

A Retrospective Review on HIV Pre-Exposure Prophylaxis in Davao City

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Abstract

Objectives: Evaluating the adherence to HIV Pre-Exposure Prophylaxis (PrEP) is essential for increasing its utilization and decreasing the risk of HIV transmission among Davao City's vulnerable groups. **Methods:** The research method utilized in the study is a quantitative, retrospective, descriptive research design. This method was employed to retrospectively review the de-identified data, which involved the fill and refill dates of PrEP and tablets supplied, to calculate the Proportion of Days Covered (PDC) among individuals in Davao City from January 2021 to December 2023. The study also included some demographic characteristics such as age and gender. **Results:** From 178 data entries collected, the age group of 25 to 34 years old was found to have the highest HIV PrEP use (52.25%), followed by those between 18 to 24 (30.90%), 35 to 44 (13.48%), and 45 years old and older (3.37%). Out of 178, only 2 clients were female. Furthermore, 73.60% of the 178 entries in the pharmacy records were identified to be taking PrEP daily. Descriptive statistics showed that the frequency of adherent clients across the years were 36.36%, 44.74% and 38.46%, respectively. Furthermore, the average PDC through the years was found to be 70.13%, 80.48%, and 72.8%. Age did not significantly affect adherence to PrEP during the years investigated (p -values > 0.05). **Conclusion:** Adherence to PrEP improved consistently in 2022 but declined in 2023, showing erratic adherence rates. Furthermore, adherence to HIV PrEP in Davao City was found to be suboptimal and while there are clients who are adherent, many are not. The results emphasize the need for targeted interventions and suggest that other socio-behavioral factors may play a role in this. To improve adherence and prevent HIV contractions, both short-term actions like public education campaigns about HIV PrEP and long-term plans like incorporating PrEP into the community pharmacies can be contributive.

Keywords: HIV PrEP, Medication Adherence, Prophylaxis, Proportion of Days Covered

Introduction

HIV Pre-exposure prophylaxis (PrEP) is highly effective in reducing HIV cases and transmission; however, its efficacy is dependent on the consistent adherence. Additionally, adherence to therapy is pivotal for treatment success, impacting both patients and healthcare systems. As such, identifying barriers to drug adherence on an individual, healthcare provide, and healthcare system basis is crucial for improvement¹.

Enhancing approaches aimed at boosting the consistent use of pre-exposure prophylaxis (PrEP) in specific demographic groups is a top global health priority across nations. In Portugal and Brazil, a survey research has shown that adherence to PrEP was only 19.5% among the participants². In Kenya and Uganda, one third of their sample were found to have poor adherence based on drug plasma concentration and PrEP uptake was a particular problem among young and mobile individuals³.

In Davao City, HIV PrEP is being offered for free at the Reproductive Health and Wellness Center, which is a government-owned establishment⁴. However, HIV cases remains to be rising in the Davao Region⁵. Furthermore, many of these cases are in Davao City owing to its high population and urbanization⁶. Understanding medication adherence patterns

and factors contributing to it is useful for health promotion programs to ultimately reduce incidence and protect people from HIV.

It is noteworthy to highlight that there is a low number of HIV PrEP research in the Philippines particularly in Davao City and its region. This hinders further studies preventing a thorough understanding of HIV PrEP and its effectiveness in the country, thus, resulting in limited information and knowledge regarding the utilization of HIV PrEP. Addressing this gap through this study, could provide valuable insights for tailored interventions and improved public health outcomes. With this, it highlights the need to prioritize research and action programs on medication adherence for PrEP users and to implement effective dissemination strategies to maximize its public health impact. Thus, understanding and improving adherence to PrEP are crucial for achieving its full potential in HIV prevention.

Materials and Methods

This study utilized a retrospective design to establish the medication adherence patterns of HIV-negative at-risk individuals who are taking HIV PrEP. A retrospective design allows for the investigation using existing data that has been collected prior to the current research⁷. Specifically, the data that was collected is de-identified data from the medical records of the pharmacy of a primary HIV treatment facility in Davao City.

Prior to data collection, approval was sought from the relevant authorities. First, the study team submitted their study for ethical review to the Research Ethics Committee of the

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University of the Immaculate Conception. Once an ethical clearance was obtained, a letter of intent addressed to the officer-in-charge of the human resource management office (HRMO) of the City Government of Davao was submitted. An authorization letter from the HRMO was obtained indicating approval from the said office before actual data collection was done.

