

# Utilization and Satisfaction with HIV Services at 7 Provinces in Vietnam: A Cross-Sectional Study

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## Abstract

The study was carried out to determine utilization and satisfaction with essential HIV services from HIV individuals and high-risk populations in 7 socioeconomic provinces nationwide. A cross-sectional approach was applied in the study. Data were collected through face-to-face interviews using self-report questionnaires. Findings from 2380 respondents indicated a high percentage of utilization as well as a high level of satisfaction, in particular among men who have sex with men (MSM) and female sex worker (FSW) sub-group. Needle, syringe, and condom programs had lower usage and satisfaction mean scores in comparison with other services. The proportion of people who used drugs (PWID) and participated in the needle and syringe program was 53.6%. HIV counseling and testing uptake proportion of overall respondents in the last 12 months was 82.2% while the rate of antiretroviral treatment among infected PWID was 74.9%. The level of satisfaction with treatment services was found to be higher than preventive interventions ( $p < 0.05$ ). Analysis using univariable logistic regression suggested an association between some socioeconomic factors such as income, employment, educational attainment, and marital status with subjects' satisfaction with several HIV services. Preventive services, especially needle, syringe and condom programs should be prioritized to scale up the coverage and effectiveness. Innovative approaches targeting at PWID should be promoted to increase their access to prevention programs as well as HIV care when needed.

## Keywords

HIV Service, Utilization, Satisfaction

## 1. Introduction

After peaking in the early 2000s, Vietnam's HIV infection rate has been con-

trolled to under 0.3%. However, HIV/AIDS is still a major burden disease with an estimated 220,000 to 280,000 people living with HIV (PLHIV) and 13,000 new HIV infections in 2021 [1]. HIV infection remains concentrated among three key populations with behaviors that put them at high levels of HIV-transmission risk, namely men who have sex with men (MSM), people who inject drugs (PWID), and female sex workers (FSW) [1] [2].

Over the last two decades, with the large support from international donors and high commitment from the Vietnamese Government, HIV services have expanded rapidly nationwide. It is estimated that the scale-up of prevention and treatment programs has contributed to the averting of over 400,000 HIV infections between 2001 and 2017 [2]. However, it raises a significant challenge of utilization among the target population as well as the quality of services to ensure sufficient scale, intensity and efficiency. Especially, Vietnam has observed an accelerated increase in foreign aid, which is the main source for financing HIV/AIDS activities. In addition, changes in the hierarchy of the provincial system for preventive care since 2015 in Vietnam have affected considerably to HIV service delivery [2] [3].

In literature, most studies on utilization and satisfaction in Vietnam were conducted on antiretroviral therapy (ART) or methadone maintenance therapy (MMT) patients [4] [5] [6] [7]. Assessment of patient satisfaction with HIV testing and counseling can also be found elsewhere [8] [9]. In fact, patient's utilization and satisfaction feedback can help estimate service performance and outcomes as well as identification of patients' unmet needs. Highly satisfied users are more likely to build long-lasting relationships with service providers, resulting in service linkage, compliance, and retention in care [6] [10] [11]. However, access and satisfaction with other HIV services, especially preventive interventions such as education-information-communication, needle and syringe distribution, condom and lubricant provision, etc. in Vietnam were little known. To fill the gap in many studies, this research assesses the utilization and satisfaction of some basic HIV services and explores the associations between some socioeconomic characteristics and client's satisfaction among key populations in Vietnam.

## **2. Methodology**

We conducted a cross-sectional survey in seven provinces represented for seven socio-demographic regions in Vietnam including Ha Noi, Thai Binh, Nghe An, Khanh Hoa, Dak Lak, Ho Chi Minh City, and Can Tho. A quantitative research approach was applied with PLHIV and those most-at-risk populations. Data were collected from January to September 2020.

### **2.1. Sample Size and Recruitment**

Due to the concentrated model of HIV epidemic in Vietnam, five groups of clients were recruited including: 1) Methadone maintenance therapy (MMT) pa-

tients; 2) Antiretroviral therapy (ART) patients; 3) People who inject drug (PWID); 4) Female sex worker (FSW); 5) Men who have sex with men (MSM). Based on an estimation of the targeting population's size and available resources for the study, the sample size of participants for each province was identified as 340, including 100 MMT patients; 100 ART patients; 100 PWIDs; 20 FSW and 20 MSM. As a result, the total sample size of 7 provinces was  $340 \times 7 = 2380$  clients.

Participants who were eligible for involving in this study included those: 1) being identified as a population of these 5 groups; 2) aged 18 years old or more; 3) accepting to enroll in the study, and 4) having the capacity to answer interview questions for 15 - 20 minutes. Participants would be pulled out from the study if they display signs of serious illness during the interview time.

