E-ISSN: 2502-3519 P-ISSN: 2798-3234
JGA, Vol. 9(2), June 2024 (211-224)
DOI: https://doi.org/10.14421/jga.2024.92-03

Golden Age
Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini

OPEN ACCESS

Family Support in Preventing Mother-to-Child HIV Transmission: A Case Study on the Effectiveness of ARV Therapy in Pregnant Women

Eka Ayu Lelyani Subandi[1], Mariyani[2]
[1,2]Health Science Institute of Abdi Nusantara, Indonesia

Keywords:
ARV Adherence, Family Support, HIV Prevention, Mother-To-Child Transmission, Pregnant women.

Correspondence to
Eka Ayu Lelyani Subandi, Health Science Institute of Abdi Nusantara, Jakarta, Indonesia.
e-mail:
eka.ayulelyani@gmail.com

Received 21 02 2024
Accepted 20 06 2024
Published Online First 29 06 2024

Abstract
This study examines the role of family members' knowledge, behavior, and social support in enhancing the effectiveness of antiretroviral (ARV) treatment to prevent mother-to-child HIV transmission at RSUD Ciawi, Bogor. Using a qualitative descriptive approach, data were gathered from December 2023 to January 2024 through in-depth interviews with 11 HIV-positive pregnant women and 11 family members. Findings revealed that most informants adhered well to ARV regimens, with family support, especially from spouses, being crucial. Participants displayed a strong understanding of HIV prevention, favoring cesarean deliveries and formula feeding to reduce transmission risks. However, some emotional challenges, such as stress, fatigue, and economic factors, impeded adherence. The study highlights the necessity of incorporating comprehensive family support into PMTCT programs, addressing medical and emotional needs to improve health outcomes. Despite its insightful findings, the research is limited by its small, localized sample size and the subjective nature of self-reported data. Future studies should investigate the long-term impacts of family support on ARV adherence and mother-to-child transmission rates and develop targeted family education programs to support HIV-positive pregnant women better. The implications for public health practice and policy include the need for a holistic approach to HIV care, integrating family education and support to optimize ARV therapy effectiveness and reduce infant HIV infections.

To cite: Subandi, E. A. L., & Mariyani. (2024). Family support in preventing mother-to-child HIV transmission: A case study on the effectiveness of ARV therapy in pregnant women. *Golden Age: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini, 9*(2), 211-224. *https://doi.org/10.14421/jga.2024.92-03*

Introduction

The prevention of HIV transmission from pregnant women to their infants remains a critical global health challenge. Despite significant advancements in antiretroviral (ARV) therapy, which have greatly reduced mother-to-child transmission rates, the prevalence of HIV among pregnant women worldwide is alarmingly high, with over 39 million living with HIV, of which 29.8 million are on ARV therapy (UNAIDS, 2023). This issue is particularly pronounced in developing countries where healthcare systems are often overwhelmed and resources are limited (Chilaka & Konje, 2021; Hussen et al., 2022). Consequently, the effective implementation of ARV treatment protocols and the support systems required to ensure adherence is paramount in these regions (Tambunan et al., 2020; Hakawi & Mokhbat, 2022). Addressing this issue is vital not only for the health of the infants but also for the overall well-being and social stability of communities affected by HIV/AIDS.

In the field of public health, understanding the multifaceted role of family support in the management and prevention of HIV/AIDS has become increasingly critical. The support provided by family members can significantly influence the health outcomes of individuals living with HIV, particularly in the context of adhering to ARV therapy (Larki & Roudsari, 2020; Zakiei et al., 2022). Family dynamics, including the provision of emotional support and the facilitation of access to healthcare services, have been shown to impact individuals' willingness to undergo HIV testing and adhere to treatment regimens (Serovich et al., 2020; Suardana et al.,

2020). Moreover, the stigma and misinformation surrounding HIV/AIDS within families can hinder these supportive efforts, thereby exacerbating the challenges faced by those living with the virus (Fauk, Ward et al., 2021; Puspitasari et al., 2020).

Despite the availability of effective ARV therapies, ensuring consistent adherence among pregnant women remains a significant challenge, partly due to socio-cultural and family-related factors (Auriti et al., 2021; Liblik et al., 2022). Misunderstandings about HIV transmission modes and pervasive stigma within communities and families contribute to non-adherence and poor health outcomes (Hakawi & Mokhbat, 2022; Suardana et al., 2020). In Indonesia, where HIV cases among women have recently surged, there is an urgent need to understand and address these barriers to improve maternal and infant health outcomes (Maria et al., 2024; Waine et al., 2023; Wardhani et al., 2023). Strengthening family support systems and enhancing public knowledge about HIV/AIDS are essential steps in mitigating these challenges.

Previous research has highlighted the crucial role of family support in ensuring adherence to ARV therapy and improving health outcomes for individuals living with HIV (Mpinganjira et al., 2020; Fauk et al., 2021). Studies have shown that family support can enhance self-efficacy and facilitate better management of HIV by encouraging consistent medication intake and regular medical appointments (Mi et al., 2020; Nabunya et al., 2020). Additionally, the positive impact of family cohesion and effective communication on ART adherence has been well-documented (Fauk et al., 2021). These findings underscore the importance of involving family members in the care process to support HIV-positive individuals, particularly pregnant women who face additional challenges.

The stigma associated with HIV/AIDS remains a pervasive issue that negatively impacts individuals' willingness to disclose their HIV status and seek necessary treatment (Serovich et al., 2020; Suardana et al., 2020). Studies have demonstrated that stigma and discrimination can lead to social isolation and reduced access to healthcare services (Puspitasari et al., 2020; Fauk, Ward, et al., 2021). Furthermore, educational interventions targeting families and communities have been shown to reduce stigma and improve acceptance of people living with HIV (Auriti et al., 2021; Liblik et al., 2022). By improving public understanding of HIV transmission and the benefits of ARV therapy, these interventions can foster a more supportive environment for individuals living with HIV.