In this retrospective review, only specific information was assessed from the medical records. Specifically, the study team emphasized their review on the medication adherence of people taking HIV PrEP from years 2021 to 2023. To measure medication adherence, the researchers calculated the proportion of days covered or simply abbreviated as PDC. PDC is a measure of medication adherence that is obtained by calculating the proportion of days the patient has medication and the period of interest⁸ and multiplying this proportion by a hundred to get a percentage.

More specifically, the period of interest is the number of days from the start of PrEP initiation to a predefined date - in this study, the end date of each year from 2021 to 2023. For the numerator of the PDC formula, the study team collected the refill dates and the number of tablets supplied per fill and counted these supplies over the period of interest. This meant that only the date of initiation, refill dates, and fill supplies were collected and no identifiable data were collected. A PDC of 90% or above is considered adherent for antiviral medicines⁹. The frequency of those adherent and not were counted. Figure 1 provides the formula in calculating PDC.

Aside from the medication adherence, the study team also investigated whether currently available demographic characteristics can affect the adherence to HIV PrEP. These demographic data included age and sex only to ensure non-traceability of other demographic information. For this reason, the study team utilized Chi-squared test to identify if there was a significant difference in the adherence to HIV PrEP according to demographic profile. Statistics were done through JASP version 0.18.3 software.

Results

Table 1 below shows the demographic profile found inside the deidentified medical records provided by the pharmacist-in-charge of the HIV hub in Davao City. A total of 178 clients were recorded from 2021 to 2023. Of these, 47 were taking HIV PrEP as event driven. These clients were excluded from the analyses. More than half of the clients (52.25%) from 2021 to 2023 were aged 25 to 34 years old, followed by ages 18 to 24 years old (30.90%). Only 1 client was found to be female in the deidentified records implying a sex disparity.

Table 2 presents data, patterns, and trends regarding the medication adherence of the clients taking HIV PrEP. In 2021, the 13 clients started PrEP therapy and only 4 were adherent.

In 2022, the number of clients increased indicating improved utilization of HIV PrEP. However, only 44.74% of the clients in 2022 were adherent to daily therapy. The year 2023 had the greatest number of clients in the given available records but only 38.46% were adherent to therapy. A more convenient visualization of the adherence pattern through the years can be seen in Figure 2.

Table 3 shows the Chi-square test result when the number of adherent and non-adherent clients were grouped according to the age bracket of the clients. From this table, no statistically significant difference was observed between the two variables.

Discussions

The present study provides valuable information to the current utilization and adherence of clients taking HIV PrEP in Davao City. Currently, PrEP is free for all vulnerable individuals which includes men who have sex with men, transgender women, sex workers, and people who inject drugs¹⁰.

Demographic data shows valuable utilization patterns of HIV PrEP. From the findings, there is a male-dominant pattern of HIV PrEP use in Davao City. However, the current findings align with government initiatives since the most prevalent population at risk of HIV contraction are men who have sex with men (MSM), then men who have sex with both men and women¹⁰. Despite that, women either cis- or transwomen are still vulnerable to HIV. This would suggest a need to increase initiatives geared towards cis-women and transwomen.

Furthermore, findings indicate that most of these male clients are aged 25-34 years old. This also makes sense since it has been found that peak incidence of HIV cases were from the ages 25 to 29 years old¹¹. Despite that, there is still a need to consider HIV PrEP promotions geared towards younger individuals since there have already been news of teens younger than 18 years old getting HIV in Davao City^{6,12}. In fact, a news article points out the youngest age recorded from January to May of 2023 was ten years old¹³. Additionally, it has long been found that male individuals aged 15 to 25 years old that are engaging in casual sex and many of these engagements are unprotected¹⁴.

The low number of younger individuals taking PrEP may be due to a few reasons. Knowledge and awareness to this biomedical intervention may be a prime reason since it has been shown that only 1 in 5 teens aged 18 to 24 years old knew the existence of PrEP¹⁵. On top of that, misconceptions about HIV/AIDS is still evident^{16,17}. Furthermore, teens may have a lower perception of HIV risk despite engaging in risky sexual behavior¹⁸.

