cell phone or device others. Mobile Phone as tool or mobile health devices have start done for change behavior healthy, efforts made in utilization mobile phone is one of them with sending SMS remainder containing motivation or invitation for behave healthy. Compliance monitoring ARV therapy periodic can detect compliance *incomplete* before the number of viruses is growing, and this this is very potential For prevent failure therapy (Heberer, JE, et al, 2021). *Daily Text Message* in the form of message giver Spirit will give motivation for recipient message for do something action in accordance desire sender message. Motivation show encouragement and effort For fulfil or satisfying something need or for reach something purpose. While that , shortell & Kaluzny explained that motivation is feeling or driving thoughts somebody do work or operate power especially in behave (Nursalam, 2022).

It was found in Zambia and Tanzania that the stigma associated with HIV/AIDS positive lower Spirit patients and impact negative to compliance they to prescribed medication. This study also found that Mother pregnant who is not experiencing the stigma of having good compliance compared to with Mother pregnant women who experience stigma related to HIV. Consequences from view this is strange limited to patients only; it affects family, society and the state as a whole overall. The impact to economy and relations the community is also very large and therefore the facilities health, non- governmental organizations , academics , and the community must contribute Lots in overcome this shame and empower HIV/AIDS patients in general and women pregnant women in particular. Patients receiving support from family they found more likely to obedient to treatment they compared to with those who don't accept support in this research , in line with results research conducted in Nigeria.

Delivery messages that are carried out in a way continuous and full message positive show existence communication and attention. This in accordance with Principle motivation where the builder motivation is principle communication and attention. Principles Communication is all something related with achievement objective clear information need given clear information Because will influence his motivation . While Principle give attention environment closest / family is very influential in give attention to those closest to him to what is desired. With attention given said , then somebody will motivated For direct to an SMS reminder as the message given in a way continuous show giving communication and attention that can change motivation, in matter This motivation undergo ARV therapy.

Motivation become something important things in something healing or treatment. Treatment process will walk with fluent If motivation For healed also big . With clarity something motivation, for example he want to healed from his illness Because motivated want to make his family happy so in a way automatically, he will do empowerment self Alone For heal and achieve expected motivation. The height motivation For finish his illness or the problem he has , makes the person do empowerment such appearance so that the healing process or treatment can walk more The results of this study are in accordance with with study use of SMS in collect data regarding compliance treatment . Research in Kenya on The influence of SMS reminders on compliance ARV therapy is carried out for 48 weeks showed that 53% of patients who received SMS reminders had compliance up to 90%. It was also conveyed that SMS reminders with delivery weekly more effective compared to daily (Eleches, et al, 2021).

Women with HIV/AIDS have problem in various aspects, good physical, psychological and social and spiritual. When women are of age reproduction experience pregnancy and HIV so risky experience pregnancy and also carries the risk of transmitting it to the child . The government has do various effort management of people with HIV/AIDS, one of which is through the ARV (Anti-retroviral) treatment program . In 2010 , there were 1 million – 5 million case HIV infections in Indonesia From the total number the estimated As many as 10,000 PLWHA need immediate ART (Antiretroviral Therapy). Failure ARV therapy is often caused by non-compliance patient taking ARVs. Failure therapy can result in patient resistant to the ARVs given , the amount of virus in blood increase significant, and the number of CD4+ cells decreased. (Ministry of Health of the Republic of Indonesia, 2012). Increased motivation in undergo This ARV therapy is necessary For ensure success ARV therapy . With intervention giving *Daily Text Message* as a reminder to Mother pregnant with HIV can increase motivation in undergo ARV therapy.

CONCLUSION

Based on results study Influence Intervention Daily Text Message To Compliance Treatment Antiretroviral (ARV) in Pregnant Women Infected with HIV can concluded as following : some big Pregnant Women Infected with HIV own level compliance in category high , and intervention Daily Text Message proven influential to Compliance Treatment Antiretroviral (ARV) in Pregnant Women Infected with HIV.

REFERENCES

- Apriani, W., Nopi Herdiani, T., & Ningsih, D. A. (2020). Faktor-faktor yang Berhubungan dengan Inovasi Enterpreneur Dalam Pelayanan Praktik Mandiri Bidan Di Kota Bengkulu. *Jurnal Abdiman Saintika*, 2(2), 142–146. <https://jurnal.syedzasaintika.ac.id>
- Arianty, T. D. (2018). Perilaku Ibu Hamil dalam Melakukan Tes HIV. *Higeia Journal of Public Health Research and Development*, 2(3), 488–497.
- Arista Sari, P. I., Sulistyono, A., & Notobroto, H. B. (2016). Hubungan Jumlah Kunjungan ANC dan Stigmatisasi dengan Keikutsertaan Ibu Hamil dalam Tes HIV setelah Konseling oleh Petugas Kesehatan. *The Indonesian Journal of Public Health*, December, 89–98. <https://doi.org/10.20473/ijph.v11i1.2016.89-98>

