

## **THE EFFECTIVENESS OF REMINDER MESSAGES IN INCREASING COMPLIANCE WITH ARV DRUG IN HIV/AIDS PATIENTS**

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### **ABSTRAK**

*HIV (Human Immunodeficiency Virus) dan AIDS (Acquired Immune Deficiency Syndrome)* merupakan masalah kesehatan global yang menyebabkan kesakitan dan kematian. Ketidapatuhan dalam pengobatan menjadi masalah kegagalan pasien HIV/AIDS dalam menjalani pengobatan ARV. Salah satu upaya yang dapat dilakukan adalah dengan layanan pesan singkat (SMS reminder) sehingga dapat mengetahui efektifitas SMS reminder dalam meningkatkan kepatuhan minum obat ARV pada penderita HIV/AIDS. Penelitian ini menggunakan metode *narrative literatur review* dengan analisis secara kritis, objektif, dan komprehensif. Kata kunci disini diambil dari basis data elektronik yaitu ProQuest, Science Direct, Pupmed, dan Google Scholar. Hasil pencarian pada data ditemukan sebanyak 244 artikel yang terbit dari tahun 2016 – 2021, setelah itu dilakukan penilaian kelayakan artikel dengan full-text dan memilih artikel sesuai dengan tujuan tinjauan literatur dan didapatkan 6 artikel yang memenuhi kriteria dan relevan. Pada kesimpulan didapatkan bahwa SMS Reminder dapat memudahkan interaksi antara pasien dengan pihak pelayanan kesehatan dalam meningkatkan kepatuhan dalam pengobatan ARV pada orang dengan HIV. Direkomendasikan untuk meneliti penggunaan SMS reminder ini untuk mengatasi berbagai masalah pasien HIV yang lebih bervariasi, sehingga penelitian ini dapat bermanfaat bagi pasien HIV secara luas.

**Kata kunci:** SMS Reminder, HIV-AIDS, Kepatuhan, Pengobatan ARV

### **ABSTRACT**

*HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immune Deficiency Syndrome)* are global health problems that cause morbidity and mortality. Non-adherence in treatment is a problem of the failure of HIV/AIDS patients in undergoing ARV treatment. One of the efforts that can be done with a Short Message Service (SMS) reminder is to determine the effectiveness of SMS reminders in improving medication adherence to ARV in people living with HIV/AIDS. His study uses a narrative literature review method with critical, objective, and comprehensive analysis. The keywords are taken from electronic databases ProQuest, Science Direct, PubMed, and Google Scholar. The search results on the data found as many as 244 articles published from 2016 – 2021, after which a full-text review of the feasibility of the articles was carried out and had articles for the literature review and obtained 6 articles that met the criteria and were relevant. In conclusion, SMS Reminders can facilitate interaction between patients and health care providers in increasing adherence to ARV treatment in people with HIV. It is recommended to use SMS reminders for more variety of problems in HIV patients so that this study can be helpful for HIV patients in general.

**Keywords:** SMS Reminder, HIV-AIDS, Compliance, ARV Treatment

### **INTRODUCTION**

HIV (Human Immunodeficiency Virus) is a retrovirus that can infect immune system cells, cause immune system cells to become infected, and cause AIDS (Acquired Immune Deficiency Syndrome). Decreased immunity in the human body can make sufferers very easy because of various

diseases that can be fatal. Until now, HIV and AIDS infection and replication can still be prevented with drugs. This treatment is known as antiretroviral therapy. ARVs do not kill the virus, but they can slow or suppress the growth of the HIV/AIDS virus (Suryanto & Nurjanah, 2021).

The largest HIV-infected population in the world is on the African continent (25.7 million people), then in Southeast Asia (3.8 million) and America (3.5 million). The high population of people infected with HIV in Southeast Asia requires Indonesia to be more aware of the spread and transmission of this virus. (UNAIDS, 2019). In 2020, based on the progress of HIV AIDS until September 2020, it is known that the data shows that the percentage of PLWHA undergoing ARV therapy is only 26.3% of the 40% target, with 65.8% performance achievement using antiretroviral treatment amounting to 26.3%. 1,029 people and 983 people were assessed for compliance. A total of 920 (93.5%) PLWHA had high adherence or more than 95%, and 63 (6.4%) PLWHA had low adherence or lower than 95% (Dimala et al., 2016).

