Barriers and Facilitators to Highly Active Antiretroviral Therapy (HAART) among Retroviral Disease (RVD)-Infected Patients in Tawau Hospital

Young Lee Yee[1], Melissa Lim Ven Ching[2], Muhamad Fauzanudin[1], Ong Kim Yok[1], Mohammad Fitri Mohd Zuberi[2], Nor Atiqah Abdul Halim[1], Soong Yit Loo[1], Choong Fui Kiun[3], Marliana Binti Mohd Jajuli[4]

[1] Hospital Tawau, Sabah, Ministry of Health Malaysia
[2] National Pharmaceutical Regulatory Agency, Ministry of Health Malaysia
[3] Klinik Kesihatan Tawau, Sabah, Ministry of Health Malaysia
[4] Hospital Lahad Datu, Sabah, Ministry of Health Malaysia

Abstract

Introduction: Adherence to highly active antiretroviral therapy (HAART) has become a formidable barrier for retroviral disease (RVD)-infected patients to maintain successful viral suppression and immune recovery. Therefore, both healthcare providers and patients face significant challenges concerning adherence to HAART.

Objectives: This study was conducted to understand the barriers and facilitators to treatment adherence among RVD-infected patients.

Method: This was an exploratory qualitative study. In-depth semi-structured interviews with RVD-infected patients were conducted. The questions covered topics related to the beliefs and knowledge concerning RVD and HAART, barriers to HAART adherence, and HAART adherence tools. The interviews were audio-recorded and transcribed, verified and translated into the English language. Thematic analysis was done parallelly with data collection.

Results: Data saturation was reached during the interview of 16th patient. The thematic analysis identified five themes which were Belief about HAART medications, Barriers to adhere with HAART treatment, Adherence tools, Supports, and Patients' attitude / perception. All interviewed patients believed that HAART was beneficial for their disease. The barriers to HAART adherence included HAART-related adverse effects, wrong belief, fear of stigma, and the complicated and strict treatment regimen. The facilitators to HAART adherence identified in this study included making use of adherence tools such as alarm, clock, mobile phone application, pillboxes and tag notes. In addition, the support from families, peers and healthcare providers, and patients' own attitude or perception were important facilitators to HAART adherence. Positive thinking, self-motivation and self-discipline were important attitudes to ensure continuous adherence to HAART treatment.

Conclusion: This study identified few common barriers and facilitators to HAART adherence which can be incorporated into HAART counselling to improve the adherence rates.

Keywords: highly active antiretroviral therapy, retroviral disease, barriers, facilitators, qualitative study

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Corresponding Author: Young Lee Yee
Department of Pharmacy, Hospital Tawau, 91007 Tawau, Sabah
Email: young.hospitaltawau@gmail.com

Introduction

As of December 2014, the World Health Organization (WHO) estimated that 36.9 million people were living with human immunodeficiency virus (HIV) and 1.9 million people were newly enrolled on antiretroviral treatment. Highly active antiretroviral therapy, or HAART, is the standard treatment for people infected with HIV which consists of a combination of at least three drugs that suppress HIV replication, reduce morbidity and mortality rates among HIV-infected people, and improve their quality of life (1). In the East Asia and Pacific region, Malaysia is one of the countries with fastest-growing AIDS epidemics. From 1986 to 2017, 115,263 people were infected with HIV, while 42,864 people have died of acquired immunodeficiency

syndrome (AIDS). According to the Malaysia Country Progress Report on HIV/AIDS 2018, in 2017, 72,399 people in Malaysia were living with HIV and 3,347 new HIV cases were reported (2).

Although HAART has transformed HIV infection into a manageable chronic disease, many factors had contributed to HAART ineffectiveness including the inappropriate drug of choice, viral resistance and non-adherence to the therapy (3). Studies have shown that patient's adherence of higher than 95% to HAART therapy is the optimum requirement to succeed the treatment and less than that is associated with a virologic failure rate in more that 90% of the therapy (3). Therefore, the strict adherence to antiretroviral therapy is the key to sustained HIV suppression, reduced risk of drug resistance, improved overall health, quality of life and survival, as well as decreased risk of HIV transmission (4-6).

