

# **QUALITY IMPROVEMENT CYCLE IN OPUWO DISTRICT HOSPITAL HIV/AIDS**

## **CLINIC, KUNENE REGION, NAMIBIA**

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**December, 2013**

## **DECLARATION**

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own original work, that I am the authorship owner thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Signature:

Date:

## **ABSTRACT**

### **Introduction**

The study aimed to assess and improve the quality of care for Opuwo District Hospital HIV/AIDS clinic in Namibia. Currently, there is no literature available on the quality of care for the HIV/AIDS clinic at primary level in Namibia.

Opuwo District has one of the lowest prevalence rates of HIV/AIDS in Namibia with 8.8% among ANC patients. A total of 1714 HIV positive patients are enrolled at Opuwo District Hospital HIV/AIDS clinic and 109 (6.36%) of them are defaulting treatment. Based on these statistics, I decided to do a quality improvement cycle of the HIV clinic system to see if it would improve adherence. Adherence will improve if the quality of care rendered to patients is standard (18).

### **Aim and Objectives**

The aim of the research is to improve the quality of care for patients on ARVs, with concern for factors influencing adherence in Opuwo district Hospital.

The objectives are as follow:

- 1) To evaluate the quality of care that was given to patient registered at Opuwo HIV/AIDS clinic since 2007
- 2) To correct inadequacies discovered during initial evaluation of the clinic to improve the quality of care
- 3) To evaluate if corrected inadequacies have led to improved quality

### **Method**

The study design is a quality improvement cycle

The quality improvement cycle done was a teamwork that involved trained nurses in HIV, data clerk, counsellors, trained pharmacist in ARV therapy and a doctor. This team audited care rendered by looking at the structure, process and outcome of the care given at the clinic; then inadequacies discovered were corrected and the whole system was re-audited to see if there is improvement.

The study population was patients attending HIV/AIDS clinic since 2007 until date and the sample size was fifty with selection made by random sample using simple proportion (HIVQUAL system that

was automatically programmed to calculate sample size based on the population of patients entered into the system).

Data on structure was carried out prospectively by observing what is on the ground in term of equipment, staff, tools etc. Data for proper documentation, weight checked at every visit, clinical staging at every visit, counselling at every visit, TB screening etc and outcome (regular in clinic attendance, viral load below 1000 after 6months on HAART, etc) were audited retrospectively using patient's file.

## **Results**

Using chi-square test to analyse the data, the intervention was successful because the P-values were less than 0.05 in most of the indicators audited for process and outcome.

It was found that after the intervention (in-service training, re-enforce proper documentation, re-enforce health education by all staff not limit it to counsellors alone, wall poster to remind staff on ordering investigation for CD4, viral load when due and follow up results by doctor or nurses, weigh check for all patients before starting consultation, doctor and nurses should prescribe IPT, Co-trimoxazole and multivitamins) was made, adherence improved from 46% to 82% and opportunistic infection declined below 15%.

## **Conclusion**

The quality improvement cycle enabled simple changes like in-service training, re-enforcement of health education by all staff, etc to be made at the clinic, which lead to appreciable quality improvement over a short period.

## **ACKNOWLEDGEMENTS**

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- 7) To my dear wife for encouragement, proof reading and support I love you darling.

## **DEDICATION**

This piece of work is dedicated to my late daughter Princess Toluwanimi Alagbe, who died through the course of this work; May your beautiful soul rest in perfect peace.

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### ABBREVIATION

HIV	Human immunodeficiency virus
AIDS	Acquired immunodeficiency syndrome
ARV	Antiretroviral
HIVQUAL	Human immunodeficiency virus quality improvement
WHO	World health organization
UN	united Nations
ANC	Antenatal clinic
HAART	Highly active antiretroviral therapy
ART	Antiretroviral therapy
HREC	Human research ethics committee
TB	Tuberculosis
INH	Isoniazide
IPT	isoniazide prophylaxis therapy
PD	Proper documentation
WCAEV	weight checked at every visit
CSAEV	Clinical staging at every visit
CAEV	counselling at every visit
TSAEV	Tuberculosis screening at every visit
ASAEV	Alcohol screening at every visit
AQQNI	Assessment of quality and quantity of nutritional intake
PQFH	Patient qualify for highly active antiretroviral therapy
PQFHS	Patient qualifies for highly active antiretroviral therapy and started on highly active antiretroviral therapy
VL6mthH	Viral load checked every 6 months of highly active antiretroviral therapy
CD46mthH	CD4 Count checked 6months after highly active antiretroviral therapy initiation
GINHP	Given isoniazide prophylaxis
UC	Use contraceptives
CTXP	Co-trimoxazole prophylaxis
MVT	multivitamins
SCrC3mth	serum creatinine checked at 3 months
SCrC6mth	serum creatinine checked at 6months
SCrCE6mth	serum creatinine checked every 6months
RCA	Regular in clinic attendance
VL<1000A6mthH	Viral load below 1000 after 6months on highly active antiretroviral therapy
C6mthIPT	completed 6 months of isoniazide prophylaxis therapy
OI	Opportunistic infection