MMT and ART patients were recruited safely from the ART and MMT clinics. PWID, FSW, and MSM were recruited from communities with the support of local outreach workers or peer educators.

## 2.2. Ethics

After agreeing to participate in the study, participants were invited to a private room or space to ensure their confidentiality. Then, they were introduced the objectives of this study and explained that they can withdraw from the interview without having effect on their HIV care and treatment services. Finally, we collected written consent from participants who agreed to participate in the survey. The study procedure was approved by the IRB of Hanoi University of Public Health (Decision No 34/2020/YTCC-HD3 17th February 2020).

## 2.3. Tools and Method of Data Collection

Participants were interviewed face-to-face by local investigators, using a set of structured questionnaires. Data collectors were local health staff, community outreach worker or peer educator, who had experiences in working with infected individuals and high-risk groups for HIV infection. Investigators received intensive training sessions from researchers of Hanoi University of Public Health. The training session included the introduction of the study purpose, data collection process, and questionnaires. Nine HIV/AIDS services investigated in the questionnaires were basic services implemented in Vietnam in the period 2016-2020 [3]. They were: 1) Needle and syringe provision (NSP), 2) Condom and lubricant provision (CLP), 3) Methadone maintenance therapy (MMT), 4) HIV information-education-communication (IEC), 5) HIV testing and counseling (HTC), 6) Prevention of mother-to-child transmission (PMTCT), 7) antiretroviral therapy (ART), 8) Tuberculosis-HIV co-infection treatment (TB/HIV treatment), 9) Opportunistic infection treatment (OI). The first five services are mainly for HIV prevention purposes while the rest aim at care and treatment for HIV patients.

Questionnaires asked about background information: age, gender, education, marital status, employment status, and personal income. We also asked respon-

dents to report on their use of HIV/AIDS services within twelve months and rank their level of satisfaction. Likert scale (1 - 5 points) was applied to quantify satisfaction toward services used, 1 was lowest and 5 was highest. The ranking was listed as “not satisfied at all”, “not satisfied”, “satisfied partly”, “satisfied”, “very satisfied”.

## 2.4. Data Analysis

Data was entered by Epidata and analyzed by SPSS 20.0. Descriptive analysis was used for demographic characteristics of respondents, self-reported HIV service usage within the last 12 months and their satisfaction with services received (by mean and proportion). Chi-square, Fisher’s exact tests and ANOVA tests were used to examine the differences between proportions or means of service utilization and satisfaction across studied groups. Univariable logistic regression was used to determine the correlation between respondents’ socioeconomic background and service satisfaction. The level of signification was set at a p-value of less than 0.05.

## 3. Result

A total of 2380 participants from seven provinces completed the interview of the study. Among them, MMT patient, ART patient and PWID accounted for 28.8%, 28.3% and 27.4% respectively. The number of FSW and MSM interviewed were 168 and 199 (7.1% and 8.4% of total respondents). Average age of participants was 36.7 (18 - 67). 76.2% respondents reported they were living alone, and among these respondents, drug users occupied the highest proportion. 46.5% have high school diploma or above. Among them, HIV positive case was 967 (40.6%). Most of study participants reported having unstable source of income (self-employment or unemployed). 5.8% reported have no job at the time of data collection, majority were MMT and ART patient. Average monthly income of respondents was 5,345,000 VND (~250 USD), 6.4% said that they have no income (**Table 1**).

### 3.1. HIV/AIDS Service Utilization

**Table 2** presents service utilization in the last 12 months of participants by different target groups. Utilization was identified as receiving HIV services within 12 months since interview date, regardless of number of usage. Overall, service utilization proportion is high, especially the ART service with the uptake rate among HIV positive participants was 94.1%. However, the percentage of drug user ever received ART reaches 74.8%, lowest among five groups. Regarding preventive services, HIV testing and counseling (HTC) was reported highest proportion of usage (82.4%). The proportion of taking HTC service was up to 92.4% among MSM and difference rate of this service utilization across groups was statistical significance ( $p < 0.05$ ). Service to provide HIV/AIDS information, education and communication (IEC) that target to all population was reported