Adherence to ARV therapy is influenced by multiple factors, including the individual's relationship with their healthcare providers, health literacy level, and social support availability (Mi et al., 2020; Nabunya et al., 2020). Research has shown that effective communication between patients and healthcare providers can enhance treatment adherence by addressing patients' concerns and misconceptions about HIV/AIDS and its treatment (Mpinganjira et al., 2020; Fauk et al., 2021). Moreover, social support from family and peers can provide the necessary emotional and practical assistance to ensure that individuals adhere to their treatment regimens (Mi et al., 2020). These findings highlight the multifaceted nature of ARV adherence and the need for comprehensive support systems.

Despite the extensive research on ARV adherence and family support, there is a lack of focused studies on the specific experiences of pregnant women with HIV, particularly in the context of developing countries like Indonesia. Previous studies have either broadly addressed the general population of people living with HIV or focused on other demographics, such as adolescents or men who have sex with men (Fauk et al., 2021; Mi et al., 2020; Nabunya et al., 2020). Additionally, there is limited research on the impact of specific family dynamics and cultural factors on ARV adherence among pregnant women. This gap in the literature underscores the need for targeted research that explores this vulnerable group's unique challenges and support needs.

This study aims to analyze the influence of family members' knowledge, behavior, and social support on the effectiveness of ARV treatment in preventing mother-to-child HIV transmission at RSUD Ciawi, Bogor. By examining these factors, the research seeks to provide a nuanced understanding of the role of family support in ARV adherence among pregnant

women. The findings are expected to contribute to the development of targeted interventions that enhance family support systems and improve ARV adherence, ultimately reducing the incidence of HIV transmission to infants. This study will also offer valuable insights into the socio-cultural dynamics that affect health behaviors, informing public health strategies aimed at combating HIV/AIDS in similar contexts.

Methods

This research employs a qualitative design with a descriptive approach to deeply explore family factors in the prevention of HIV in infants through the use of ARV drugs in pregnant women at RSUD Ciawi, Bogor. The study was conducted from December 2023 to January 2024, with research subjects including 11 pregnant women infected with HIV/AIDS and 11 family members of HIV patients. The primary data collection technique was in-depth interviews with interview guides and voice recording devices. Additionally, observation questions were used in direct observations of adherence behavior in individuals living with HIV/AIDS (ODHA). Informants were selected through purposive sampling based on relevance, adequacy, availability of time, and active participation criteria. The number of informants was determined based on the principles of adequacy and relevance, with data collection continuing until no new information was found.

Data analysis was carried out through content analysis, encompassing the stages of preparation, organization, and presentation (Agaton & Cueto, 2021; Pollock et al., 2023). The unit of analysis was defined according to the research questions, and the organization process included coding, categorization, and abstraction (Locke et al., 2022; Rädiker & Kuckartz, 2020). Data were integrated into previously identified analytical categories. Ethical aspects of the research were upheld, with principles of autonomy, benefit, and justice being the main focus. Informed consent was obtained from all participants, who were informed about the research process, objectives, benefits, duration, type of data collected, and researcher contact information. The potential risks were also explained, and participants were allowed to express their discomfort before consenting. The collected data were used exclusively for research purposes and were not shared with third parties.

Result

3.1. Profile Overview of HIV Patient Informants and Their Family Group

In-depth interviews were conducted with five main informants who are HIV patients at RSUD Ciawi. These interviews aimed to gather comprehensive insights into their personal experiences, backgrounds, and the impact of their condition on their daily lives. Each informant provided detailed information on their age, educational background, occupation, and marital status, offering a diverse perspective on the challenges faced by individuals living with HIV. Below is a table summarizing the characteristics of these main informants.

Table 1. Characteristics of HIV Patient Informants

No.	Initials	Age (Years)	Last Education	Occupation	Marital Status
1.	P	35	Elementary School	Housewife	Married
2.	O	31	Junior High School	Housewife	Married
3.	R	32	Junior High School	Housewife	Married
4.	B	29	Elementary School	Housewife	Married
5.	D	30	Junior High School	Housewife	Married
6.	S	31	Junior High School	Housewife	Married
7.	M	39	High School	Housewife	Married
8.	C	37	High School	Private Employee	Widow
9.	T	35	High School	Housewife	Married
10.	L	28	High School	Housewife	Married
11.	K	34	Junior High School	Housewife	Married

Table 1 presents the characteristics of 11 women with HIV-positive status who are pregnant and undergoing treatment at RSUD Ciawi, Bogor. The informants have an age range

of 28 to 39 years and varying educational backgrounds, namely elementary school, junior high school, and high school. The majority, ten informants, work as housewives, while one works as a private employee. Most of them are married, except for one widow.

Table 2. Characteristics of Family Group Informants

No.	Initials	Age (Years)	Last Education	Gender	Relationship with Patient	Occupation	Marital Status
1.	D	35	High School	Male	Husband	Private Employee	Married
2.	L	38	High School	Male	Husband	Private Employee	Married
3.	S	30	High School	Male	Husband	Private Employee	Married
4.	M	29	High School	Male	Husband	Private Employee	Married
5.	B	40	High School	Male	Husband	Private Employee	Married
6.	R	37	High School	Male	Husband	Private Employee	Married
7.	T	42	High School	Male	Husband	Private Employee	Married
8.	L	73	Elementary School	Female	Mother	Housewife	Married
9.	P	35	High School	Male	Husband	Entrepreneur	Married
10.	U	35	High School	Male	Husband	Entrepreneur	Married
11.	K	40	Junior High School	Male	Husband	Entrepreneur	Married

Table 2 describes the characteristics of family group informants, consisting of husbands and biological mothers of pregnant women with HIV. Most informants are husbands of the patients, aged between 29 and 42 years, except for one biological mother, aged 73 years. Their educational levels are generally high school, except for one with middle and primary school education. Most male informants are private employees, with some being entrepreneurs. The female informant is a housewife. All informants in this group are married. These characteristics provide an overview of the family background supporting pregnant women with HIV in this study.