## Chapter 1

### **INTRODUCTION, BACKGROUND AND MOTIVATION**

Human immunodeficiency virus (HIV) belongs to the retrovirus family called Lentivirus that causes acquired immunodeficiency syndrome (AIDS) (1) (2). WHO has declared HIV infection in humans as pandemic, and contentment about it may play a key role in HIV risk (3) (4). Since its discovery in 1981, AIDS have killed more than 25 million people worldwide (5). HIV infects about 0.6% of the world's population (5). In 2009, AIDS claimed an estimated 1.8 million lives, down from a global peak of 2.1 million in 2004 (6). Approximately 260,000 children died of AIDS in 2009(6). A disproportionate number of AIDS deaths occur in Sub-Saharan Africa, retarding economic growth and exacerbating the burden of poverty (7). An estimated 22.5 million people (68% of the global total) live with HIV in sub-Saharan Africa, which is also home to 90% of the world's 16.6 million children orphaned by HIV (6). Treatment with antiretroviral drugs reduces both the mortality and the morbidity of HIV infection (8).

Namibia is one of the countries hit by the HIV epidemic with the prevalence among pregnant women attending ANC in the country standing at 17.8% in 2010(9). HIV in Namibia is primarily transmitted through heterosexual transmission. The Government of Namibia has been monitoring HIV prevalence since 1992 through sentinel surveillance of pregnant at selected antenatal facilities throughout the country (9).

Opuwo district has one of the lowest prevalence of HIV/AIDS in Namibia at 8.8%. At the moment 736 patients are on free HAART, courtesy of the government and foreign donors. Despite the free treatment and availability of medication, the number of HAART defaulters in the district is alarming and as at January 2012, stands at 109 patients. This data from Opuwo State Hospital's HIV Clinic is a wakeup call to the risk of treatment failure and the development of widespread HIV (Human Immunodeficiency Virus) resistance strain unless all patients are given the continuing support they need to achieve full adherence to ARV's.

#### **Overview of the literature**

The quantity rather than quality of health services has been the focus historically in developing countries and ample evidence suggests that quality of care (or the lack of it) must be at the centre of every discussion about better health (10).

In the same way clinical aspects of care are routinely reviewed and changed, the HIV quality program needs to be continuously and systemically evaluated and improved (11).

The necessity for quality and safety improvement initiatives permeates health care. Lohr and Schroeder define quality health care as the degree to which health services for individual and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (12).

According to the Institute of Medicine (IOM) report, *To Err Is Human*, the majority of medical errors result from faulty system and processes, not from individuals (13). Processes that are inefficient and variable, changing case mix of patients, health insurance, differences in provider education and experience, and numerous other factors contribute to the complexity of health care. With this in mind, the IOM also asserted that today's health care industry function at a lower level than it can and should.

The following examples are illustrative: In one study, evaluating paediatric care in Papua New Guinea, 69 percent of health centre workers reported that they checked for only two of the four examination criteria for pneumonia cases (14). Only 24 percent of these workers were able to indicate correct treatment for malaria. When clinical encounters were observed at aid posts, providers met minimal examination criteria in only 1 percent of cases.

In a study in Pakistan, only 56 percent of providers met an acceptable diagnostic standard for viral diarrhoea and only 35 percent met the acceptable standard for treatment (15).

The concept of quality is one of the leading forces in improving health services. According to Tamura and Perriens, The International Organization for Standardization (ISO) defines quality as “the totality of features and characteristics of an entity that bears on its ability to satisfy a stated or implied need” (16).

Hardon stated that ‘AIDS is particularly challenging because of the need to achieve very high (at least 95%) levels of adherence to prevent treatment failure and the generation of ARV resistance’ (17). In this study, adherence means compliance to the demands of ART/ARV (18).

Reiter and Gary emphasised that adherence will improve if quality of care rendered to patients is good (18). A number of factors are associated with adherence to ART and are commonly divided into five intersecting categories. These categories are patients' variables, treatment regimens, disease characteristics, patients-provider relationship and clinical setting (18).