**Table 1.** Demographics of HIV/AIDS service clients recruited in the study (n = 2380).

No	Characteristic	Total		MMT patient		ART patient		PWID		FSW		MSM	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Age:	36.7	9.2	39.7	8.3	38.0	8.4	36.9	8.8	28.4	7.3	28.4	8.1
		N	%	N	%	N	%	N	%	N	%	N	%
		2380	100	686	28.8	674	28.3	653	27.4	168	7.1	199	8.4
Gender:													
2	- Male	2068	86.9	667	97.2	575	85.3	627	96.0	0	0	199	100
	- Female	312	13.1	19	2.8	99	14.7	26	4.0	168	100	0	0
Ethnicity:													
3	- Kinh	2308	97.0	679	99.0	655	97.2	637	97.5	157	93.5	180	90.5
	- Minority	72	3.0	7	1.0	19	2.8	16	2.5	11	6.5	19	9.5
Marriage:													
4	- Living with partner/spouse	566	23.8	168	24.5	191	28.4	116	17.8	54	32.3	37	18.7
	- Single/widow/divorce/separate	1810	76.2	518	75.5	481	71.6	537	82.2	113	67.7	161	81.3
Highest education:													
5	- No school	51	2.2	6	0.9	11	1.6	28	4.3	6	3.6	0	0
	- Primary	813	34.4	293	42.8	213	31.9	216	33.4	42	25.1	49	25.0
	- Secondary	400	16.9	108	15.8	117	17.5	139	21.5	29	17.4	7	3.6
	- High school	453	19.2	71	10.4	193	28.9	62	9.6	22	13.2	105	53.6
	- College and above	645	27.3	207	30.2	134	20.1	201	31.1	68	40.7	35	17.9
Employment:													
6	- Famer/fisher	69	2.9	15	2.2	42	6.2	9	1.4	0	0	3	1.5
	- Officer/worker	288	12.1	56	8.2	139	20.6	45	6.9	4	2.4	44	22.2
	- Self-employment/free-labor	1847	77.6	553	80.6	431	63.9	580	88.8	161	95.8	122	61.6
	- Unemployment	137	5.8	60	8.7	54	8.0	18	2.8	1	0.6	4	2.0
	- Student	38	1.6	2	0.3	8	1.2	1	0.2	2	1.2	25	12.6
Monthly Income:													
7	- No income	152	6.4	58	8.5	55	8.2	19	2.9	5	3.1	15	7.5
	- Under 1.5 million VND	87	3.7	39	5.7	28	4.2	17	2.6	1	0.6	2	1.0
	- 1.5 to under 5 million VND	1128	47.7	337	49.3	317	47.4	342	52.5	59	36.9	73	36.7
	- 5 to under 10 million VND	938	39.7	230	33.6	249	37.2	268	41.1	84	52.5	107	53.8
	- 10 million VND and higher	59	2.5	20	2.9	20	3.0	6	0.9	11	6.9	2	1.0
HIV positive:													
8	- Male <sup>a</sup>	844	40.8	105	15.7	568	100	109	17.4	0	0	55	27.6
	- Female <sup>b</sup>	123	39.4	5	26.3	99	100	6	23.1	13	7.7	0	0

a. %: Percentage of men who was positive with HIV among total men by groups; b. %: Percentage of women who was positive with HIV among total women by groups.

**Table 2.** HIV/AIDS service utilization in the last 12 months.

No	Services	Total	MMT patient	ART patient	PWID	FSW	MSM	p <sup>a</sup>
	N	2380	686	674	653	168	199	
1	NSP	672 (28.2%)	214 (31.2%)	96 (14.2%)	350 (53.6%)	8 (4.8%)	4 (2.1%)	<0.05
2	CLP	1225 (51.5%)	398 (58.0%)	255 (37.8%)	249 (38.1%)	153 (91.1%)	170 (85.4%)	<0.05
3	MMT	1170 <sup>b</sup>	686 (100%)	85 (12.6%)	377 (57.7%)	11 (6.6%)	11 (5.5%)	
4	IEC	1777 (74.7%)	530 (77.3%)	448 (66.5%)	456 (69.8%)	160 (95.2%)	183 (92.0%)	<0.05
5	HTC	1957 (82.2%)	594 (86.6%)	465 (69.0%)	574 (87.9%)	141 (83.9%)	183 (92.0%)	<0.05
6	PMTCT	130/312 (41.7%)	5/19 (26.3%)	59/99 (59.6%)	11/26 (42.3%)	55/168 (32.7%)	-	
7	ART	910/967 (94.1%)	88/110 (80.0%)	674/674 (100%)	86/115 (74.8%)	12/13 (92.3%)	50/55 (90.1%)	
8	TB/HIV treatment	182 <sup>b</sup>	34 (5.0%)	124 (18.4%)	5/653 (0.8%)	0	19/199 (9.5%)	
9	OI treatment	116 (4.9%)	31 (4.5%)	69 (10.2%)	8 (1.2%)	0	8 (4.0%)	

a. Chi square test applied for prevention services that target to all respondents; b. No data on number of respondents need MMT service.

to cover 3/4 respondents (74.7%). MSM and FSW reported highest percentage of receiving IEC on HIV/AIDS (95.2% and 92%). Meanwhile, just around two third of ART patient and PWID said they ever received IEC on HIV/AIDS in the last 12 months ( $p < 0.05$ ). 53.6% of PWID responded receiving safe needle and syringe. This percentage among MMT patient was 31.2% ( $p < 0.05$ ). Meanwhile, the proportion of using condom and lubricant services among FSW and MSM is much higher, 91% and 85% respectively.