3.2. Description of ARV Medication Adherence

In-depth interviews with 11 key informants revealed that the majority, nine people, consistently take ARV medication regularly. However, two individuals have stopped treatment due to fatigue. Despite their desire to stop, some informants acknowledge difficulties in adhering to a strict treatment schedule, as expressed by Informant 1, "*Maybe I have forgotten to take it once, like when it is already past the time*."

A strong commitment to preventing HIV transmission to the unborn infant motivates some informants, as stated by Informant 3, "*There is no desire to stop at all because I want the infant I give birth not to be infected with HIV like me, but if I forget, it does not happen often*." This shows an excellent awareness and desire from the informants to protect their children from HIV despite challenges in medication consistency.

Informant 4 expresses feelings of boredom with the daily routine of taking ARV medication, "*Of course, there is boredom because I am fed up with having to take this medication every day for 3 hours.*" However, the support of a husband who always advises and motivates and the use of an alarm as a reminder help the informant to remain compliant and never forget to take her medication.

Family support, especially from partners, is also an important factor in helping HIV patients undergo treatment regularly and consistently, as expressed by Informant 2, "*Boredom*

always comes every day, and sometimes I want to stop, but my husband always strengthens me, always accompanies me to take medication, and always prepares it, so I never forget."

Informant 7 states that they have never stopped taking ARV medication or thought about stopping because they realize the importance of the medicines for their health, "No, I have never stopped taking medication or thought about stopping because I must, otherwise if I do not take it, I will get sicker. For forgetting, sometimes, but I immediately hurry to take it."

Informant 6 expresses a desire to stop taking ARV medication because of feeling tired. Still, she remains committed to taking it without forgetting, "*I want to stop because it is tiring, but so far, I keep taking it and never forget.*"

The concern for health and the inability to take care of the family motivate Informant 11 to adhere to ARV treatment, "*There is no desire to stop because I am afraid if I stop, I will easily get sick, be hospitalized, and I will not be able to take care of my child and my husband, so I have to be healthy and take medication on time.*"

The bitter experience of Informant 5, who once stopped taking medication, which resulted in the transmission of HIV to her first child, is a strong motivation for the informant to ensure treatment adherence to protect her second child from a similar risk, "*I once stopped taking medication because I was tired, but I regretted it because my child got infected, so now I have to be diligent so that my second child does not get infected by me.*"

The emotional experiences of Informant 8, such as sadness, despair, and stress, can affect adherence to ARV treatment, "*I was told that I was infected with HIV because of my husband. Initially, I felt sad, but I adhered to the treatment given. However, when my husband died while I was pregnant, I felt hopeless and stressed because there was no one to encourage me. As a result, I decided to stop taking the medication. However, now I deeply regret that decision because it caused my child also to be infected with HIV.*"

In-depth interviews with 11 key informants revealed that while the majority, nine people, consistently take ARV medication regularly, two have stopped treatment due to fatigue. The desire to protect their unborn infants from HIV strongly motivates some informants to adhere to their treatment schedules despite challenges. Support from partners and family plays a crucial role in maintaining treatment consistency. However, feelings of boredom and emotional distress, such as sadness and despair, can negatively impact adherence. Experiences of regret and the recognition of the health benefits of ARV medication also drive informants to stay committed to their treatment.

The use of antiretroviral therapy (ARV) has become a crucial step in the management of HIV. One of the indicators of the success of this therapy is the measurement of the patients' CD4 count, which reflects the condition of their immune system. Below is a table showing the initial year of ARV treatment and the last CD4 count of HIV patients:

Table 3. Initial Year of ARV Treatment and CD4

No	Initial	Age (Years)	Initial Year of ARV Medication	Initial CD4	Last CD4	Notes
1.	P	35	2016	381	668	He always takes medication but sometimes forgets
2.	O	31	2014	200	645	Always takes medication and is on time
3.	R	32	2017	225	527	He always takes medication but sometimes forgets
4.	B	29	2015	315	610	He always takes medication but sometimes forgets
5.	D	30	2018	114	534	Stopped medication and then resumed
6.	S	31	2013	225	615	Always takes medication and is on time
7.	M	39	2007	210	555	Sometimes takes the medication late

doi: *https://doi.org/10.14421/jga.2024.92-03*

No	Initial	Age (Years)	Initial Year of ARV Medication	Initial CD4	Last CD4	Notes
8.	C	37	2010	125	525	Stopped medication and then resumed
9.	T	35	2012	189	545	Always takes medication and is on time
10.	L	28	2018	200	590	Always takes medication and is on time
11.	K	34	2016	310	670	Always takes medication and is on time

Note: CD4 is a type of protein found on the surface of some immune cells, such as helper T cells. It regulates the immune system and is a primary target of HIV infection.

The data from the table indicates that the year of initiation of ARV treatment and the patient's adherence to medication significantly affect their final CD4 levels. Patients who always take their medication on time, such as patients O, S, T, L, and K, show a significant increase in CD4 levels from their initial levels, reflecting the effectiveness of ARV treatment in boosting the immune system. Conversely, patients who sometimes forget to take their medication or take it late, such as patients P, R, B, and M, although they also show an increase in CD4 levels, tend to have slightly lower final levels than those who are consistently adherent. Patients who stopped treatment and then resumed, like patients D and C, also show an increase in CD4 levels, but interruptions might hinder their recovery in medication adherence.