- Cuinthane, C. E., Coene, G., Roelens, K., & Vanroelen, C. (2017). *AIDS & Clinical Research Exploring Perceptions and Practices of Biomedical Norms during Exclusive Breastfeeding among HIV-Positive Lactating Mothers in*. 8(4). <https://doi.org/10.4172/2155-6113.1000687>
- Ertiana, D., & Masrurin. (2020). Dukungan Petugas terhadap Perilaku Konseling dan Tes HIV Ibu Hamil. *Jurnal Kebidanan*, 9(2), 120–129. <https://akbid-dharmahusada-kediri.e-journal.id/JKDH/article/download/159/121/>
- Fitria, A., & Aisyah, S. (2019). Analisis Tes HIV dengan Sikap Ibu Hamil dalam Pencegahan Penyakit HIV/AIDS di Wilayah Kerja UPT Puskesmas Stabat Lama. *Jurna Ilmiah Universitas Batanghari Jambi*, 19. <https://doi.org/10.33087/jiubj.v19i1.589>
- Glanz, K., Rimer, B. K., & K.Viswanath. (1991). *Health Behavior and Health Education: Theory, Research, and Practice* (T. C. Orleans (ed.)). Jossey-Bass A Wiley Imprint.
- Hairuddin, K., Sudirman, J., & Suriani, B. (2024). *Faktor yang berhubungan dengan Pelaksanaan Voluntary Counseling Testing (VCT) pada Ibu Hamil*. 13(1), 37–46. <https://doi.org/10.31314/mjk.13.1.37-46.2024>
- Hary Purwani, N. L. P. S., Yuliana, & Wardana, I. N. G. (2020). Faktor yang berhubungan dengan perilaku tes HIV pada ibu hamil di Puskesmas Abianseml I. *Intisari Sains Medis*, 11(3), 1210–1215. <https://doi.org/10.15562/ism.v11i3.696>
- Hasnia, H., Ramadany, S., Arsin, A. A., Widaningsih, Y., & Tamar, M. (2022). Behavior Of Pregnant Mothers To Prevent Malaria With Pre And Post Personal Counseling Methods. *Jurnal Kebidanan Malahayati*, 8(4), 698–708. <https://doi.org/10.33024/jkm.v8i4.7822>
- Hasnia, Pratami, Y. R., Vitania, W., Handayani, E. P., Wahyu Astutik, E. D., & Nasrianti. (2024). Perubahan perilaku ibu hamil tentang hiv / aids (metode : pre-post konseling personal). *Jurnal Kesehatan*, 12(1), 48–62. <https://jurnal.stikesbethesda.ac.id/index.php/jurnalkesehatan/article/view/536/368>
- Indrayani, T., Kesehatan, F. I., Nasional, U., & Barat, P. (2024). Kecemasan ibu hamil trimester satu dalam melakukan pemeriksaan triple eliminasi. *Jurnal Keperawatan Jiwa (JKJ): Persatuan Perawat Nasional Indonesia*, 12(1), 209–216.
- Irmawati, G.P, C. V., & Rasyid, Z. (2020). Determinant of Utilization of Voluntary Counselling and Testing (VCT) Service in Pregnant Women in Work Area of Langsung Health Center Pekanbaru City in 2020. *Jurnal.Htp.Ac.Id*, 6(3), 335–341. <http://jurnal.htp.ac.id>
- Ismail, I. A., Febriyanti, A., Alif, D., Namira, A., Wicaksono, S., Nadeak, R. S., Damar Ramadhan, T., Yusral, A., & Ardhana, W. (2022). Hubungan Pengetahuan Dan Sikap Terhadap Pencegahan HIV / AIDS pada Remaja. *International Journal of Academic Health and Medical Research (IJAHMR)*, 6(5), 46–51.
- Kemenkes RI. (2022a). *Laporan Eksekutif Perkembangan HIV/AIDS dan Penyakit Infeksi Menular Seksual (PMS) Triwulan I Tahun 2022*.
- Kemenkes RI. (2022b). Profil Kesehatan Indonesia 2021. In *Pusdatin.Kemenkes.Go.Id*.
- Kusvitasari, H., Putri Yuliantie, & Istiqamah. (2023). Hubungan Masa Kerja Bidan dengan Kelengkapan Imunisasi Dasar pada Masa Pandemi Covid-19. *Health Care: Jurnal Kesehatan*, 12(1), 186–193. <https://doi.org/10.36763/healthcare.v12i1.362>
- Maniagasi, J., Nontji, W., & Ahmad, M. (2022). Pengaruh Kelas Ibu Hamil terhadap Tingkat Kecemasan pada Ibu Hamil dalam Menghadapi Persalinan. *Jurnal Keperawatan Volume 14 No.54. Departemen Kebidanan. Universitas Hasanuddin*, 14(S4), 1037–1046. <http://journal2.stikeskendal.ac.id/index.php/keperawatan/article/view/691>
- Moyo, F., Mazanderani, A. H., Kufa, T., & Sherman, G. G. (2021). Maternal HIV viral load testing during pregnancy and postpartum care in Gauteng Province, South Africa. *South African Medical Journal*, 111(5), 469–473. <https://doi.org/10.7196/SAMJ.2021.v111i5.15240>

Musringatun. (2017). Faktor-Faktor yang berhubungan dengan Stigma Bidan terhadap Ibu dengan HIV Positif di Bangsal Kebidanan RSUD Dr. Soedirma Kebumen. *Skripsi*.