### 3.2. Satisfaction of Clients toward HIV/AIDS Services

**Table 3** presents average score of clients' satisfaction with services received. In general, all the services in the study had mean score over 4, equal to "satisfied" to "very satisfied" level. However, groups of MMT, ART and FSW evaluated average score of needle and syringe provision service under 4 (between "satisfied partly" and "satisfied"). Mean score of satisfaction with condom and lubricant service among MMT patients also reach  $3.95 \pm 0.96$ . ART service gained highest average score among services studied ( $4.77 \pm 0.47$ ), then MMT treatment ( $4.67 \pm 0.57$ ). IEC and HTC had a mean score of satisfaction of  $4.42 \pm 0.70$  and  $4.56 \pm 0.59$  respectively, slightly lower than that of the FSW and MSM groups. Analysis

**Table 3.** Mean score of client satisfaction with service received (1 - 5 scale).

No	Service	n	Total (n ± SD <sup>a</sup> )	MMT patient (n ± SD)	ART patient (n ± SD)	PWID (n ± SD)	FSW (n ± SD)	MSM (n ± SD)	p <sup>b</sup>
	N		2380	686	674	653	168	199	
1	NSP	672	4.21 ± 0.96	3.81 ± 1.10	3.72 ± 1.13	4.61 ± 0.58	3.50 ± 0.54	4.75 ± 0.50	<0.000
2	CLP	1225	4.16 ± 0.83	3.95 ± 0.96	4.02 ± 0.87	4.49 ± 0.57	4.27 ± 0.60	4.31 ± 0.71	<0.000
3	MMT	1170	4.67 ± 0.57	4.69 ± 0.55	4.40 ± 0.71	4.70 ± 0.55	4.36 ± 0.67	4.18 ± 0.41	<0.000
4	IEC	1777	4.42 ± 0.70	4.48 ± 0.75	4.35 ± 0.70	4.55 ± 0.59	4.23 ± 0.73	4.25 ± 0.70	<0.000
5	HTC	1957	4.56 ± 0.59	4.64 ± 0.60	4.46 ± 0.58	4.63 ± 0.54	4.36 ± 0.59	4.50 ± 0.63	<0.000
6	PMTCT	130	4.57 ± 0.60	4.8 ± 0.48	4.47 ± 0.65	4.82 ± 0.41	4.60 ± 0.56	-	
7	ART	910	4.77 ± 0.47	4.80 ± 0.63	4.76 ± 0.46	4.90 ± 0.34	4.83 ± 0.39	4.74 ± 0.44	<0.000
8	TB/HIV treatment	182	4.48 ± 0.66	4.68 ± 0.77	4.44 ± 0.62	4.80 ± 0.45	0	4.37 ± 0.76	0.023
9	OI treatment/prevention	115	4.70 ± 0.56	4.97 ± 0.18	4.53 ± 0.66	4.88 ± 0.35	0	5.00 ± 0.00	<0.000

a. SD: Standard Deviation; b. ANOVA Kruskal-Wallis test.

using ANOVA Kruskal-Wallis test found that the mean differences across groups of participants were statistically significant.

Proportion of surveyees reported “very satisfied” or “satisfied” with services provided was presented in **Table 4**. Generally, almost all respondents satisfied with HIV/AIDS services: 98.5% for ART treatment, around 96% for MMT, HTC and Opportunistic infection treatment/prevention. Prevention services seemed to receive a lower rate of patient’s satisfaction than treatment. Regarding needle and syringe provision, there was 21.4% participants expressed as unsatisfied. Approximately half of ART patients and FSW reported satisfied with this service. Difference in the satisfaction proportion across groups of respondents toward prevention services was found to be statistically significant (by applying Chi-square or Fisher’s exact tests).

### 3.3. Factors Affecting Patients’ Satisfaction with HIV/AIDS Services

Four socio-demographic characteristics were tested for association with HIV service satisfaction proportion including: monthly income, employment status, highest education level and marital status (**Table 5**). Generally, participants reported with independent income were more satisfied with services received than those without personal income. Just 46.2% of respondent without income report satisfied with needle-syringe provision while this proportion within the independent income group was 81.1% (OR = 4.99, 95% CI 2.58 - 9.66). For condom and lubricant contribution, 72.1% and 84% was the satisfied rate (OR = 2.03, 95% CI 1.29 - 3.21). Similarly, employed subjects were more likely to feel satisfied with services than unemployed participants. Difference in the needle-syringe