Access to PrEP among older individuals or those aged 45 years old and of which are vulnerable to HIV, should not be limited since it has been shown that this particular age group exhibits interest and willingness to use such a prophylactic strategy¹⁹.

However, older individuals were found to be correlated with being more hesitant in using HIV PrEP²⁰. As such, strategies to reduce hesitancy including educational campaigns are warranted across all age groups.

From Table 2, the adherence trend can be seen across the years. While it is good that there is increasing number of adherent individuals, it is still concerning that more than half of the individuals every year remains not adherent. Furthermore, the number of adherent individuals dropped in 2023. Various factors may play a role in non-adherence including individual, interpersonal, and structural factors²¹.

Clients need to realize the personal benefit that HIV PrEP provides in order to strengthen or reinforce their motivation that is a key factor for initiating and sustaining HIV PrEP²¹. Furthermore, other individual-related barriers can be considered here like forgetting to take the product daily, alcohol consumption, lifestyle, and work-life balance that potentially causes various stressors to the individual²².

Additionally, clients who have partners that are HIV-seronegative or having unknown HIV status are less likely to remain taking PrEP²³. This can be due to their perceived low risk of contracting HIV, especially to those having assumed their partners are HIV-seronegative. Younger individuals were also found to be less likely to be retained in PrEP care than older individuals²³. Future research should divulge on the lived experiences of those taking HIV PrEP in Davao City to understand their motivations and provide insights as to the where we can improve and who should we target more.

It has been found that there is an association between high PrEP-related stigma and discontinuation²⁴. Furthermore, evidence shows that stigma to this prophylactic strategy affects adherence and reduces its scalability as a prevention program²⁵. Stigma can be experienced by someone at an individual, community, and healthcare provider level²⁵. This would warrant the need for programs and interventions to reduce HIV stigma.

Access to HIV PrEP can also be a factor since Davao City only has a limited number of establishments dedicated for HIV care and diversifying access points to PrEP may increase adherence. Incorporating PrEP-services into pharmacy practice have been proven to be acceptable and feasible^{26,27}. This can be particularly true for community pharmacists in Davao region since they are widespread and are shown to be knowledgeable and have positive attitudes and behavioral skills towards HIV PrEP²⁸. Incorporating PrEP services into community pharmacies may prove to be contributive, but further research to its feasibility in the local and national context is still imperative.

Another factor to the non-adherence that we postulate is medication persistence. Medication persistence is the action of

continuing medication for the prescribed duration²⁹. Discontinuation of PrEP during the first year was also seen in another study³⁰. Overtime, clients who are HIV-seronegative may experience pill burden especially when they also have lower perceived risk of contraction. The resulting loss of client without notification and erratic follow up visits may be a reason to the decline in adherence during the year 2023. However, this needs to be investigated in future research. The non-adherence that was found in this study may be attributed to loss of clients resulting to low medication persistence.

While this study provides information and insights to the adherence of Davaoños towards HIV PrEP, it is not without limitations. Because the study is a retrospective analysis of medication records, the study team have limited data. There might be other demographic and socio-behavioral factors that can contribute to medication adherence that the current study failed to investigate because the data collected from the pharmacy records were de-identified and removed of all traceable information which may include client's location, profession, and educational background. Furthermore, the data is male dominant prohibiting the study team from making inferences regarding sex and its effect to adherence. Aside from that, other behavioral factors have not been included due to the limited data.

Conclusions

The predominant individuals that use HIV PrEP in Davao City are males aged 25 to 34 years old, with only few females using it. While there was an overall improvement in medication adherence in 2022 from the previous year, there was a decline in the frequency of adherent clients to PrEP in 2023. Such fluctuation in adherence emphasizes the need to develop and incorporate short-term and long-term interventions. These interventions may include public educational and health promotion campaigns, especially among the youth, and other interventions to increase follow-up or refill visits of clients, like incorporating HIV PrEP in community pharmacies to increase accessibility and ensure medication counseling from these healthcare professionals. These strategies may mitigate barriers, thereby contributing to long-term adherence to PrEP.