3.3. Understanding of Patients Regarding Prevention and Transmission of HIV from Mother to Infant

To investigate the impact of HIV knowledge on treatment, researchers asked questions to understand the informants' comprehension of the prevention of HIV transmission from mother to infant. This understanding was categorized in several ways, including delivering by cesarean section, the rules and efficacy of ARV medication, and not breastfeeding. Most informants demonstrated a high awareness of the importance of preventing HIV transmission through safe childbirth methods and appropriate medication. They understood that these measures are crucial in reducing the risk of HIV transmission to their babies and showed a willingness to follow medical advice to ensure their children's safety.

3.3.1. Cesarean Section Safer in Preventing Mother-to-Infant Transmission

All informants expressed an understanding that childbirth should be done by cesarean section to prevent HIV transmission to the infant during delivery. Informant 1 stated, "*When I had my first child, I gave birth normally, and I was really scared that my child would be infected with HIV, but thankfully not, so for my second child, I will have a cesarean section (CS) just to be safe*." This shows anxiety related to the risk of HIV transmission to her child, thus choosing to give birth by cesarean section to reduce that risk.

Informant 3 expressed, "*I was already informed since the pregnancy of my first child to have a cesarean section for safety,*" indicating that the respondent had been given information since her first pregnancy that the cesarean section procedure is recommended to ensure safety. Similarly, Informant 4 stated, "*Just like before, I had a CS, so naturally, I want a CS again,*" showing her desire to give birth through a cesarean section again, as her previous childbirth experience was also done in the same way.

Informant 2 explained, "*Take the safe option, which is surgery because my first child was normal and got infected with HIV, so the doctor and midwife informed me from the beginning of my second pregnancy.*" This decision was taken as a preventive measure to avoid HIV transmission to her second child. Meanwhile, Informant 5 stated, "*Even though I am a bit scared, for the sake of my child not getting HIV, it is better to have surgery. I do not want to repeat the*

past when I was stubborn about wanting to give birth normally," showing awareness and concern for the health and safety of her child.

Informant 8 stated her compliance with the medical advice given by the doctor, "*The doctor indeed told me from the start to have a cesarean, so I just followed their advice.*" This shows trust and obedience to medical authority in decision-making related to the birthing process. However, Informant 7 showed distrust or unwillingness to follow the medical advice from the doctor to undergo a cesarean section (CS) as the method of childbirth, "*Do not want to take the risk, follow the doctor's advice for CS.*"

Informant 6's preference for cesarean section (CS) as the method of childbirth shows awareness of the risk of HIV transmission from mother to child during normal delivery, "*CS to be safe for my child.*" In this context, the decision to give birth through a cesarean section (CS) was agreed upon by the informant and her husband after receiving a recommendation from the doctor, "*The doctor told me to have a CS at that time, so my husband and I agreed.*"

Informants 10 and 11 also showed a good understanding of the importance of cesarean section in preventing HIV transmission to the infant, "*CS because it can prevent HIV transmission to the infant*" (Informant 10) and "*Cesarean so that my HIV does not transmit to the infant*" (Informant 11). This shows a high awareness of the importance of preventing HIV transmission from mother to infant through the appropriate choice of childbirth method.

3.3.2. Efficacy of ARV

In this study, it was found that the informants have a positive perception of the benefits of using Antiretroviral (ARV) medication in preventing HIV transmission from mother to infant. Informant 1 emphasized, "*The benefit of ARV, in my opinion, is to suppress the HIV, especially since I am pregnant, so it does not transmit to my infant.*" This aligns with Informant 3's statement that ARV functions to "*suppress the HIV for myself and my child, and for me, it reduces pain."*

Moreover, Informant 4 and Informant 2 highlighted the importance of ARV in boosting the immune system, "*ARV is for reducing the HIV and increasing our immune system against the HIV*" (Informant 4) and "*So that our immune system becomes better and the infant also does not get infected with HIV*" (Informant 2). This common view indicates that the informants understand that ARV reduces the spread of the virus and improves their overall health.

Furthermore, Informant 5 and Informant 8 expressed their hopes for ARV in protecting their infants from HIV and prolonging life, "*First and foremost, so that my infant does not get infected with HIV, and for me, so that I can live healthily with a good immune system*" (Informant 5) and "*So that my immune system is healthy and prolongs the life of my child as well*" (Informant 8). This shows that the informants are focused on their health and the well-being of their children.

Informant 7 and Informant 6 emphasized reducing HIV transmission to their children, "*Reducing HIV transmission to my child*" (Informant 7) and "*To inhibit the increase of HIV in my body so it does not transmit to the infant*" (Informant 6). This opinion aligns with the primary purpose of using ARV in pregnant women infected with HIV, which is to prevent vertical HIV transmission to the infant.

Lastly, Informant 9, Informant 10, and Informant 11 expressed their hopes for their children to be free from HIV and for better health, "*The most important thing right now is for my child not to get HIV and for me, so that I do not get sick easily*" (Informant 9), "*To prolong my life and the doctor said, my child is not infected with HIV*" (Informant 10), and "*So that my child does not get HIV*" (Informant 11). This indicates that the desire to protect their children from HIV is the main motivation for the informants to consume ARV.

The informants in this study have a positive perception of the benefits of using Antiretroviral (ARV) medication in preventing HIV transmission from mother to infant. They stated that ARV helps suppress HIV, boosts the immune system, reduces pain, and protects their babies from HIV infection. They also hope ARV can prolong their lives and ensure their children's health. This view reflects the informants' understanding that ARV helps reduce the spread of the

virus and improves overall health. The strong desire to protect their children from HIV is the main motivation for the informants to consume ARV.

