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## Effectiveness of a live-chat social media and leaflets for people living with HIV/AIDS (PLWHA) under antiretroviral therapy (ARVs)

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### Abstract

**Background:** Adherence to taking ARV (antiretroviral) is a term used to describe the patient's behavior in taking medication correctly both regarding dose, frequency and time. To get a response to suppress the number of viruses up to 85%, 95% compliance is required in the use of drugs. Failure to achieve adherence rates of less than 95% will reduce the suppression of HIV replication. In general, non-compliance is explained.

**Purpose:** To analyze the effectiveness of a live-chat social media and leaflets for people living with HIV/AIDS (PLWHA) under antiretroviral therapy (ARVs)

**Method:** This study uses a quantitative approach. This research is a pre-experimental research with one group pretest and posttest design. In this study, respondents were given treatment using a live-chat social media and leaflets within 4 (four) weeks. Every week respondents are given 2x a live-chat social media and leaflets. Posttest 1 for knowledge, attitudes, and practice of adherence to antiretroviral therapy was conducted after 2 weeks of intervention, while posttest 2 was conducted after 4 weeks of intervention. The sample in this study were all PLWHA (People With HIV/AIDS) in PSG (Peer Support Groups) who were willing to become research respondents, as evidenced by filling out the informed consent given by 30 PLWHA.

**Results:** There is a difference in knowledge, attitude and adherence to ARV between pre test and post test 1 by a live-chat social media and leaflets with p value < 0.05. Likewise with the results between post test 1 and post test 2 there are differences in knowledge, attitudes and adherence to taking ARV between post test 1 and post test 2 by a live-chat social media and leaflets.

**Conclusion:** The intervention of a live-chat social media and leaflets is effective in increasing knowledge, attitude and adherence to taking ARV in PLWHA (People Living with HIV/AIDS).

**Keywords:** Social media; leaflets; People living with HIV/AIDS (PLWHA); Antiretroviral therapy (ARVs)

### INTRODUCTION

Treatment after exposure to HIV infection in a person is antiretroviral therapy. HIV is a retrovirus so these drugs are called antiretroviral drugs (ARVs). ARVs do not kill the HIV virus, but can only slow the growth rate of the virus (Gimyanti, 2012). The expansion of access to ARVs in Indonesia since the existence of a fully subsidized ARV program by the government has caused more and more PLWHA to

receive ARVs, in the hope that their quality of life will be better, and they can survive like other people, as long as ARV therapy is used consistently and obediently. From the Situation Report on the Development of HIV & AIDS in Indonesia until September 2014, it was recorded that 108,060 PLWHA received ARV therapy from 33 provinces and 300 districts/cities. There were 19,670 people living

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with HIV who stopped ARVs, 15,046 were not followed up for various reasons and 14,547 died (Ministry of Health of the Republic of Indonesia, 2014).

Based on the projection of HIV AIDS in Indonesia, it is illustrated that the need for ARV for the population aged 15-49 years has increased from 145,706 in 2011 to 248,903 in 2016. Meanwhile, PLWHA receiving ARV is estimated at 24.20 (16.60%). in 2011 increased by 4,594 (18%) in 2016 (Ministry of Health of the Republic of Indonesia, 2013). ARV therapy is the only drug of choice currently available. Compliance with taking medication is the key to success in the treatment process for PLWHA patients which can provide a longer and better life expectancy. Adherence to ARV use is one of the factors that can significantly extend the life expectancy of PLWHA. ARVs work against infection by slowing the reproduction of HIV in the body (Aryastami, Handayani, & Yuniar, 2013; Ana, Gobel, & Arman, 2020; Velisitas, 2013; World Health Organization, 2011).

Support to PLWHA and those affected by HIV/AIDS aims to empower and maintain a decent and productive socio-economic life (Lestari, 2013). Similarly, at the Asia-Pacific level, in 2012 there were an estimated 350,000 new infections, or a decrease of 26% since 2001. More people have ever received ARV treatment, which is around 1.25 million people in 2012. proven in the prevention and treatment of HIV/AIDS. It is proven that early treatment and adherence to ARV is one of the most effective methods of dealing with HIV. Efforts to provide early ARV and treatment expansion have been initiated through the strategic use of ARV initiatives (Ministry of Health of the Republic of Indonesia, 2015). Even so, currently, medication adherence is still a challenge that needs to be addressed.