**Table 4.** Proportion of client satisfied with service received.

No	Service	Total	MMT patient	ART patient	PWID	FSW	MSM	p	
	Sample Size	N	2380	686	674	653	168	199	
1	NSP	672	528 (78.6%)	134 (62.6%)	49 (51.0%)	337 (96.3%)	4 (50%)	4 (100%)	a
2	CLP	1225	1018 (83.1%)	286 (71.9%)	203 (79.6%)	240 (92.2%)	141 (92.7%)	148 (87.1%)	a
3	MMT	1170	1124 (96.1%)	667 (97.2%)	76 (89.4%)	360 (95.5%)	10 (90.9%)	11 (100%)	b
4	IEC	1777	1608 (90.5%)	475 (89.6%)	404 (90.2%)	432 (94.7%)	141 (88.1%)	156 (85.2%)	b
5	HTC	1957	1878 (96.0%)	568 (95.6%)	444 (95.5%)	557 (97.0%)	133 (94.3%)	176 (96.2%)	
6	PMTCT	130	123 (94.6%)	5 (100%)	54 (91.5%)	11/11 (100%)	53 (96.4%)	-	
7	ART	910	896 (98.5%)	84 (95.5%)	665 (98.7%)	85 (98.8%)	12 (100%)	50 (100%)	
8	TB/HIV Treatment	182	169 (92.9%)	30 (88.2)	118 (95.2%)	5 (100%)	-	16 (84.2%)	
9	OI Treatment/Prevention	115	111 (96.5%)	31 (100%)	64 (94.1%)	8 (100%)	-	8 (100%)	

a.  $p < 0.000$ ; b.  $p < 0.05$ .**Table 5.** Socio-Demographic factors affecting clients' satisfaction.

No.	Factors	NSP	CLP	MMT	IEC	HTC	PMT CT	ART	TB/HIV treatment	OI treatment
Income										
1	- No income	46.2%	72.1%	95.9%	90.6%	95.7%	100%	94.7%	100%	100%
	- Have income	81.1% <sup>a</sup>	84.0% <sup>a</sup>	96.1%	90.5%	96.0%	94.2%	98.8%	92.2%	96.4%
	OR <sup>b</sup> (95% CI) <sup>c</sup>	4.99 (2.58 - 9.66)	2.03 (1.29 - 3.21)							
Employment										
2	- Unemployment	45.5%	65.5%	97.9%	90.1%	96.0%	100%	94.5%	100%	100%
	- Have job	80.9% <sup>a</sup>	84.4% <sup>a</sup>	95.9%	90.5%	96.0%	94.2%	98.8% <sup>a</sup>	92.2%	96.4%
	OR (95% CI)	5.08 (2.72 - 9.50)	2.85 (1.77 - 4.59)					4.79 (1.47 - 15.68)		



## Continued

Education										
	- Secondary school and lower	79.2%	82.3%	95.6%	91.7%	96.1%	95.5%	98.6%	97.1%	98.3%
3	- High school and higher	77.1%	83.8%	96.8%	89.4%	95.9%	93.5%	98.3%	88.2% <sup>a</sup>	94.5%
	OR (95% CI)								0.22 (0.058 - 0.85)	
Marriage status										
	- Living with partner/spouse	53.5%	67.2%	94.0%	87.1%	95.6%	92.3%	99.1%	96.3%	100%
4	- Living alone	89.0% <sup>a</sup>	88.7% <sup>a</sup>	96.8% <sup>a</sup>	91.6% <sup>a</sup>	96.1%	95.6%	98.2%	91.4%	95.7%
	OR (95% CI)	7.04 (4.72 - 10.52)	3.84 (2.81 - 5.25)	1.92 (1.05 - 3.52)	1.62 (1.15 - 2.28)					

a.  $p < 0.05$ . b. OR: odd ratio. c. CI: Confidence interval.

and condom provision service were statistically significant (OR = 5.08, 95% CI 2.72 - 9.50 and OR = 2.85, 95% CI 1.77 - 4.59 respectively). Meanwhile, respondents with higher education seemed less satisfied with HIV/AIDS services. Yet, the difference was statistically significant in the service of treatment for TB-HIV co-infection. Regarding client marriage status, those who reported living alone due to single, divorce, widow, separate, etc. were more satisfied with HIV services than respondents living with family or partners. The difference was statistically significant ( $p < 0.05$ ) among 4 prevention services including needle and syringe provision, condom and lubricant contribution, methadone maintenance therapy and HIV information-education-communication with OR were 7.4, 3.84, 1.92, 1.62 respectively.