3.3.3. Medication Schedule

The following section provides a comprehensive overview of the various types of medication administered to patients and the specific times they begin their intake. Understanding the medication schedule is crucial for ensuring adherence and maximizing the effectiveness of treatment. This table is designed to offer clear insights into the different Antiretroviral (ARV) medications prescribed for HIV patients, detailing the start times for each medication type. By closely monitoring and adhering to these schedules, patients can maintain optimal health outcomes and effectively manage their condition. The table below encapsulates this essential information for easy reference.

Table 4. Types of ARV Medication and Time of Intake for HIV Patients

No.	Initial	Age (Years)	Type of Medication Consumed	Time Medication is Taken
1.	P	35	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
2.	O	31	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
3.	R	32	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
4.	B	29	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
5.	D	30	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
6.	S	31	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
7.	M	39	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
8.	C	37	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
9.	T	35	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
10.	L	28	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00
11.	K	34	Fixed-dose combination tablet: Tenofovir (TDF), Lamivudine (3TC), and Efavirenz (EFV)	21:00

In this study, informants reported receiving information about the rules for taking ARV medication doses from healthcare services. They emphasized the importance of taking the medication daily at 21:00, before bedtime, to adhere to the established schedule. Informant 1 explained, "*I take it before sleeping because it causes nausea*." This is supported by Informant 3, who stated, "*I was told to take it around bedtime because after taking the medication, I go straight to sleep*." This explanation indicates that the timing of medication intake is adjusted to reduce side effects such as nausea and dizziness, as expressed by Informant 4, "*Maybe because it causes nausea and dizziness, so it is taken at 9 PM before sleeping.*"

Uniformity in the timing of medication intake is also seen in the statement of Informant 2, "*I take it at 9 PM*," and Informant 5, who added, "*An hour before bedtime, I prepare to take this ARV medication.*" Informants 8 and 10 affirm that this rule comes from the doctor's instructions, "*Because it is one type, the doctor told me to take it at 9 PM*," and "*The rule from the doctor is to take it at 9 PM*." The experience of Informant 7 reinforces the clarity of these instructions, "*The doctor said to take it at night before sleeping,*" and Informants 6 and 9, who are consistent with their routine, "*Always take it at 9 PM,*" and "*Healthcare workers told me to take it at 9 PM*." Lastly, Informant 11 concludes by saying, "*I take it around bedtime at 9 PM*." All these quotes indicate

the importance of adhering to the prescribed medication schedule to optimize the effectiveness of ARV treatment and reduce the impact of side effects on patient well-being.

3.3.4. Not Breastfeeding the Infant to Prevent HIV Transmission to the Infant

As part of the prevention of HIV transmission from mother to child, informants in this study stated their decision not to breastfeed their infants. Instead, they gave formula milk based on the medical advice they received. Informant 1 explained, "*For my first child, I used formula milk so that my child would not be infected with HIV.*" This is supported by Informant 3, who said, "From the beginning, the doctor told me not to breastfeed." Informant 4 added, "J*ust formula milk is fine so that my child does not get infected with HIV,*" indicating awareness of the risk of HIV transmission through breastfeeding.

Informant 2 expressed a desire to breastfeed but acknowledged the risk of transmission: "*I wanted to breastfeed, but since breastfeeding can transmit HIV, I gave formula milk.*" Informants 5 and 7 also expressed similar concerns, with Informant 5 saying, "*I am afraid if I use breastfeeding, we both agreed to give formula milk like before.*" Informant 7 added, "*Because I am afraid my child will test positive, I chose formula milk instead.*"

Although aware of the benefits of breastfeeding, Informants 6 and 9 decided to give their children formula milk. Informant 6 revealed, "*It is okay not to be able to breastfeed for the sake of my child's well-being.*" Informant 9 affirmed, "*Even though breastfeeding has many benefits, I still give formula milk.*"

Informants 10 and 11 also stated their decision to give formula milk based on the advice received, with Informant 10 saying, "*I was advised that the best thing to give is formula milk,*" and Informant 11 emphasizing, "*To ensure my child does not get HIV, I give formula milk.*"

However, Informant 8 revealed a different situation, where financial conditions influenced her choice: "*It should be formula milk, but my financial condition is not good, so I give breastfeeding.*" This indicates that although there is awareness of the risk of HIV transmission, economic factors also play a role in the decision to breastfeed or give formula milk.

Overall, the quotes from the informants indicate that the decision not to breastfeed and to choose formula milk is a preventive measure taken by pregnant women with HIV to reduce the risk of HIV transmission to their infants. This decision is based on medical advice and awareness of the associated risks, although economic factors can also influence their choice.

3.4. Family Support for Adherence to ARV Medication

Family support, especially from husbands, is an essential aspect in ensuring adherence to ARV therapy in pregnant women with HIV. Informant D emphasized the importance of accompaniment in the treatment process, stating, "*Every day when I need to take my medication, I always prepare it together, and whenever I need to go for a check-up, I try my best to be accompanied.*" This shows that the husband's presence reminds him to take medication and accompany medical check-ups. Informant L revealed simpler yet effective support, "*5 minutes before, I always remind her not to forget to take her vitamin,*" indicating that small reminders can significantly impact therapy adherence.

Informants S and M highlighted the importance of communication in providing support, even when separated by distance or work commitments, "*When I am at home, I prepare it, and if I am at work, I remind her through WhatsApp or during a call*" (Informant S) and "*Sometimes I forget when I am busy, but I try my best to remind her to take it together, and yes, I always accompany her for check-ups*" (Informant M). This shows that support is not limited to physical presence but also through digital interaction.

Informants B and R described a more technological approach to providing support, "*I always remind her to take her ARV; that is how I support her*" (Informant B) and "*Sometimes when I am still at work, I make time for a video call and accompany her to take her medication*" (Informant R). The use of technology, such as video calls and setting alarms on phones, as expressed by Informant T, "*I set the alarm on my phone so I can remind my wife to take her medication,*" shows adaptation to the couple's needs in the digital era.