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Table 1. Demographic Profile

	Frequency	Percentage
Age		
18 – 24 years old	55	30.90
25 – 34 years old	93	52.25
35 – 44 years old	24	13.48
≥ 45 years old	6	3.37
Sex		
Male	176	98.88
Female	2	1.12
Method of Intake		
Event Drive	47	26.40
Daily	131	73.60

Table 2. Medication Adherence According to Proportion of Days Covered

	2021	2022	2023
Adherent, f (%)	4 (36.36)	17 (44.74)	45 (38.46)
Not Adherent, f (%)	7 (63.64)	21 (55.26)	72 (61.54)
Mean ± SD	70.13 ± 29.85	80.48 ± 24.42	72.80 ± 27.81
Median	76.56	87.87	80.00
Range	19.23 – 100.00	6.38 – 100.00	3.64 – 100.00

Table 3. Significant Difference in Medication Adherence when Group According to Age and Through the Years

Year	Demographic (Age)	Adherent	Not Adherent	χ^2	p-value
2021	18 – 24 years old	1	1	0.737	.692 (NS)
	25 – 34 years old	3	5		
	35 – 44 years old	0	1		
	≥ 45 years old	0	0		
2022	18 – 24 years old	3	2	2.513	.473 (NS)
	25 – 34 years old	12	13		
	35 – 44 years old	1	1		
	≥ 45 years old	1	1		
2023	18 – 24 years old	20	18	7.047	.070 (NS)
	25 – 34 years old	22	40		
	35 – 44 years old	3	11		
	≥ 45 years old	0	3		

Note. NS – not significant.

$$PDC = \frac{\# \text{ of days in period "covered"}}{\# \text{ of days in period of interest}} \times 100$$

Figure 1. Formula in Calculating Proportion of Days Covered

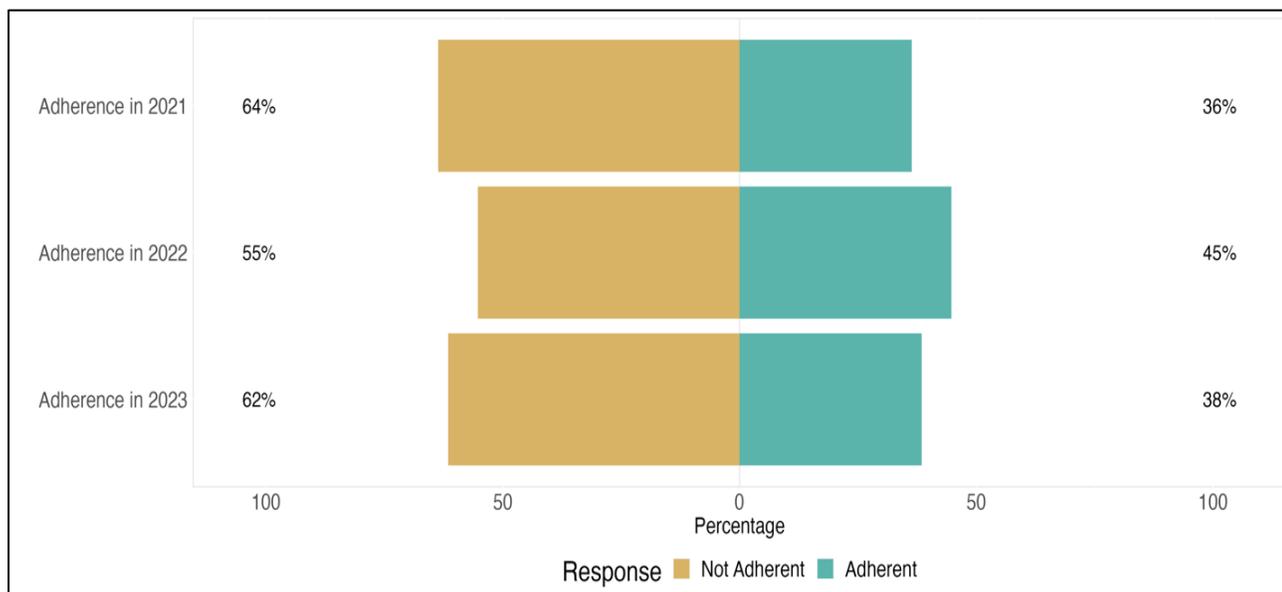


Figure 2. Graphical Visualization of HIV PrEP Adherent and Non-Adherent Clients in Percentage