Poor adherence is the major cause of therapeutic failure among the retroviral disease (RVD)-infected patients and it remains the main issue to be solved. Adherence to HAART can be influenced by several factors, such as patient's social situation and clinical condition, prescribed regimen, and patient-provider relationship (7). Heavy pill burden, fear of stigma and discrimination, cost and access to transportation, lack of understanding of the benefit of taking the medication, economic problems in the household, and lack of nutritional support were the reported barriers to HAART adherence (8). Further more, common barriers faced by the developing settings were financial constraints and disruption in the access to medications (9).

The complexity of the HAART regime is also one of the significant challenges faced among the RVD-infected patients, whereby the adherence generally decreases with the increasing number of doses per day (10). Once-daily and twice-daily medication regimens were associated with significantly better compliance, which were 73% and 70% respectively, compared to medication regimens of three (52%) and four times daily (42%) (11).

Despite being given pre-HAART counseling, RVD-infected patients could be overwhelmed with the side effects of HAART and discontinue the regimen, resulting in treatment failure (12). For instance, side effects occured among the protease inhibitor-treated cohorts in up to 29% to 36% of subjects after 14 to 19 months of observation (13). As high as 33% of the patients were found to be unable to maintain complete adherence due to the side effects (14). Even with development of new antiretroviral agents, the frequency of side effects remains high (12) and therefore timely intervention by the healthcare providers are deemed very important.

In the Ministry of Health Malaysia (MOH) healthcare facilities, antiretroviral therapy is provided and the Retroviral Medication Therapy Adherence Clinics (RVD MTAC) are set up to provide counselling for patients receiving HAART. As it is crucial for the healthcare providers to recognise and overcome the key barriers faced by HIV-infected patients and promote measures to facilitate their adherence, this qualitative study was conducted to understand the barriers and facilitators to HAART treatment among the RVD-infected patients. The finding from this study could provide input to improve the counseling materials for RVD MTAC and help to structure the interventions that can be done by the healthcare providers to improve patients' adherence and treatment effectiveness.

Methods

This was a qualitative study conducted in Tawau Hospital, Sabah, starting from May 2016 to March 2017. It involved RVD-infected patients aged above 12 years who were receiving HAART and were able to communicate in Malay, English or Chinese language. Recruitment was done by convenience purposeful sampling and written consent forms were obtained from the respondents.

Face-to-face in-depth semi-structured interviews with RVD-infected patients were conducted privately in a clinic room on the same date of the patient's hospital appointment or follow upeither on one-to-one basis or alongside caregivers. The interview was conducted according to a interview guide that consists of a general set of open-ended questions that covered topics related to beliefs and knowledge concerning retroviral disease and HAART, barriers to HAART adherence, and HAART adherence tools (Appendix). Once the successive interviews become repetitive and redundant, and when no new information is forthcoming from newly sampled participants, the study achieved data saturation and the data collection was ceased.

The interviews were audio-recorded and transcribed, verified and translated into the English language. Thematic analysis was done parallelly with data collection. The collected data was then coded and categorized into themes by the investigators after reviewing and vetting the transcripts.

Results

A total of 16 participants were recruited to this study. The thematic analysis identified five themes which were Belief about HAART medications, Barriers to adhere with HAART treatment, Adherence tools, Supports, and Patients' attitude / perception.

Theme 1: Belief about HAART medication

HAART requires strict adherence to its complicated treatment schedule. In order for the patients to adhere to the regimen, they need to first believe that the treatment is helping them becoming better. All interviewed patients believed that HAART can help them with their disease.

> *''After taking these medications for more than ten years without any therapy alteration, I'm sure and believe that these medications can give a beneficial effect to us. It helps to improve our white blood cells and makes us healthier.'' (Patient B)*

> *"I believe that, since my body becomes healthy. I knew this medication is good. I felt like my body becomes healthy." (Patient G)*

> *"Yes. Previously I have known about RVD. I have google and read up and the solution is HAART treatment. So to me if you don't take HAART, it's like dying slowly. I can see the changes despite just started the medication." (Patient L)*

HAART treatment is notorious for its side effects that affect the adherence of RVD-infected patients. One of all interviewed patients, however, claimed that he still adhered to the treatment despite having side effects.