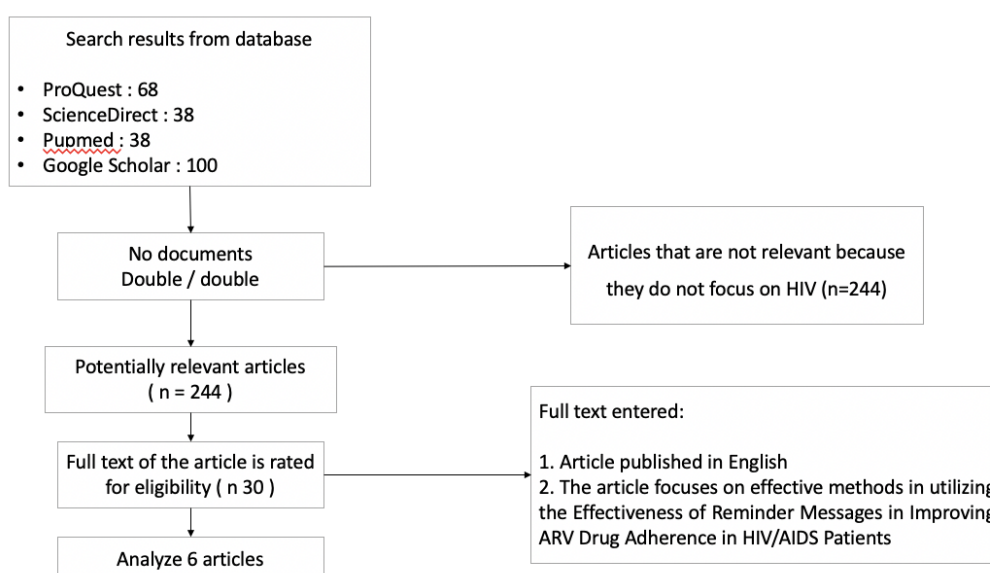
Many HIV/AIDS patients do not comply with their treatment for various reasons. The factor is tedious to take ARV drugs because people with HIV/AIDS must take the same drug every day, and nothing should be missed for a lifetime. Non-adherence to ARV medication has been identified as a major barrier to successful HIV/AIDS treatment, which can lead to the development of virological resistance and treatment failure and increase the risk of subsequent HIV transmission. Currently, the action taken by officers so that HIV patients take ARV drugs obediently is conducting Pre-ARV Counseling, which can focus on beliefs related to ARV treatment adherence. Kim, 2015). Evidenced research conducted by Ubra (2012), in Timika, some factors related to adherence to ARV treatment in HIV/AIDS patients, that out of 74 patients were non-adherence (55.41%), with moderate adherence 10 people (13.51%). The same thing was explained by the researcher, who stated that at the end of 2014, of 1,270 people who had received ARV treatment and were still on treatment, only 44.64%. The results above show that the HIV/AIDS treatment program requires compliance to improve this. Along with the development of information technology in the digital era, digital can now be used to improve ARV treatment adherence in people with HIV AIDS (Listyawati & R, 2018).

To increase effectiveness, we need a service that follows technological developments in the form of applications that can record the time of drug consumption and remind patients to take medication; then, the drug consumption data is sent to ARV therapy officers so that officers can monitor patient compliance anywhere and anytime. As mobile marketing application technology develops, Emarketer ( researcher ) estimates in 2021, and there will be more than 100 million smartphone users in Indonesia. Social Media on cell phones has become a technology that can help facilitate the delivery of messages, or it can be a reminder to take ARV drugs to help increase adherence to antiretroviral therapy (ARV). Based on the above background, the researcher is interested in conducting a literature

review on using SMS remainder to increase ARV adherence in people living with HIV/AIDS (Putri et al., 2021).

## METHOD

This study uses a narrative literature review method with critical, objective, and comprehensive analysis. The keywords are extracted from electronic databases: ProQuest, Science Direct, PubMed, and Google Scholar. The search results on the data found as many as 244 articles published from 2016 – 2021. The articles were carried out and had articles for the literature review and obtained 6 articles that met the criteria and were relevant.



**Figure. 1 Article Search Flow**

## RESULTS AND DISCUSSION

In 2020, Indonesia targeted a new concept of "3 – 0. UNAIDS also achieves the target in 2020, 90% of people know their HIV status, 90% of people with HIV get ARVs, and 90% of people on antiretrovirals experience decreased viral load. The target is to prevent HIV transmission, increase HIV treatment, increase treatment retention, improve the quality of life of PLWHA in Indonesia. The SMS intervention has shown a potential benefit in improving or maintaining ARV adherence. First, SMS can be used as a medication reminder to enhance compliance with ARV treatment (Suryanto & Nurjanah, 2021).