The term adherence used in the medical world is a term used to describe the patient's behavior in taking medication correctly regarding the dose, frequency and time. To get a response to suppress the number of viruses by 85%, 95% adherence to drug use is required. Failure to achieve adherence levels of less than 95% will reduce the suppression of HIV replication. In general, non-adherence is described as missing/not taking medication more than 10% of the

daily dose of medication or forgetting to take medication. Maintaining adherence at the expected level is not easy. PLWHA's negligence in taking ARV drugs on a regular basis is mostly due to forgetfulness. This can happen because the HIV virus can attack the central nervous system and cause dementia. Some PLWHA eventually experience a form of mental disorder or dementia, in which individuals experience difficulties in language skills, memory and thinking skills. Infection with HIV often causes dementia and other psychotic symptoms. Approximately 14% of patients with HIV develop dementia each year.

Based on this background, it is necessary to make a new breakthrough to improve adherence to ARV in PLWHA. Provision of comprehensive interventions on HIV and ARVs needs to be given to PLWHA. Correct knowledge and awareness about HIV disease and the importance of treatment is expected to reduce non-adherence to PLWHA in ARV therapy. So that media is needed to increase knowledge, attitudes and practice of adherence to taking ARV in PLWHA.

The idea offered in this study is to use a mobile phone communication tool to remind and motivate people living with HIV in taking ARVs. The use of communication technology in the world of health aims to improve or promote health, health services including their quality (Juanda, 2013). However, in using mobile phones, there are still many studies that remind people living with HIV to take ARVs by using short message/messaging service, even though today most people have used a live-chat social media as a medium of communication and have slowly abandoned short message/messaging service.

Through the use of a live-chat social media in health services, making health services effective and efficient in an unlimited range in improving health services

## RESEARCH METHOD

This study uses a quantitative approach. This research is a pre-experiment with one group pretest and posttest design and grouping of sample members in the experimental and control group to determine the increase in knowledge, attitudes and adherence to taking ARVs, a pretest and posttest were carried out.

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In this study, respondents were given treatment using a live-chat social media and leaflets. The intervention was carried out within 4 (four) weeks. Every week the respondent is given 2x a live-chat social media (WhatsApp messages). The leaflet used is a leaflet containing ARV information from the Jakarta Provincial AIDS Commission.

Posttest 1 for knowledge, attitudes, and practice of adherence to taking ARVs was carried out after 2

weeks of intervention, while posttest 2 was carried out after 4 weeks of intervention. This is based on previous research by a live-chat social media and leaflets will increase adherence to PLWHA after 1 month of intervention. The sample in this study were all PLWHA in peer support groups who were willing to become research respondents, as evidenced by filling out the provided informed consent, totaling 30 PLWHA.

## RESULTS

Table 1. Demographic Characteristic of Respondents (N=30)

Variables	Results
Age (Mean $\pm$ SD)(Range) (Years)	(35 $\pm$ 4.96) (26-43)
<b>Gender (n/%)</b>	
Male	16/53.3
Female	14/46.7

Source: Primary Data, 2021

Based on table 1, it can be seen that in terms of gender, more than half of the respondents are male with a percentage of 53.3%. In the age category, it shows that the average respondent is 35 years old.

Table 2. The Effectiveness of a Live-Chat Social Media and Leaflets

Variables	Mean $\pm$ SD	Min-Max	p-value
<b>Knowledge</b>			0.000
Pre Test	94 $\pm$ 2,17	89 - 98	(pretest-posttest1
Post Test 1	96,41 $\pm$ 2,07	92 - 101	0.024
Post Test 2	98 $\pm$ 2,13	93 - 102	(posttest1-posttest2)
<b>Attitudes</b>			0.021
Pre Test	26,41 $\pm$ 2,78	22 - 32	(pretest-posttest1
Post Test 1	29 $\pm$ 3,16	22 - 35	0.000
Post Test 2	30,27 $\pm$ 2,80	26 - 36	(posttest1-posttest2)
<b>Adherence</b>			0.010
Pre Test	19,48 $\pm$ 1,97	14 - 21	(pretest-posttest1
Post Test 1	22,27 $\pm$ 2,18	17 - 24	0.030
Post Test 2	23,27 $\pm$ 2,11	18 - 25	(posttest1-posttest2)