Rabkin, El- Sadr, and Abrahams; described adherence as engagement and accurate participation of an informed patient in a plan of care’ (19). They further stated that ‘The concept of ‘adherence’ has a broader meaning than compliance which encompasses the extent to which a patient follows instructions, implying understanding, consent and partnership (19). It also includes entering into and

continuing in a programme, or care plan, notably, meeting appointment and tests as scheduled. Adherence to treatment encompasses more than adherence to medications, rather encompasses regular clinic attendance, etc.

## Chapter 2

### **METHODS**

#### **Aim**

To improve the quality of care for patients on ARVs, with the concern for factors influencing adherence in Opuwo State Hospital

#### **Objectives**

- 1) To evaluate the quality of care that was given to patient registered at Opuwo HIV/AIDS clinic since 2007
- 2) To correct inadequacies discovered during initial evaluation of the clinic to improve the quality of care
- 3) To evaluate if corrected inadequacies have led to improved quality

#### **Study design**

The study design is a quality improvement cycle.

#### **Setting Target of Standard**

The criteria used in setting the targeted standard are based on Namibia HIV monitoring indicators; the team agreed that all indicators should have at least 90% and opportunistic infection to decline to 15%.

#### **Quality Improvement Cycle (QIC) Team**

The quality improvement team comprised of the HIV/AIDS doctor, the pharmacist attached to the HIV/AIDS Clinics, two HIV/AIDS clinic nurses (1 registered nurse and 1 enrolled nurse), the clinic data clerk, counsellors and myself.

Quality of service can be improved using the quality improvement cycle, which consists of five essential steps:

- 1) Agree criteria( set target standard)
- 2) Observe practice(collect data)
- 3) Evaluate information

- 4) Implement invention
- 5) Re-audit

### **The Setting**

The study took place in Opuwo district hospital, Kunene region health directorate in the Republic of Namibia. The district has a 90 beds capacity hospital, two health centres, 13 Primary Health Care Clinics and ninety-one outreach points. The total district population is 49,018. The study took place in Opuwo state hospital because the HIV/AIDS clinic is situated in this hospital. HIV prevalence rate by ANC sentinel surveillance in Opuwo is 8.8% of population of women attending the ante-natal clinic in Namibia.

### **Study Population:**

The study is on the entire HIV/AIDS clinic system in Opuwo District Hospital and population will be the people living with human immunodeficiency virus (HIV) that registered in Opuwo HIV/AIDS clinic.

### **Data Collection**

Sample size was 50 and was determined by HIVQUAL software. The sample size confidence interval was 95% and selection was by random sampling.

Data on equipment, staff, tools, etc were carried out prospectively.

The doctor using Excel spreadsheet collected data for the process like proper documentation, counselling on adherence, etc prospectively.

The outcome data was assessed by checking the folder of all patients attending HIV/AIDS clinic to see how many of them defaulted treatment, how many of them have their Viral Load below 1000 after 6months of HAART, number of patients that completed 6months of IPT and patients with opportunistic infections.

### **Evaluate Information**

Baseline data analyses and results were shared with the HIV quality committee.

The summaries of performance measurement data include graphics such as tables or charts.

The analysis began with a few questions or hypotheses before spending too much time digging through the data. Data from the audit was analyzed using simple frequencies / percentages .The display of data results is limited to summaries of the most important findings.

## **PLAN CARE AND IMPLEMENT CHANGE**

### **Planning Change**

Discussion with these key role-players was conducted as to what changes could realistically be implemented. Questions posed included: “Did we meet our goal? What worked and what did not work? Do we need additional test cycle?”

The following elements are helpful to maintain long-term effects of implemented gains: re-measure performance level, educate staff to support improvements, identify a champion of change, ensure ownership of change and institutionalize changes (11).

### **Implementation of change**

The team was briefed and a plan of action was collectively decided on, a period of approximately six months was given for the changes to be implemented.

### **Favourable risk-benefit ratio**

There is no risk involved but rather benefit, because we cannot continue to do things in the old incorrect way. When assessing our services and implementing change, it will benefit the patients immediately and the community in the long run.

### **Independent review**

Ethics approval was granted by HREC (Human Research Ethics Committee) before proceeding with the research and from the Namibian Ministry of Health and Social Services to use HIV/AIDS clinic for collection of data.