> *"I believe it even though I suffered from its side effects at the beginning of therapy. In my opinion, these medications are high quality and 99% trustworthy." (Patient D)*

There was one patient who did not believe in the treatment at first and sought alternatives to cope with the disease. Eventually, this patient managed to follow the regimen and believed that HAART is still better.

> *"Yes, I do believe. As you know, I stopped taking my medication for almost one and a half year to see what will happen to me. Eventually in the year of 2015, I get sick and started HAART since then. Been taking HAART for almost 3 months until now and I feel much better than before. If I take supplement alone, I don't think I can survive until today. Nevertheless, the combination of HAART and supplement is much better." (Patient A)*

Theme 2: Barriers to adhere with HAART treatment

The interviewees disclosed a few barriers that affected their adherence to HAART treatment, such as side effects, wrong belief, fear of stigma, and complicated and strict regimen.

Among the 16 patients, ten of them complained of side effects.

> *"I noted about the risk of having rashes induced by nevirapine as I experienced it at the first time of taking neverapine." (Patient A)*

> *"During the early time of therapy, I did experience some effects such as dizziness and nausea." (Patient B)*

> *"When I first started HAART, I experienced nausea and vomiting. It persisted for almost three days and resolved afterward." (Patient C)*

Nevertheless, the side effects might become tolerable as time passed.

> *"I was uncomfortable, very uncomfortable, for about 2 months or so. I found myself sweating, feeling uncomfortable for about two hours, after that I would get drowsy. We feel like vomiting, really like nauseous, but when we're used to it, after taking it for some time, it's like normal." (Patient E)*

> *"It was a lot. I refused to take the medications initially due to its side effect such as dizziness, nausea and vomiting. I stop taking the medications temporarily when the pain was too unbearable. Also, I experienced loss of appetite where my body weight by that time was only around 40kg." (Patient I)*

On the other hand, there could be wrong beliefs among the patients. For instance, one patient sought complementary medicines before following the HAART regimen. The Malaysian population may believe in alternative medicines more compared to prescribed medicines, and this could be a challenge for the healthcare professionals as this is a potential barrier to HAART adherence.

> *"Instead of taking HAART, I took lots of supplements throughout the year." (Patient A)*

> *"I mistakenly believed in my own theory and on the other hand, doubted the effectiveness of medical science." (Patient A)*

Also, the interviewees admitted being fear of stigma and thus were reluctant to share their conditions with the others including their family and friends.

> *"I do not want to share my problems with my family. I have to consider about their future and I am scared to let my children know about it." (Patient D)*

> *"I do not want other people to know what medicine I'm taking. I don't involve my family, because I think this is my personal matter." (Patient E)*

> *"Family knows nothing about this." (Patient H)*

> *"First barrier is people surrounding me, if I got back home, my family will ask me what the medication is. I have to lie saying that it is supplement." (Patient J)*

Complicated and strict regimen could also be a significant barrier to HAART adherence, as HAART medications must be taken at the same time every day without a miss. Patients recognized this as one of the barriers to their adherence.

> *"HAART is a therapy where we must follow the administration timing strictly. We need to take the medications on time without delay, not even five minutes delay." (Patient B)*

> *"At the beginning of therapy, I always took my medications late." (Patient D)*

> *"When I first started, I missed my medication. Sometimes when I got back from work at 5pm, I overslept until 9pm or 10pm. Hence I missed my 8pm dose. But now, no more." (Patient J)*

> *"I delay in taking my medications. This is because sometimes I go out for a drink." (Patient M)*

Patients use tool like alarm as reminder. Nevertheless, forgetfulness or technology failures could hinder them from keeping track of time.