## 4. Discussion

### 4.1. HIV/AIDS Service Utilization and Satisfaction

Findings from interviews with 2380 respondents who were HIV infected or high-risk population generally demonstrated high rate of HIV service utilization. 53.6% PWID reported to have received free clean needles and syringes within last 12 months, almost achieved the target of 60% coverage by 2020 [3]. The data on NSP utilization seems varied among studies in Vietnam. Result from HIV sentinel surveillance plus behavioural component in 2017 revealed only 27% of people who inject drugs reported being able to access to this service [2]. A study conducted in 2011 in a northwestern mountainous province indicated a rate of 51.8% men who injects drug ever received free clean needles and syringes in

previous 6 months [12]. According to Vietnam Ministry of Health, in 2019, NSP has been implemented in 56/63 provinces nation-wide, covered 117,726 people who inject drugs, 2025 FSW and 5949 spouse/sex partner of people living with HIV/AIDS. More important, PWID could receive service through various channels in order to increase accessibility of clean needles and syringes: via peer/outreach network or at fix spots including health facilities [13]. Although NSP was the service received lowest proportion of satisfaction from overall users (Table 4), this rate among PWID was as high as 96%. This result confirmed the success of the program also the need for scale-up the service especially for PWID at the rural and mountainous areas who meet difficulties to access these HIV prevention commodities as found from other studies to enhance the effectiveness of intervention [2] [12].

Study result has also showed a large coverage of condom and lubricant program among overall participants (51.5%). Especially, high proportion of FSW and MSM accessing this service (91% and 85% respectively) and reporting satisfied with program (over 92%) were solid evidences for the success of the intervention. This is higher than findings from other studies in Vietnam. Data in 2017 expressed that only 33% FSW accessed to prevention services [2]. Another study on male sex worker in Ho Chi Minh City in 2014 revealed the percentage of participants received free condom in the past 12 month was 74.3%, free lubricant was 71% [14]. However, the use of condom is the most important, related to prevention efficacy of the service. Among MSM, condom use as reported in 2017 was just 60% [2]. Currently, MSM has been identified as priority population for Vietnam's HIV response toward elimination of AIDS. National data indicated an increasing prevalence of HIV in this population, from 6.7% in 2014 to 12.2% in 2017 and 13.3% in 2020 [1]. In contrast, consistent low HIV prevalence and the high rate of condom use among FSW (83% in 2017) has contributed to a downward trend of estimated new infections attributed to this population (infection prevalence was kept under 3% for years) [2]. However, low rate of CLP utilization among other groups: ART patient, PWID, MMT patient (37.8%, 38.0%, 58.0% respectively) could increase risk of transmission for their spouse/sex partners. Surveillance data in Vietnam recently shows an increasing proportion of transmission through unsafe sex (from 65.1% in 2019 to 75.8% in 2020 and 79.1% in 2021) [1] [13].

Our study data showing that NSP and CLP received lowest mean and percentage of satisfaction from ART and MMT patients while these indicators among key target populations namely PWID, MSM and FSW were very high (Table 3 and Table 4). Free but low-quality commodities from the programs that addressed commonly in Vietnam may be insufficient to explain for the low satisfaction rates among these patients [2] [15]. ART and MMT patients who has enrolled in treatment likely to have closer engagement and more experiences with the HIV/AIDS services through their treatment than high-risk groups namely PWID, MSM and FSW. Meanwhile, level of patient satisfaction, as reported in several studies, depends on preconceived ideas, expectations, past experiences

and achieved service performance [16] [17]. For instance, it is found that those patients who stayed longer on ART treatment were less likely to be satisfied than those who stayed less [18]. Factors affecting clients' expectation and satisfaction with HIV/AIDS services are an important area for further researches.

In addition to NSP and CLP, opioid substitution therapy (OST) by methadone has been considered as a priority for PWID since injecting drug use remains the leading HIV transmission mode in Vietnam. Data from HIV sentinel surveillance in 2019 estimates that HIV prevalence among PWID was 12.78% [13]. The rate of MMT enrolment among PWID in our study was 57.7%. Rapid scale-up of MMT clinics nation-wide recent years has contributed significantly to expansion of MMT coverage. There was about 53,000 PWID have enrolled in OST, which is equivalent to 66% of Viet Nam's target of 80,000 in 2020 [2] [13]. In some central Asia countries, access to OST was alarming low due to limited treatment services. For example, in Kazakhstan, only 250 patients (0.2% of the estimated number of PWID) enrolled in OAT programs in 2018 [2] [12] [19]. High level of satisfaction with the MMT service from both MMT patient and PWID found in our study is similar to findings of high level of health-related quality of life among MMT patients from a study carried out in a northern province of Vietnam in 2016 [5]. Our findings reaffirmed the effectiveness of MMT program and supported the need of scaling up MMT program in Vietnam which has been highlighted in other studies [5] [12].