Informants L and P highlighted the importance of reminders and motivation, "*I usually call her when it is time to take her medication, but sometimes I forget, so I ask her to set the alarm*" (Informant L) and "*Since I am always at home, I am the one who always prepares it, and I always persuade her if she is feeling lazy*" (Informant P). This shows that family support also involves understanding and motivation to overcome reluctance to take medication.

Lastly, Informants U and K emphasized the importance of direct involvement in the treatment process, "*Preparing the medication, accompanying her to take it, and taking her to the hospital are forms of my support for her*" (Informant U) and "*If it is already 9 o'clock, I quickly remind my wife to take her ARV medication*" (Informant K). This indicates that family support is not only limited to verbal reminders but also actual actions in preparing medication and accompanying to the hospital.

From the interviews above, it is evident that family support, especially from husbands, plays a crucial role in ensuring adherence to ARV therapy in pregnant women with HIV. This support can take the form of verbal reminders, physical accompaniment, the use of technology, and motivation and direct involvement in the treatment process.

Discussion

The research aimed to analyze the influence of family members' knowledge, behavior, and social support on the effectiveness of ARV treatment in preventing mother-to-child HIV transmission at RSUD Ciawi, Bogor. Previous studies have consistently highlighted the critical role of family support in managing HIV, particularly in enhancing adherence to antiretroviral therapy (ART) (Abdulai et al., 2022; Angelo & Alemayehu, 2021). The involvement of family members, especially partners, has been shown to significantly improve health outcomes and treatment adherence in individuals living with HIV (Jopling et al., 2020). This study sought to extend this understanding by specifically focusing on pregnant women and the role of family factors in preventing infant HIV transmission.

The study found that the majority of HIV-positive pregnant women at RSUD Ciawi adhered to their ARV medication regimen, motivated by the desire to prevent HIV transmission to their infants. Interestingly, the adherence was bolstered by strong familial support, particularly from spouses, who provided reminders, emotional backing, and assistance in managing medication schedules. Despite the rigorous demands of the ARV regimen, most women maintained high adherence levels, although some reported emotional challenges and occasional lapses due to medication fatigue. The study also revealed a comprehensive understanding among the women about the importance of ARV therapy, cesarean delivery, and formula feeding in preventing HIV transmission to their infants.

These results align with previous findings that emphasize the importance of family support in ARV adherence and PMTCT (Mabasa et al., 2023; Reis et al., 2020; Rios et al., 2021). The role of spouses in reminding and supporting the patients mirrors findings from Abdulai et al. (2022) and Angelo and Alemayehu (2021), who reported similar patterns of family involvement enhancing treatment adherence. However, this study uniquely highlights pregnant women's specific emotional experiences and motivations, which were less prominently discussed in earlier studies. Additionally, the understanding and adherence to medical advice regarding cesarean delivery and formula feeding corroborate previous research on effective PMTCT strategies (Fassinou et al., 2024; Trindade et al., 2021; UNICEF, 2019).

The study's findings also contrast with previous research identifying barriers to ARV adherence, such as stigma and lack of support (Fauk et al., 2021; Mi et al., 2020; Nabunya et al., 2020). Unlike these studies, which highlighted negative aspects like stigma and discrimination as significant barriers, this study focuses on the positive impact of familial support. The emphasis on partners' involvement and the high adherence rates provide a new perspective that underscores the potential of family-centric interventions. This difference highlights the variability in the experiences of individuals living with HIV, suggesting that while stigma is a barrier for some, strong family support can be a powerful facilitator of adherence.

The high adherence rates observed can be attributed to the intrinsic motivation of pregnant women to protect their unborn children, coupled with substantial family support. This dual motivation aligns with the health belief model, which posits that perceived benefits and social support significantly influence health behaviors (Mabasa et al., 2023). However, considering the study's context-specific nature, these findings should be cautiously interpreted. The unique socio-economic and cultural dynamics at RSUD Ciawi, Bogor, may not represent broader populations. Future studies should consider diverse settings to validate these results and explore varying dynamics in family support and ARV adherence.

The positive perceptions of ARV efficacy and the informed decisions regarding cesarean delivery and formula feeding indicate effective health education and counseling at the healthcare facility. This underscores the importance of healthcare providers in disseminating critical information and supporting informed decision-making (Reis et al., 2020). The emotional experiences and motivations reported by the informants highlight the psychosocial aspects of HIV management, suggesting that emotional and psychological support is crucial in enhancing adherence. Nonetheless, the reliance on self-reported data may introduce bias, and further quantitative research is needed to measure these factors' impact accurately.

These findings have significant implications for public health practice and HIV/AIDS policy. They highlight the necessity of incorporating family support components into PMTCT programs, ensuring that family members, especially partners, are actively involved in the treatment process. This approach could enhance adherence rates and improve health outcomes for both mothers and infants. Additionally, the results advocate for comprehensive support systems that address not only medical but also emotional and psychological needs, reinforcing the need for a holistic approach to HIV care. Future interventions should focus on enhancing family education and support to optimize the effectiveness of ARV therapy and prevent mother-to-child HIV transmission.

Conclusion

This study aimed to analyze the influence of family members' knowledge, behavior, and social support on the effectiveness of antiretroviral (ARV) treatment in preventing mother-to-child transmission (PMTCT) of HIV at RSUD Ciawi, Bogor. Our findings reveal that the majority of HIV-positive informants, primarily housewives aged 28 to 39, showed high adherence to ARV medication, although some faced challenges such as emotional fatigue and stringent medication schedules. Family support, especially from spouses, was crucial in promoting regular ARV consumption. Informants demonstrated a solid understanding of HIV transmission prevention, recognizing the importance of ARV therapy and opting for cesarean deliveries and formula feeding to mitigate transmission risks. These findings highlight the necessity of incorporating family support components into PMTCT programs and advocate for holistic support systems addressing medical, emotional, and psychological needs. Despite the valuable insights, the study's small, localized sample size and reliance on self-reported data limit generalizability. Future research should explore the long-term effects of family support on ARV adherence and PMTCT outcomes, investigating tailored family education programs to enhance support for HIV-positive pregnant women.