> *"Sometimes, I have forgotten to take my medication. If you are referring to setting reminder alarm, yes, there is. But I have even forgotten to take my medication as I forgot to set my alarm." (Patient C)*

> *"When I was travelling by air, sometimes during the afternoon flight, I forgot to keep my medication in my pocket. That's what usually happened to me." (Patient J)*

> *"I forgot to bring medications to keep it inside the car." (Patient M)*

> *"I have missed for about half an hour. The alarm did not ring, I had forgotten before." (Patient O)*

Lack of understanding about HAART among the patients and healthcare-related personnel could have caused non-adherence.

> *"I did not know what medications I was taking." (Patient H)*

> *"The nurse served the medicines late. Only during that time (that I had difficulties with the compliance)." (Patient F)*

Theme 3: Adherence tools

Barriers to HAART were linked to the importance of administration time of medication. There were several facilitators that helped the patients in overcoming barriers. The most common facilitator was the use of adherence tools.

The most frequently used adherence tool among the interviewed patients was alarm. All interviewed patients used alarm to remind them on the timing of medication intake.

"I'll use my phone alarm to remind me about the time." (Patient A)

"Usually I use alarm, either clock or phone alarm." (Patient P)

"Clock… or phone alarm." (Patient C)

"I use alarm only to remind me so that I do not miss taking medications." (Patient M)

"I use my phone alarm and no problem." (Patient J)

One patient used mobile application as reminder.

"I use application 'medisafe', it'll remind me to take the medication and bring along the medication while travelling." (Patient J)

Some patients form a habit to take medication at the same time daily gradually with the aid of alarm.

"I did use my phone alarm previously. However, I don't need it anymore after been taking this medication for 7 years." (Patient I)

"I use my phone alarm to remind me to take medication. Gradually, I'll get used to it." (Patient L)

Other than alarm, pill box is one of the most useful tools for the interviewed patients.

"And I use pill box as well." (Patient L)

"I always bring my pill box along and I have 2 pill boxes. Big sized one is to be kept at home meanwhile the small sized one is for me to bring along to work." (Patient A)

Tag notes is another method used by patients in this study.

"I have used alarm clock, mobile phone and tag notes on mirror. Or I wrote it in notebooks." (Patient E)

Theme 4: Supports

Support is crucial for RVD-infected patients from the acceptance of disease diagnosis, to the initiation of treatment and life-long treatment.

Continuation of treatment was deemed easier with the love and support from the family.

"Sometimes I asked my family member at home to remind me. For example, if it was 10pm and I already felt asleep, they helped to wake me up." (Patient P)

"I have maid at home who helps to remind me to take medication. Sometimes my siblings and my parents help as well." (Patient L)

"My youngest child always ask "Mummy have you taken your medicines?" (Patient M)

Spousal support also played essential roles in reminding the patients to take their medications time.

"…my wife takes care of my medications. Most of the time my wife reminds me to take medications. For example, if I fall asleep while watching TV, she reminds me to take the medicines." (Patient G)

"My husband always reminds me." (Patient I)

Peer support among the RVD-infected patients could also enhance HAART adherence.

"We have a chatting group called "kasih" and this is the platform where we'll remind each other to take the medication on time." (Patient A)

In addition, the support from healthcare providers was important to help the patients to get through the initial treatment stage.

"During the early time of therapy, I did experience some effects such as dizziness and nausea. However, I tried to continue the medication after been motivated by the doctors and now I'm tolerating it." (Patient B)

One patient highlighted the importance of seeking treatment at the MOH facility.

"So for me it was the best that we seek treatment in a hospital under MOH, whom prescribed real medication. Plus we received counselling to support us if something's wrong. Plus we have review for us to follow everything." (Patient L)

Theme 5: Patients' Attitude / perception

Adherence to HAART therapy could be affected by the patients' perception towards the use of medication, possible side effects and the outcome of treatment.

Positive thinking provided the patients with healthy and peaceful mind to endure the life-long treatment.

"I think we have to be positive. If we keep denying the fact, we'll be going on not knowing and not adhering to the timing of administration. If we don't follow the instructions given, it will lead to much worse diseases. Others cannot feel how our bodies feel. So start within yourself to adhere. Hospital and counselling will assist but no one can help apart from yourself." (Patient L)

"For me, a HIV patient has to think positive and then he has to discipline himself. Although doctors say that there is no medicine to cure this disease but I believe that if I practice this HAART medicine, and if I follow the correct method and administration schedule, with God's grace, maybe this thing can disappear." (Patient E)

Self-motivation kept patients going through journey with HAART.