### Chapter 3

#### RESULTS ANALYSIS

##### STRUCTURE

The researcher walking through the facility and observing the items listed on Table 3.1 on 5 days of data collection audited the structural criteria.

A total of 50 patients had their file audited, 18(36%) are males and 32(64%) are females

The table 3.1 shows the result of the audit as at 30<sup>th</sup> October 2012 of the structural audit.

**Table 3.1 –Structural Assessment**

Does the clinic have an isolated building?	No isolated building for patients living with HIV/AIDS
Does the clinic have trained personnel?	Yes, one registered Nurse, one enrolled Nurse, a Data clerk, counsellors and pharmacy assistant. All of them are trained in HIV/AIDS. But there is no doctor for the clinic specifically
Does the clinic have a pharmacy department?	Yes
Does the clinic have a functioning computer for data storage?	Yes, there is a computer and a printer
Does the clinic have charts to counsel clients?	Yes
Is the appropriate medication in stock on the day of the audit?	Yes

Does the clinic have a separate HIV testing room?	No direct testing room in the clinic, patient have to go out of the clinic to nearby testing room.
Trained members of staff adequate for patient numbers?	

## PROCESS

Table 3.2 show the initial audit result, and only four indicators met the standard of good quality of care because they scored more than 90%. This audit was done by reviewing the patients' file.

**Table 3.2-Initial Process Assessment**

INDICATOR	INITIAL AUDIT	PERCENTAGE OF INITIAL AUDIT
Proper documentation	22	42%
weight checked at every visit	44	88%
Clinical staging at every visit	49	98%
Counselling at every visit	50	100%
TB screening at every visit	48	96%
Alcohol screening at every visit	44	88%
Assessment of quality and quantity of nutritional intake	41	82%
Patient Qualify for HAART	42	84%
Patient Qualify for HAART and started on HAART	33	66%
Viral load checked every 6months of HAART	3	6%
CD4 Count checked 6 months after HAART Initiation	1	2%
Given INH prophylaxis	18	36%
Use Contraceptives	44	88%
On Co-trimoxazole prophylaxis	45	90%
On multivitamins	43	86%

serum creatinine checked at 3 months	0	0%
serum creatinine checked at 6 months	0	0%
serum creatinine checked every 6 months	0	0%

## OUTCOME

**Table 3.3 outcome assessment**

Indicator	Baseline((Initial Assessment)	Baseline((Initial Assessment) percentage
Regular in clinic attendance	23	46%
Viral load below 1000 after 6months on HAART	2	4%
Patients that completed 6months of IPT	10	20%
Patients with opportunistic infection	23	46%

### Plan and implement changes to improve the quality of care for HIV/AIDS

The initial audit findings were presented to the audit team on 30<sup>th</sup> October 2012, only four indicators met the set standard. Discussion with the team was conducted as to what changes could realistically be implemented.

The team welcomed the findings and voiced their limitations and concerns;

- Time constraints: the individual health care providers have to see a large number of patients daily, thus they cannot spend more than 10 minutes with a patient.
- Dwindling staff members: vacant posts are not being filled, or the posts are being frozen, thus resulting in increasing pressure on the existing staff. The trend was observed by the family physician and applied to both nursing staff and doctors.

- Increasing patient population: despite a shortage of staff members the patient population is

Indicators	Initial Audit	Re-audit after 6months	P-value
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increasing.

- Patient

adherence to treatment: often a problem despite a perception that patient health care education was adequate.

## INTERVENTIONS

- Re-enforce proper documentation.
- Re-enforce health education by all staff not limit it to counsellors alone.
- Wall poster to remind staff on ordering investigation for CD4, viral load when due and follow up results by doctor or nurses.
- Weigh check for all patients before starting consultation
- In service training
- Doctor and nurses should prescribe IPT, Co-trimoxazole and multivitamins

However, the team agreed to improve on the care of patients and to implement changes within six months period of 1<sup>st</sup> November 2012 to 30<sup>st</sup> April 2013. In January 2013 re-enforcement of changes implement was carried out and re-auditing was carried out in the first week of May 2013.

Regarding the structure, the team had no power to effect any change, because staff recruitment and buildings are the responsibility of the ministry of health. However, hospital management was consulted to remind/inform them about the structural challenges.

The post-intervention medical audit included all the patients from the baseline audit of 1<sup>st</sup> November 2012 to 30<sup>th</sup> April 2013. The total number of folders that were re-audited was 47; the remaining three could not be located

Table 3.4 compares the percentage of initial audit, re-audit for the process, and out of 18 indicators looked at, there was improvement in 16(The intervention was successful because the P-value is less than 0.05) and the two without improvement are indicators that nothing tangible could correct the indicators in question at the time of auditing.