References

Abdulai, M. A., Mevissen, F. E. F., Ruiter, R. A. C., Owusu-Agyei, S., Asante, K. P., & Bos, A. E. R. (2022). A qualitative analysis of factors influencing antiretroviral adherence among persons living with HIV in Ghana. Journal of Community and Applied Social Psychology, 32(1), 135–150. https://doi.org/10.1002/casp.2551

Agaton, C. B., & Cueto, L. J. (2021). Learning at home: Parents' lived experiences on distance learning during COVID-19 pandemic in the Philippines. International Journal of Evaluation and Research in Education, 10(3), 901–911. https://doi.org/10.11591/ijere.v10i3.21136

Angelo, A. T., & Alemayehu, D. S. (2021). Adherence and its associated factors among adult hiv-

infected patients on antiretroviral therapy in South Western Ethiopia, 2020. Patient Preference and Adherence, 15(1), 299–308. https://doi.org/10.2147/PPA.S298594

Auriti, C., De Rose, D. U., Santisi, A., Martini, L., Piersigilli, F., Bersani, I., Ronchetti, M. P., & Caforio, L. (2021). Pregnancy and viral infections: Mechanisms of fetal damage, diagnosis and prevention of neonatal adverse outcomes from cytomegalovirus to SARS-CoV-2 and Zika virus. Biochimica et Biophysica Acta - Molecular Basis of Disease, 1(1), 166198. https://doi.org/10.1016/j.bbadis.2021.166198

Chilaka, V. N., & Konje, J. C. (2021). HIV in pregnancy – An update. European Journal of Obstetrics and Gynecology and Reproductive Biology, 256(1), 484–491. https://doi.org/10.1016/j.ejogrb.2020.11.034

Fassinou, L. C., Songwa Nkeunang, D., Delvaux, T., Nagot, N., & Kirakoya-Samadoulougou, F. (2024). Adherence to option B + antiretroviral therapy and associated factors in pregnant and breastfeeding women in Sub-Saharan Africa: a systematic review and meta-analysis. BMC Public Health, 24(1), 1–22. https://doi.org/10.1186/s12889-023-17004-9

Fauk, N. K., Hawke, K., Mwanri, L., & Ward, P. R. (2021). Stigma and discrimination towards people living with hiv in the context of families, communities, and healthcare settings: A qualitative study in indonesia. International Journal of Environmental Research and Public Health, 18(10). https://doi.org/10.3390/ijerph18105424

Fauk, N. K., Ward, P. R., Hawke, K., & Mwanri, L. (2021). HIV Stigma and Discrimination: Perspectives and Personal Experiences of Healthcare Providers in Yogyakarta and Belu, Indonesia. Frontiers in Medicine, 8(1), 1–11. https://doi.org/10.3389/fmed.2021.625787

Hakawi, A., & Mokhbat, J. (2022). The current challenges affecting the quality of care of HIV/AIDS in the Middle East: Perspectives from local experts and future directions. Journal of Infection and Public Health, 15(12), 1508–1513. https://doi.org/10.1016/j.jiph.2022.10.021

Hussen, R., Zenebe, W. A., Mamo, T. T., & Shaka, M. F. (2022). Determinants of HIV infection among children born from mothers on prevention of mother to child transmission programme of HIV in southern Ethiopia: A case-control study. BMJ Open, 12(2), 1–10. https://doi.org/10.1136/bmjopen-2020-048491

Jopling, R., Nyamayaro, P., Andersen, L. S., Kagee, A., Haberer, J. E., & Abas, M. A. (2020). A Cascade of Interventions to Promote Adherence to Antiretroviral Therapy in African Countries. Current HIV/AIDS Reports, 17(5), 529–546. https://doi.org/10.1007/s11904-020-00511-4

Larki, M., & Roudsari, R. L. (2020). Home-based care, the missing link in caring of patients living with HIV/AIDS and their family members: A narrative review. International Journal of Community Based Nursing and Midwifery, 8(3), 190–208. https://doi.org/10.30476/ijcbnm.2020.82771.1085

Liblik, K., Byun, J., Saldarriaga, C., Mendoza, I., & Baranchuk, A. (2022). HIV & Heart. In The NET-Heart Book: Neglected Tropical Diseases and other Infectious Diseases affecting the Heart (pp. 125–136). Academic Press. https://doi.org/10.1016/B978-0-323-91122-1.00012-X

Locke, K., Feldman, M., & Golden-Biddle, K. (2022). Coding Practices and Iterativity: Beyond Templates for Analyzing Qualitative Data. Organizational Research Methods, 25(2), 262–284. https://doi.org/10.1177/1094428120948600

Mabasa, R. A., Madiba, S., & Mothiba, T. M. (2023). Structural, Familial, and Psychosocial Factors Affecting Long-Term Antiretroviral Treatment Adherence amongst Adolescents Living with Perinatally Acquired HIV in Limpopo, South Africa. International Journal of Environmental Research and Public Health, 20(22), 1–12. https://doi.org/10.3390/ijerph20227074

Maria, W., Hutomo, P., Pramukti, I., & Sari, S. P. (2024). Relationship Between Age, Gender, and Marital Status with The Intention to Disclose HIV Status Among PLHIV. Poltekita: Jurnal Ilmu Kesehatan, 17(4), 1166–1172. https://www.poltekkespalu.ac.id/jurnal/index.php/JIK/article/view/3524/1043