"My advice to other HIV patient was to never neglect taking the medications and always remember to bring the medications. If we miss taking medications once, it could eventually bring the unfavorable outcomes to ourselves." (Patient D)

"I have strong spirit to take these medications to make myself healthier." (Patient G)

"Because I have children. No matter what. I have to stay healthy and watch my children grow up." (Patient I)

Self-discipline is another important aspect to overcome the barriers in HAART adherence.

"To me, the most important thing is to discipline myself, disciplining myself to take the medicines on time." (Patient E)

"I never miss taking my medications. I bring my medications to the office, and even when I went to Kota Kinabalu as well." (Patient N)

Strong self-discipline enabled the patients to adjust themselves easily at any given situation.

"If I went out to visit my family, I'll make sure that I don't miss any dose. For example, if I went out before 9…. I will stop by elsewhere and make sure that I take the medication at 9. We can't delay the time, we can't be late." (Patient B)

Discussion

Highly active antiretroviral therapies (HAART) have demonstrated their efficacy in improving the immune function, reducing viral load and RVD-related morbidity and mortality. The complex therapy regime, however, requires patients' strict adherence and discipline. Despite rapid advancement of modern medicines and antiretroviral programs, the long-term success of these programs depends on patients' adherence to their antiretroviral therapy. Some of the barriers identified in this study are reportedly consistent with existing literature such as side effects, lack of understanding of treatment benefits (wrong belief), stigma, and forgetfulness (15). To date, the treatment-resistant variants of RVD had attracted great concern as they were rapidly developed due to the under-dosing and intermittent, irregular use of HAART medications (16).

All of the 16 RVD-infected patients that were interviewed regarding their belief towards HAART medications in this study believed that HAART give positive effects and improve their quality of life. The most common motivator to adherence is the belief in the efficacy of HAART (9). This is because patients' beliefs, knowledge, and expectations about the treatment strongly influence their medical decision making (17). When patients have positive perceptions toward HAART, they tend to have better adherence (18). It is important for patients to believe in the benefits of taking antiretroviral medications and thus the efforts to educate patients about the benefits and risks of HAART may help improving adherence (7). Without proper counseling and understanding, patients might default treatment easily when they feel better or when they encounter any side effects. Self-motivation and self-discipline are also the main determinant for adherence (19-21). All interviewed patients in this study had reported to be motivated and disciplined in adhering to treatment.

Adherence to HAART is essential to achieve successful and prolonged viral suppression and minimise the risk of resistance (13). Nevertheless, it is unavoidable to have some barriers that may avert patient from taking the medications. Out of 16 patients, 10 of them complained that side effects of HAART affected their compliance. Therefore, focusing on managing HAART-related symptoms and side effects can help to optimize HAART adherence (13).

In this study, one patient reported stopping HAART treatment and replacing with supplements, and the patient became unwell later and restarted HAART. Complementary and alternative medicine are any treatments used in conjunction or in place of standard medical treatment. The WHO estimated that around 4 billion people, which were equivalent to 80% of the world's population, were using herbal medicines in conjunction with conventional medicines. Some studies have reported large numbers of traditional health practices in the treatment of RVD. The concurrent use of traditional supplements and antiretroviral drugs may lead to drug interactions that could affect the effectiveness of HAART (22). The use of alternative medicines in HIV-positive patients should raise clinical and pharmacological concerns that need extra attention by all healthcare providers.

Therapeutic failure occurred in approximately half of HAART recipients and is often associated with RVD resistance due to inadequate adherence. While many RVD-infected patients were able to take their HAART medications as prescribed, over one-third (37%) of RVD-infected patients in the developed countries have difficulties in maintaining an adequate level of adherence (23). Forgetfulness may affect treatment success. Majority of the patients in this study reported that they forgot to take medications on time especially when they initially started HAART. In another study, patients also stated that being forgetful was the reason for non-adherence to HAART (24). Majority of the patients in this study were using active reminder devices such as phone reminder, clock alarm and application, and passive reminder devices like pill boxes and tag notes. Also, patients need to ensure that these reminders are functioning properly and it may be advisable for patient to keep multiple reminder devices.