### Table 3.4a Final process

Proper documentation	42%	77%	0.00045
weight checked at every visit	88%	92%	0.15506
Clinical staging at every visit	98%	96%	0.24789
counselling at every visit	100%	96%	0.10096
TB screening at every visit	96%	96%	0.00391
Alcohol screening at every visit	88%	96%	0.16494
Assessment of quality and quantity of nutritional intake	82%	86%	0.12838
Patient Qualify for HAART	84%	88%	0.02723
Patient Qualify for HAART and started on HAART	66%	80%	0.00003
Viral load checked every 6 months of HAART	6%	38%	0.00000
CD4 Count checked 6months after HAART Initiation	2%	74%	0.01958
Given INH prophylaxis	36%	56%	0.04788
Use Contraceptives	88%	94%	0.00001
On Co-trimoxazole	90%	60%	0.00176

prophylaxis			
serum creatinine checked every 6months	0%	48%	0.00000

<b>Indicators</b>	<b>Initial Audit</b>	<b>Re-audit after 6months</b>	<b>P-value</b>
regular in clinic attendance	<b>46%</b>	<b>82%</b>	<b>0.00001</b>
Viral load below 1000 after 6months on HAART	<b>4%</b>	<b>4%</b>	<b>0.10096</b>
that completed 6months of IPT	20%	40%	<b>0.01563</b>
with opportunistic infection	46%	<b>14%</b>	<b>0.00072</b>

**Table3.4b FINAL OUTCOME ASSESSMENT****ANALYSIS OF THE DATA**

The data was captured in an Excel spreadsheet and analysed by the Centre for Statistical Consultation at the Stellenbosch University.

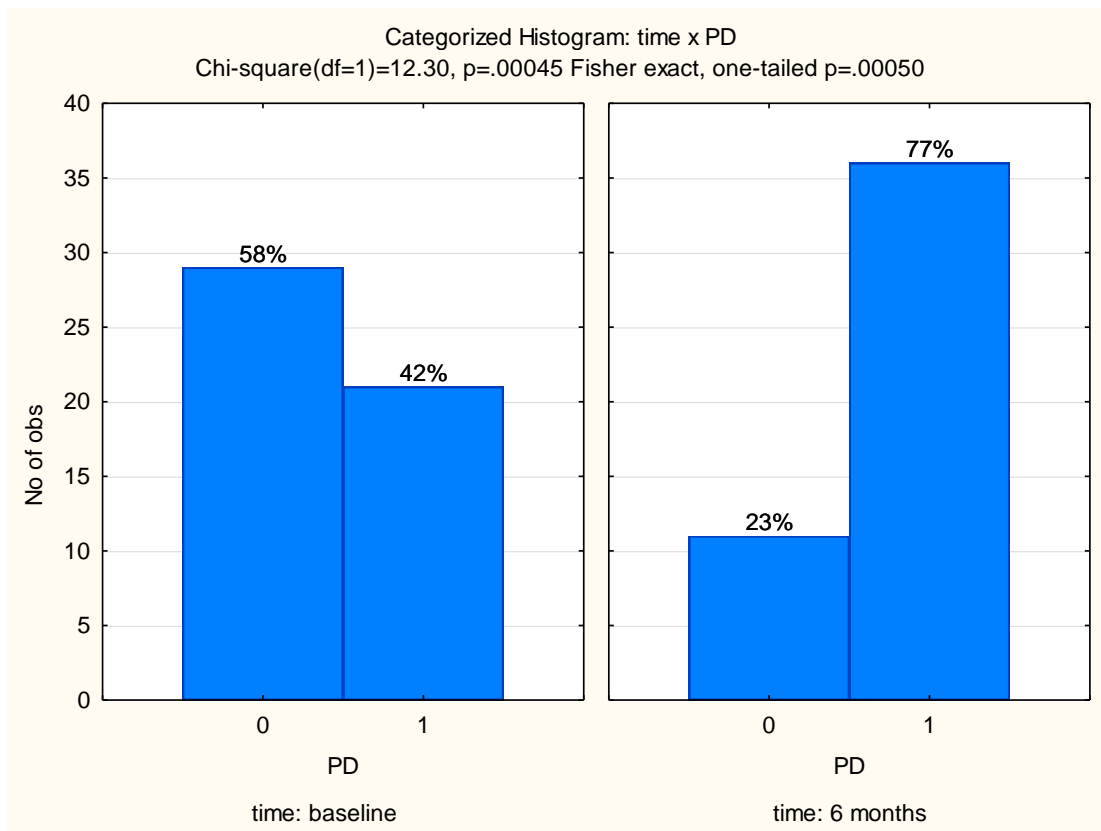
The null hypothesis is that there is no difference between before and after the audit.