Source: Primary Data, 2021

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Based on table 2, it can be seen that there was an increase in the average (mean) value of knowledge before and after by a live-chat social media and leaflets. The increase in knowledge can be seen from the average pre-test score of 94, increasing to 96.41 on the average post-test score of 1 and increasing again to 98 on the average post-test score of 2. There is an increase in the average (mean) value of attitudes before and after by a live-chat social media and leaflets. An increase in attitude can be seen from the average pre-test score of 26.41, increasing to 29 in the average post-test value of 1 and increasing again to 30.27 on the average post-test score of 2. There was an increase in the average (mean) behavioral values before and after by a live-chat social media and leaflets. The increase in behavior can be seen from the average pre-test score of 19.48, increasing to 22.27 at the post-test 1 average and increasing again to 23.27 at the post-test 2. Based on the bivariate results, then The results showed that there were differences in knowledge, attitudes and adherence to taking ARVs between pre-test and post-test 1 by a live-chat social media and leaflets with p value <0.05. Likewise with the results between post test 1 and post test 2, there are differences in knowledge, attitudes and adherence to taking ARVs between post test 1 and post test 2 by A live-chat social media and leaflets.

## DISCUSSION

### Increase of Knowledge

Based on the results of the Wilcoxon Signed Rank Test, the effectiveness of a live-chat social media and leaflets as a medium for increasing knowledge shows an increase in knowledge with p value = 0.000 meaning that there is a difference in knowledge between pre-test and post-test 1 by a live-chat social media and leaflets. Likewise with the results between post test 1 and post test 2, there is a difference in knowledge in taking ARVs between post test 1 and post test 2 by a live-chat social media and leaflets with a p value of 0.024.

Knowledge is intended to provide correct information to inaccurate and unfavorable understandings that can worsen a person's health.

Knowledge is a very important domain to shape one's actions. Behavior based on knowledge can create obedient behavior that lasts longer than behavior that is not based on knowledge (Almira, Arifin, & Rosida, 2019; Fitriyani & Wahyuningsih, 2016).

Knowledge is the most powerful factor and has a 9 times greater tendency to influence adherence to antiretroviral therapy (ARV) (Martoni, et al, 2013; Aji, 2010). This is due to the fact that knowledge about HIV and its treatment can increase respondents' awareness of and access to ARV therapy. It was also stated by Talumewo et al, that there is a relationship between knowledge and adherence to PLWHA in undergoing antiretroviral therapy. Obtained p-value = 0.010 (<0.05) (Talumewo, et al 2019). Debby's research also mentions the same thing, namely that there is a relationship between knowledge and adherence to PLWHA in undergoing antiretroviral therapy, using the chi square test = 0.005 (<0.05) (Debby, 2019).

According to the national guidelines for antiretroviral treatment (ARV), knowledge of PLWHA (People with HIV/AIDS) is one component in the behavior of PLWHA (People with HIV/AIDS), where knowledge of PLWHA (People with HIV/AIDS) is a measure of PLWHA's knowledge of HIV/AIDS, both protrusion and therapy. The knowledge about adherence to taking ARVs in PLWHA is knowledge of PLWHA (People with HIV/AIDS) about ARVs that can indirectly affect adherence to taking ARV drugs because knowledge behavior will be more permanent than behavior that is not based on knowledge (Marlinda, 2017).

The results of this study are in line with research conducted by Ana, et al., showing that there is a relationship between knowledge and adherence to taking Antiretroviral (ARV) drugs with p value = 0.031 (Ana, Gobel & Arman, 2020). Based on the opinion of the researcher, PLWHA (People with HIV/AIDS) who have good knowledge will have a better understanding of their disease and the risks that will be obtained if the patient does not comply with their treatment. To make it easier for a person to behave in a healthy manner and comply with his treatment is to increase knowledge about his health. With knowledge about

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ARV therapy, respondents will further improve their treatment.

### Increase of Attitudes

Based on the results of the Wilcoxon Signed Rank Test, the effectiveness of a live-chat social media and leaflets as media to improve attitudes showed an increase in attitudes with  $p$  value = 0.021 meaning that there were differences in attitudes between pre test and post test 1 by a live-chat social media and leaflets. Likewise with the results between post test 1 and post test 2, there are differences in attitudes towards taking ARVs between post test 1 and post test 2 by a live-chat social media and leaflets with a  $p$  value of 0.000.