Interventions to providing information, education and communication (IEC) related to HIV/AIDS ultimately aims at behavior change, especially among high-risk population. Finding from our study shows a high percentage of IEC utilization among participants (75%). However, we observed a higher rate of use but lower mean/proportion of satisfaction among FSW and MSM in comparison with other groups (the differences were statistically significant). There is evidence suggest that a large number of MSM and FWS, hidden and unreachable population, stays connected though social media frequently. However, the efficacy of social media as a tool for linking people to services, to promote behavior change or even to recruit potential participants in research studies is less clear [2] [20]. Outreach activity via peer educators, the most preferred channel to approach these key population, in the other hand, has been narrowed down due to rapid cuts in foreign aid and limited domestic resources [3] [6] [21]. Those reasons may result in lower satisfaction level among MSM and FSW. The findings also suggest urgent need to develop more effective approaches for prevention programs, taking advantage of broad internet availability and mobile phone use while sustaining peer outreach to be able to reach to these key populations.

HIV testing and counseling represents the primary entry point into the HIV prevention, care and treatment cascade. Measurement HTC uptake articulates the first 90 target "90% of population knowing HIV status by 2020". Our findings show similar results of HTC uptake rate (82.2%) as national data (82%) [1]. But the rate in sub-population of PWID, FSW and MSM in the study were higher, around 88%, 84% and 92% respectively. This proportion from HIV sentinel

surveillance plus behavioral component conducted in 2017 was 61.5%, 39.6% and 65% [2]. The success could be resulted by numerous recent administrative laws and specific innovations by domestic and international agencies have facilitated more widespread access to HTC for the Vietnamese population. This scale-up of HIV testing has allowed many individuals to learn their status [1] [13]. Nonetheless, the availability and accessibility of the HTC services also found uneven, concentrated in provinces with high and medium HIV burden and those with high populations of key populations [2] [3]. Study in a mountainous province indicated the rates of men who injects drug ever been tested for HIV was just 23.1% - 37.5% [12]. Evidence from an African country with generalized epidemic model recently showing a low rate (36.6%) of HTC service utilization among young female (15 - 24 years old), who were defined two times more likely than young men to be living with HIV [22]. Our study data also presented high proportion of client (>90%) reported satisfied with HTC received demonstrated quality assurance of service in accordance with efforts to improve the availability of services throughout the country. This result is consistent with findings from other studies internationally, like in India or Egypt [8] [9] [23]. To improve testing efficiency, reduce barrier to service as well as promote uptake among harder-to-reach populations, new HIV testing strategies have introduced recently in Vietnam: self-testing, recency testing, lay provider testing, etc. Note that many HIV prevention activities including new HIV testing approaches are project based and are largely supported through external funding [2] [3]. It poses a challenge to determine which testing strategies are most effective to the key populations and to mobilize resources to maintain the coverage and quality of services.

While the proportion of ART engagement among HIV positive MSM and FSW in our study reached the second 90 target, this indicator in PWID was 74.5%, similar to the current percentage at global and national level (74.5%). Numerous barriers for PWID to HIV care addressed consistently in studies from Vietnam and other countries can be reasons for their delay access [4] [6] [19] [24] [25]. Due to unrandomized sample selection strategy and small size of positive respondents, our findings may not represent for the general key populations. Nonetheless, this finding possibly showed outcomes of great efforts for intervention targeting MSM recent years. ART coverage among MSM in Vietnam as reported in 2017 was just 17.7% [26]. We also observed a highest level of satisfaction with ART service than other ones in the survey (98% of all respondents). Findings on high level of satisfaction with ART service from our study consistent with many other international researches, such as study in Nigeria reported overall satisfaction of services provided at HIV clinics was 85.6% or in Ethiopia, satisfaction rate for ART service provision was as high as 89.6% [16] [17] [18] [27]. Results from study on 1133 ART patients in two provinces in Vietnam, applying Satisfaction with HIV/AIDS Treatment Interview Scale tool for measurement, showed high proportion of patient “completely satisfied” with ART

services (65% - 82%) [6]. Patient satisfaction links with ART adherence, retention and treatment outcome [6] [26]. Positive evaluation of ART service quality from patients may explain for the success of the third 90 global target of Vietnam on percentage of people on treatment have suppressed viral load (96% by 2020) [3].

Other HIV treatment services such as TB-HIV co-infection treatment, PMTCT and other opportunistic care was also given high level of satisfaction from user. Generally, we observed a relatively higher mean score of satisfaction among treatment services than prevention ones. This finding is in part consistent with the recognition of UNAIDS in 2021 that effort to prevent HIV infections have been less successful compare to treatment at the global level. Prevention programs are facing with a numerous of challenges since key populations continue to be marginalized and criminalized for their gender identities and expression, sexual orientation and livelihoods [25]. These issues were also found in Vietnam as barriers to access to HIV services [4] [5] [6] [20] [28].