HAART has to be taken same time every day to ensure consistent viral suppression. Facilitators reported in this study, such as the use of reminder devices or applications, supports from community, positive attitude and perceptions, were consistent with the approaches applied in other resource-limited settings to improve adherence (25). Cognitive-behavioral therapy, education, treatment supporters, directly observed therapy and active adherence reminder device have been used to increase HAART adherence (26).

RVD brings fears, prejudices and negative attitudes. RVD-infected patients may experience being insulted, rejected and excluded from social activities as a result of stigma. Stigma could be the worst enemy of RVD-infected patients, causing them to have difficulties engaging with people. Most RVD-infected patients avoid disclosure to their family or friends regarding their health status, but social support plays a vital role in treatment success. Greater social support predicts more consistent adherence (16). Previous studies demonstracted that good family support improved HAART adherence. For example, family member can help to remind medication intake time, support to overcome side effects and reinforce a stable routine life (27).

WHO characterized family as the primary social agent in the promotion of health and well-being (28). Studies showed that having an unsupportive social network often prevents patients from having successful adherence. Interpersonal relationships can affect patient's behaviors toward adherence. Lack of trust towards healthcare providers can also affect the treatment adherence. Openly disclosing RVD status to family and friends was reported as influential to adherence (9). Most patients in this study received support

from their family, friends and healthcare personnel, but some patients were afraid to tell their family about their RVD status. Family disclosure could be beneficial to patients as relatively high adherence rate could be attributed to high moral and psychological support given by family members (28).

Supportive friends and healthcare providers can also help in improving patients' adherence. One interviewed patient mentioned about the group chat among the RVD patients in Tawau Hospital served as a medium for sharing and mutual support. As healthcare providers are often the first person to break the news to patient and manage their life-long HAART treatment, healthcare providers should be supportive and provide proper counseling for patients to have positive belief on the treatment. Unsupportive and unconcern healthcare providers may discourage patient and causing them to be non-adhere to treatment (28-29).

The main limitation of this study is that complete demographic data of interviewed patients were not collected. Otherwise, description about the demography and socioeconomic status of interviewed patients could be presented. This was a qualitative study conducted to explore the barriers and facilitators to HAART treatment among the RVD-infected patients. Although qualitative studies are superior in identifying patient-important barriers and facilitators, combining qualitative and quantitative elements in future studies may result in more informative findings.

Conclusion

In conclusion, medication-related barriers comprised of HAART side effects and complexity of HAART regimen are among the major contributing factors to non-adherence among RVD-infected patients. Extra attention to patients with negative belief and fear of stigma is vital in order to help them achieving optimum adherence status towards HAART. Adherence tools, for instance mobile phone alarm and mobile application were among the widely used facilitators in improving the HAART adherence among RVD-infected patients. Likewise, support by the family and society is also crucial in overcoming non-adherence.

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Appendix

Interview Guide

First Part
Focus: Beliefs and knowledge concerning retroviral disease and HAART
Do you belief that HAART benefits in retroviral disease?
Probes:
Do you agree that HAART being the only management in retroviral disease?
Do you have any idea on how HAART may bring benefits in retroviral disease?
Personally, how do you perceive the quality and safety of HAART?
Probes:
Do you think is there any harmful effects of HAART?

Second Part
Focus: Barriers on HAART adherence
Do you ever have any difficulty in adhering HAART?
What will be the barrier in adhering HAART you have encountered?
Probes:
Do you mind to elaborate (e.g. tight daily schedule, travelling, etc)

Third Part
Focus: HAART adherence tools
Generally, what is your opinion on the adherence tools for HAART?
Probes:
Are there any ways to overcome the barriers for adherence?
Are there any adherence tools (e.g. alarm)?

Conclusion
As a conclusion, do you have any additional comments about barrier on adherence?

Thank you very much for being able to participate in this study.