The attitude of PLWHA (People with HIV/AIDS) is one component in the behavior of PLWHA (People with HIV/AIDS), where the attitude of PLWHA (People with HIV/AIDS) towards ARV treatment is the reaction of PLWHA (People with HIV/AIDS) regarding ARV treatment which are still closed in nature (Anggina, et al, 2019).

This is also in line with Mimin's research which says that there is an effect of the attitude of PLWHA on ARV therapy adherence with a  $p$  value of 0.02 (Mimin, 2019). The results of this study are also in line with research conducted by Cao (2017), showing a moderate increase in intention to use ART, increased viral suppression, and higher self-reported adherence (intervention vs control at 6-month follow-up, 98.72% vs 93.11%) with  $p$  value = 0.006 (Cao, et al, 2017).

### Increase of Adherence

Based on the results of the Wilcoxon Signed Rank Test, the effectiveness of a live-chat social media and leaflets as a medium to increase adherence, showed an increase in adherence with  $p$  value = 0.010, meaning that there was a difference in adherence between pre-test and post-test 1 by a live-chat social media and leaflets. Likewise with the results between post test 1 and post test 2, there is a difference in adherence to taking ARV between post test 1 and post test 2 by a live-chat social media and leaflets with a  $p$  value of 0.030.

Adherence to taking medication is a term used to describe patient behavior in taking medication correctly regarding dose, frequency, and time. Adherence to therapy is a condition in which the patient not only obeys the doctor's orders, but also obeys his treatment on his own consciousness, where self-awareness is expected to further increase adherence to taking medication (Ministry of Health of the Republic of Indonesia, 2021).

This study is in line with previous studies which showed the intervention group increased from 81.7% to 89.9% from month 1 to month 2 and remained relatively stable for the rest of the month (Defulio, et al, 2021). Smartphones hold great promise as delivery devices for behavioral intervention as they have all the necessary functions. Previous research stated that the level of compliance increased from 64.6% to 79.1% (Hardy, et al, 2011). At week 3, all subjects had measured compliance with MEMS in addition to PC and SR adherence scores. CAS is calculated using the algorithm described in the methods section. Adherence as measured by PC and SR increased relative to baseline to 69.1% and 85.3%, respectively.

Previous researchers stated the mean age of the participants was 38 years, 27% were female and 90% were urban (Rodrigues et al, 2012). In all, 3,895 IVR and 3,073 SMEs were sent to participants over 6 months. Full case analysis revealed that the proportion of participants with optimal adherence increased from 85% to 91% of patients during the intervention period, an effect that was maintained 6 months after the intervention was discontinued ( $p = 0.016$ ). Both, IVR calls and short message/messaging service are considered non-intrusive and not a threat to privacy. A much higher proportion agreed that IVR was beneficial compared to short message/messaging service ( $p$  value 0.001). Research in 2017 stated that almost all (96%) intervention participants reported high satisfaction or satisfaction with the short message/messaging service intervention, with 74% wanting to continue receiving the short message/messaging service intervention. The preferred message frequency is 1-2 messages per week (Ruan, et al, 2017).

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The level of adherence to taking ARVs in people living with HIV AIDS increases with mHealth, the most effective way of administering mHealth. therefore mHealth has an effect on adherence to taking ARVs in people with HIV AIDS. From several articles found that mhealth is present as a promising initiative to improve medication adherence and short message/messaging service are considered non-intrusive and not a threat to privacy.

### CONCLUSION

There are differences in knowledge, attitudes and adherence to taking ARVs between pre-test and post-test 1 by a live-chat social media and leaflets with p value <0.05. Likewise with the results between post test 1 and post test 2, there are differences in knowledge, attitudes and adherence to taking ARVs between post test 1 and post test 2 by a live-chat social media and leaflets. So it can be concluded that the a live-chat social media reminder and leaflet intervention is effective in increasing knowledge, attitudes and adherence to taking ARV in PLWHA (People with HIV/AIDS).

### SUGGESTION

It is hoped that health workers or related agencies will further enhance campaigns to increase knowledge, attitudes and adherence to taking ARVs in interesting ways and methods and can take advantage of a live-chat social media media.

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