#### 4.2. Socio-Demographic Factors Affecting Clients' Satisfaction

Our study found having income and employment correlated positively with higher satisfaction of client using needle, syringe and condom services. Present study also confirms ART patients who having a job were more likely to get higher satisfaction with the service than those under unemployment (**Table 5**). These associations were reported in previous studies in Vietnam and in other countries, mainly on MMT and ART services [5] [7] [17]. Conversely, participants attained high school and above were found less likely to satisfy with TB-HIV co-infection treatment. The same negative impact of education factor was addressed in another study. Their results indicated that ART patients with a higher level of education had lower satisfaction with "Service quality and convenience" and "Overall satisfaction" [6]. However, impact of the education attainment as well as other socio-demographic factor on patient satisfaction may vary across of measures, target population and settings [4] [16] [17] [18]. Studies of Bach *et al.* on MMT patients in different settings in Vietnam showed contradictory correlation between education attainment and quality of life score [5] [29]. The association between socio-demographic characteristics and health care satisfaction could be affected by other interactions within the physical and social environment that requires further studies to explore.

In contrast with the findings from prior studies on HIV care and treatment, our findings indicated individuals living with spouses or partners were less likely satisfy with the majority of prevention services including NSP, CLP, MMT and IEC services [4] [7]. It is noteworthy that HIV prevention provisions are different from treatment services in terms of service accessibility and delivery. Findings from studies on ART/MMT treatment addressed the importance of family members in supporting patients during the course of treatment. Those patients who are living with their couples or partners demonstrated noticeably better

treatment outcomes and satisfactory level thanks to family support [7] [30] [31] [32]. Access to prevention services such as condom, needle and syringe, MMT or IEC activities on HIV/AIDS are likely to be misinterpreted as engaging in HIV-related risk behaviors or even misinterpreted as living with HIV. This may be the reason that patients were uncomfortable disclosing their usage of HIV services with their spouse/family members. Meanwhile, social stigma and discrimination related to HIV and high-risk behaviors are still popular, causing crucial barriers to the willingness to seek HIV care and treatment in Vietnam [2] [20] [28] [33]. These issues have also been observed in other countries like India [9] [19] [34].

### 4.3. Advantage and Limitation

The advantage of this study is its ability to determine utilization and satisfaction across nine most basic HIV services from a large sample of five key populations from seven socio-economic regions of Vietnam. As a result, comparison across key populations and services could be done to find the gap in utilization as well as linkage between services. From our knowledge, many studies focused on only one intervention or for one target population. Regarding issue on client's satisfaction which has been given more attention recently, prevail studies usually connect with individuals who receiving treatment. Therefore, findings may not fully represent for those who gave up treatment. Our respondents reported their level of satisfaction with services they used within study duration, regardless of current usage or in the past. In addition, almost all studies measured satisfaction of patients with services provided at clinics such as ART or MMT. Information on other essential preventive interventions, such as NSP, CLP, and IEC was rarely found. So, present study provides data on utilization and satisfaction on both preventive and treatment services. However, several limitations should be acknowledged. Due to the fact that different HIV services contain different features of delivery, for example, treatment often provided as "facility-based" while prevention such as needle, syringe and condom program are "community based" activities, or some services such as HTC were provided by both, there is hardly ever a validated tool measuring satisfaction applicable for all HIV services. Because of that, our study employed Likert-scale to measure level of clients' satisfaction with services received. Despite of applied in measuring patient satisfaction in several studies, this approach may contain negative impact to the validity of the results [16] [17] [18] [27]. In addition, we collected data based on self-reporting which may cause recall bias. To handle social desirability bias, clients were invited into a private space and be interviewed by investigator who were not directly related to services delivery at their living area. All answers and personal information of patients were secured and only used for study purpose. Convenient sampling technique may limit the ability to generalize the findings to the whole key populations. Lastly, limitation in the analysis strategy causes findings on the association between patients' satisfaction with some socio-demographic factors rather narrow.

## 5. Conclusion

Our study findings presented a high percentage of basic HIV/AIDS service utilization among five key populations: ART patients, MMT patients, PWID, FSW and MSM. Data on MSM and FSW showed a high level of HIV service usage and satisfaction. However, low coverage of needles and syringes and of condom programs among PWID and ART patients revealed a potential risk of transmission among these populations and their partners. HTC uptake proportion in the last 12 months has not reached the 90 goals of UNAIDS and the rate of ART engagement among PWID in the last 12 months was just 74.9%. Although respondents reported a high level of satisfaction in general, the level of perceived satisfaction with treatment services was found a little bit higher than preventive interventions. Our results also suggest a correlation between some socio-demographic characteristics such as income, employment, educational attainment and marriage status with clients' satisfaction with several HIV services. To sustain the achievements gained and reach the goal of ending AIDS by 2030, preventive services, especially needle, syringe and condom programs should be prioritized to scale up the coverage and delivery effectively. Innovative intervention approaches for PWID also should be promoted to scale up access and utilization of HIV services. Further studies explaining the correlation between socio-demographic factors with clients' satisfaction with prevention services should be focused to provide evidence for designing appropriate interventions.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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