Mi, T., Li, X., Zhou, G., Qiao, S., Shen, Z., & Zhou, Y. (2020). HIV Disclosure to Family Members and Medication Adherence: Role of Social Support and Self-efficacy. AIDS and Behavior, 24(1),

45–54. https://doi.org/10.1007/s10461-019-02456-1
Mpinganjira, S., Tchereni, T., Gunda, A., & Mwapasa, V. (2020). Factors associated with loss-to-follow-up of HIV-positive mothers and their infants enrolled in HIV care clinic: A qualitative study. BMC Public Health, 20(1), 1–10. https://doi.org/10.1186/s12889-020-8373-x
Nabunya, P., Bahar, O. S., Chen, B., Dvalishvili, D., Damulira, C., & Ssewamala, F. M. (2020). The role of family factors in antiretroviral therapy (ART) adherence self-efficacy among HIV-infected adolescents in southern Uganda. BMC Public Health, 20(1), 1–9. https://doi.org/10.1186/s12889-020-8361-1
Pollock, D., Peters, M. D. J., Khalil, H., McInerney, P., Alexander, L., Tricco, A. C., Evans, C., de Moraes, É. B., Godfrey, C. M., Pieper, D., Saran, A., Stern, C., & Munn, Z. (2023). Recommendations for the extraction, analysis, and presentation of results in scoping reviews. JBI Evidence Synthesis, 21(3), 520–532. https://doi.org/10.11124/JBIES-22-00123
Puspitasari, D., Handayani, F., Hidayah, M., Wulandari, R. D., & Laksono, A. D. (2020). Identification of inhibiting factors as a basis for formulating strategies to tackle HIV/AIDS in Tulungagung Regency, Indonesia. Indian Journal of Forensic Medicine and Toxicology, 14(4), 894–900. https://doi.org/10.37506/ijfmt.v14i4.11607
Rädiker, S., & Kuckartz, U. (2020). Focused Analysis of Qualitative Interviews With MAXQDA: Step by Step. In Maxqda Press (1st ed.). MAXDA. https://www.maxqda-press.com/wp-content/uploads/sites/4/978-3-948768072.pdf
Reis, A., Lencastre, L., Jonsson, C., & Guerra, M. P. (2020). Treatment Adherence, Meaning in Life and Affects in Quality of Life of HIV/AIDS Patients. Journal of Happiness Studies, 21(7), 2405–2417. https://doi.org/10.1007/s10902-019-00182-y
Rios, P. de los, Okoli, C., Castellanos, E., Allan, B., Young, B., Brough, G., Muchenje, M., Eremin, A., Corbelli, G. M., McBritton, M., Hardy, W. D., & Velde, N. Van de. (2021). Physical, Emotional, and Psychosocial Challenges Associated with Daily Dosing of HIV Medications and Their Impact on Indicators of Quality of Life: Findings from the Positive Perspectives Study. AIDS and Behavior, 25(3), 961–972. https://doi.org/10.1007/s10461-020-03055-1
Serovich, J. M., Laschober, T. C., Brown, M. J., Kimberly, J. A., & Lescano, C. M. (2020). Effects of a Decision-Making Intervention to Help Decide Whether to Disclose HIV-Positive Status to Family Members on Well-Being and Sexual Behavior. Archives of Sexual Behavior, 49(6), 2091–2101. https://doi.org/10.1007/s10508-020-01703-0
Suardana, I. K., Surasta, I. W., & Erawati, N. L. P. S. (2020). The effect of communication family patterns on prevention effort HIV/AIDS transmission. Enfermeria Clinica, 30(1), 113–117. https://doi.org/10.1016/j.enfcli.2020.02.003
Tambunan, M., Sarumpaet, S., & Syarifah. (2020). Factors Associated with the Use of HIV Screening in the PMTCT Program by Pregnant Women. International Archives of Medical Sciences and Public Health (IAMPH), 1(1), 1–12. https://pcijournal.org/index.php/iamsph%0AInternational
Trindade, L. de N. M., Nogueira, L. M. V., Rodrigues, I. L. A., Ferreira, A. M. R., Corrêa, G. M., & Andrade, N. C. O. (2021). HIV infection in pregnant women and its challenges for the prenatal care. Revista Brasileira de Enfermagem, 74(1), 1–7. https://doi.org/10.1590/0034-7167-2019-0784
UNAIDS. (2023). The Path that Ends AIDS: New report from UNAIDS shows that AIDS can be ended by 2030 and outlines the path to get there. https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2023/july/unaids-global-aids-update
UNICEF. (2019). Eliminate mother-to-child transmission of HIV An investment opportunity for the private sector. www.childrenandaids.org
Waine, I., Peristiowati, Y., Pinto, J., Da, O., Belo, S., & Perreira, A. G. (2023). The Risk Factors Causes Incidence of HIV/AIDS for Peoples Living with HIV/AIDS (PLWHA): A Systematic Review. American Journal of Arts and Human Science, 2(3). https://journals.e-palli.com/home/index.php/ajahs/article/view/1893

Wardhani, A. C., Haryanto, S., Fahmi, T., & Saud, M. (2023). HIV/AIDS-related knowledge among Indonesian women: the role of media exposure and socio-demographic factors. HIV and AIDS Review, 22(1), 43–52. https://doi.org/10.5114/hivar.2023.124548

Zakiei, A., Norouzi, E., Ghasemi, S. R., Komasi, S., Rostampour, M., & Khazaie, H. (2022). Controlling risky behavior associated with AIDS: the role of social support, family functioning, self-efficacy and AIDS risk perception. BMC Psychology, 10(1), 1–10. https://doi.org/10.1186/s40359-022-00839-z