Second, the SMS intervention can increase the knowledge related to HIV and ARV treatment in PLWHA who are not compliant with ARV treatment. Third, interactive text messages offered to PLWHA who do not comply with ARV treatment are a medium for timely communication with health care providers to obtain information, emotional and technical support to overcome the many obstacles they face in their treatment. (Lester et al., 2010; Xiao, Li, Williams, & Wang, 2017; Abdulrahman et

al., 2017; Guo, Xu, Qiao, Hong, & Zhang, 2018). Moore et al., 2018 claimed that SMS was used to alert or send information to PLWHA and as a consistent and convenient way to access emotional support from health care providers. Sidney et al., 2012 in India also showed this, where only 59% of participants saw all the SMS sent, while 15% never saw it. Daily messages may distract, cause boredom, and reduce response to repeated reminders. Many studies have been conducted to test the effectiveness of SMS Reminders in increasing ARV treatment adherence. In a survey conducted in Kenya for one year, an SMS Reminder sent once a week showed an increase in ARV treatment adherence. (Suryanto & Nurjanah, 2021)

In addition to studies that prove the effectiveness of SMS Reminder in increasing ARV treatment adherence, Some studies do not support this statement. Based on the results of Michael et al. research, it was shown that ARV treatment adherence was not significant in the presence of SMS Reminder. This study is more influential on patients who have Insufficient knowledge. The same thing was conveyed by Lawrence et al., who explained that sending SMS Reminders once a week containing reminder components, motivational texts, and telephone numbers of nurses who could be contacted had no significant effect on increasing adherence to HIV AIDS sufferers. (Michael et al., 2017). Likewise, research conducted by Katerina et al. that patients who received an SMS Reminder intervention every day which contained only treatment reminder information, the patient received an SMS Reminder which included reminder information and motivational encouragement which is sent three times a week, shows the results that SMS Reminder sent every day is less effective than SMS Reminder sent three times a week. This is supported by research conducted in Timika Papua within only four weeks, but three SMS Reminders are sent each week. The results of this study stated that there were changes in ARV treatment adherence behavior before and after receiving the SMS Reminder intervention (Endang et al., 2016). Factors that affect the effectiveness of the use of SMS Reminder on medication adherence are the period of sending SMS Reminder is very precise so that patients do not experience boredom. In addition, it is supported by providing motivation and encouragement so that patients will feel more cared for (Reid et al., 2017).

People with HIV/AIDS must take ARV drugs every day. These drugs help control the growth of the number of HIV viruses in the bodies of people with HIV/AIDS so that they are not exposed to opportunistic infections so that people living with HIV can live healthy like other people who are not infected with HIV. ARV drug administration aims to suppress the maximum and long-lasting viral load, restore and maintain immune function, reduce morbidity due to HIV infection, prolong life and improve quality of life, prevent HIV transmission and minimize adverse treatment effects. In research entitled description of adherence of people with HIV-AIDS (PLWHA) in taking ARV drugs in the city of Bandung, West Java Province in 2011-2012, the factors that support PLWHA in taking ARV drugs are family factors, friends, the WPA Forum (Residents Concerned with AIDS) and internal factors in

PLWHA. While inhibiting factors are bored to take drugs, side effects of medicines, community stigma, and costs become a source of information and reminders that are more often read, and the information becomes more interesting. Text messaging has generally improved medication adherence across various populations and settings. Furthermore, weekly text messages have been shown to perform better than daily messages in reducing adherence (Fan et al., 2020).

The study showed that from 29 respondents, the compliance of respondents before the SMS Reminder support intervention was 16 (55.2%). After the SMS Reminder support intervention was carried out, it increased to 26 respondents (89.7%). This SMS Reminder intervention was carried out for only 4 weeks and sent 3 times a week. The results showed an effect between SMS Reminder support and medication adherence with a significant value of  $0.001 < 0.05$ . This is by research conducted in Uganda using interactive voice response. (IVR) and SMS to assess missed doses sent once a week for 3-4 weeks. (Wang et al., 2019). The study in Kenya was conducted for 48 weeks by sending weekly SMS, and the results showed that 53% of patients who received weekly SMS reminders achieved compliance of not less than 90%. This study also found that weekly texting was more effective than daily (Pop-Eleches et al., 2011).

In contrast to a study by Lawrence Mbuagbaw in 2010, that motivational SMS sent every week did not significantly improve adherence to ARV therapy (Mbuagbaw, L et al., 2010). The use of mobile health in the form of SMS Reminder in this study has been shown to increase the adherence of HIV-AIDS patients to ARV therapy with a compliance rate of 95%. The study duration was only 4 weeks so the level of compliance of the respondents in this study still tends to be high. This is also in line with the research conducted by Yuniar Y et al. in 2013 about the supporting factors of people with HIV-AIDS and the study by Sugiharti et al. in 2014 about a description of the compliance of people with HIV-AIDS (PLWHA) in taking ARV drugs in the city of Bandung, West Java province that one of the factors supporting compliance is motivation from within the patient himself. This is in line with the research of Kalalo et al., which shows that people with HIV/AIDS undergo ARV treatment due to the support of excellent medical personnel. The SMS Reminders will increase the patient's motivation because they feel that many people care about their health (Santos et al., 2019).

Based on the results of research, theory, and previous research, it is stated that the support factor of health workers has a positive role in improving services to patients, one of which is by utilizing developed technology such as providing support with SMS Reminder. Information from health workers can increase understanding and awareness of patients to survive and increase immunity, which shows an excellent response to the given stimulus, namely SMS Reminder support. G2G (Guy2Guy) looks promising in increasing adolescent HIV testing rates. Interventional text messages appear to have increased the comfort of having sex and did not increase the potential for HIV transmission. Additional content or features may be needed to increase condom use (Wilandika, 2018).

First, it is possible that the the RCT – six months of follow-up – was inadequate to characterize a measurable impact. Secondly, the intervention's effect may have been mitigated by the type of patients enrolled, the majority (70%) had been on ART for at least 48 months at enrollment into the study. Furthermore, at baseline, most patients in both the intervention and control arm had very low or undetectable viral loads (under 400 copies/ml) were already reasonably adherent to their medications. We speculate that the SMS reminder may be more effective in treatment populations, who are less likely to have established to help remind them to pick up medications each month (Sherman et al., 2020)

One possible explanation for the lack of significant findings in our analysis was that reminding people to pick up the pills is far less likely to impact pill adherence than interventions focused on improving real-time ART adherence. Several recent studies (Haberer et al., 2016; Orrell et al., 2015; Sabin et al., 2015) have demonstrated the benefit of using SMS reminders in tandem with real-time electronic adherence monitoring devices that record when medications containers are opened and communicate the data to a central server. ("Wisepill Technologies," 2016). However, recent evidence suggests that real-time electronic adherence monitoring and support is particularly beneficial for those initiating ART compared to those with prior ART experience. ((Mehra et al., 2021)

While our results build upon and confirm previous work indicating that effective SMS ART adherence interventions should be individualized to those most likely to benefit from them (Sabin et al., 2010; Simoni, Amico, Smith, & Nelson, 2010). Text reminder interventions are relatively simple and can be used as a tool by providers and adherence counselors already in the field. Technology-mediated health care is seen as a ubiquitous glance and permanent attention of professionals concerning the daily life of PLWHA, motivating adherence to treatment behavior. Diagnosis-related depressive feelings. Thus, frequent communication between professional and patient works as direct counseling, promoting time and financial cost savings. (Ware NC, 2016). Also, it is essential to know the patients' perceptions and needs for these technologies, identify the barriers and solve the problems to develop effective technologies. It is, therefore, necessary to compare technologies and seek the most appropriate ones for each context (Safarina, 2018).

## **CONCLUSIONS AND SUGGESTIONS**

SMS Reminders can facilitate interaction between patients and health services to make it easier for nurses to monitor and evaluate and assist patients in reminding the treatment that must be taken. The use of words in SMS Reminders needs to be considered to increase the patient's self-awareness in treatment. The timeliness of sending SMS reminders also needs to be considered so as not to interfere with the activities a patient carries out. That way, the use of SMS Reminder will positively impact. ARV treatment adherence. SMS Reminder is highly recommended to be applied in all hospitals in Indonesia. However, in determining the content of the SMS component, it is necessary to involve linguists and psychologists to increase self-awareness in ARV treatment. All parts involved need to be

built and improved to synergize to increase nurses' competence as health workers in managing HIV/AIDS patients.

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