Using chi-square test to analysis the data, the intervention was successful because the P-value show in table above is less than 0.05 in most of the indicators and the outcome is significant with opportunistic infection declined below 15%.

The general comment is that for indicators that already have high values, the scope for improvement is low but for indicators with low values there is room for improvement. This also applied to the outcome, as it is not possible to alter what had happened in the initial 6month of starting HAART.

Time	PD 0	PD 1	Row Totals
Baseline	29	21	50
Row %	58.00%	42.00%	
6 months	11	36	47
Row %	23.40%	76.60%	
Totals	40	57	97

**Table 3.5: 2-way Summary Table: Observed Frequencies of Time | PD**



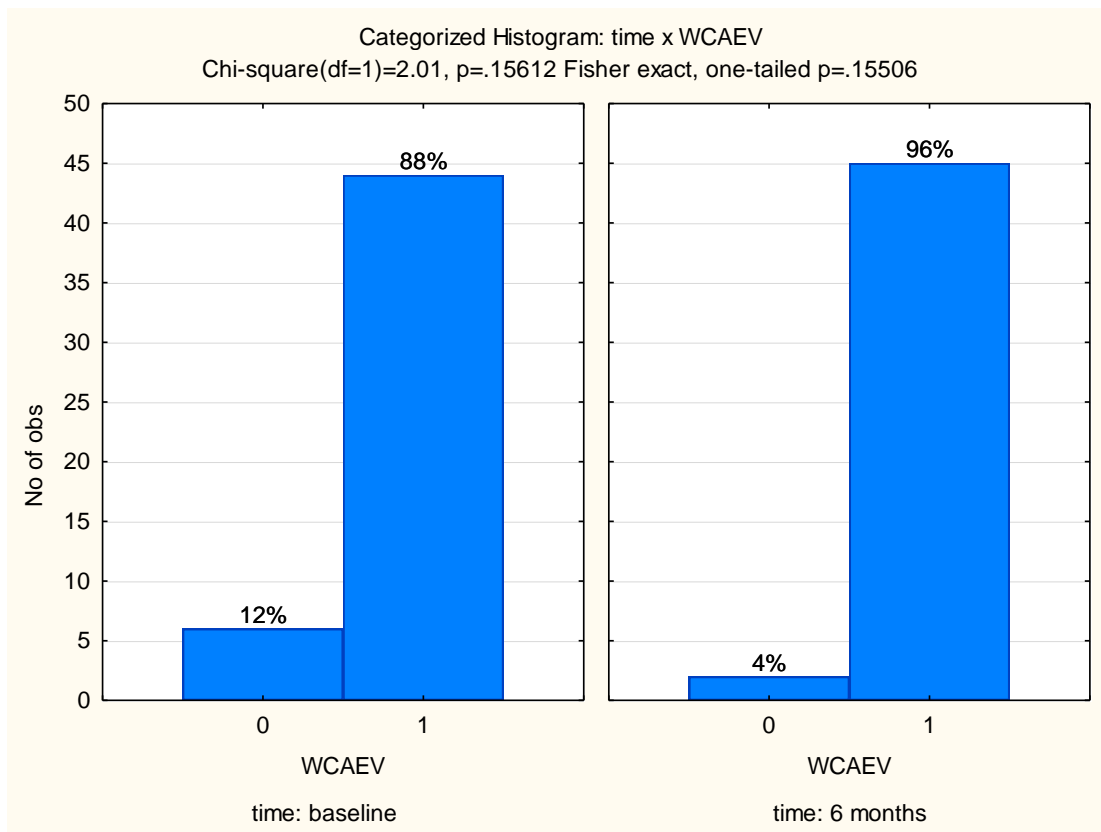
**Figure 3.1: Time |PD**

Table 3.5 and Figure 3.1 shows the histogram of time and proper documentation; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant.



Time	WCAEV 0	WCAEV 1	Row Totals
Baseline	6	44	50
Row %	12.00%	88.00%	
6 months	2	45	47
Row %	4.26%	95.74%	
Totals	8	89	97

**Table 3.6: 2-way Summary Table: Observed Frequencies of Time/ WCAEV**

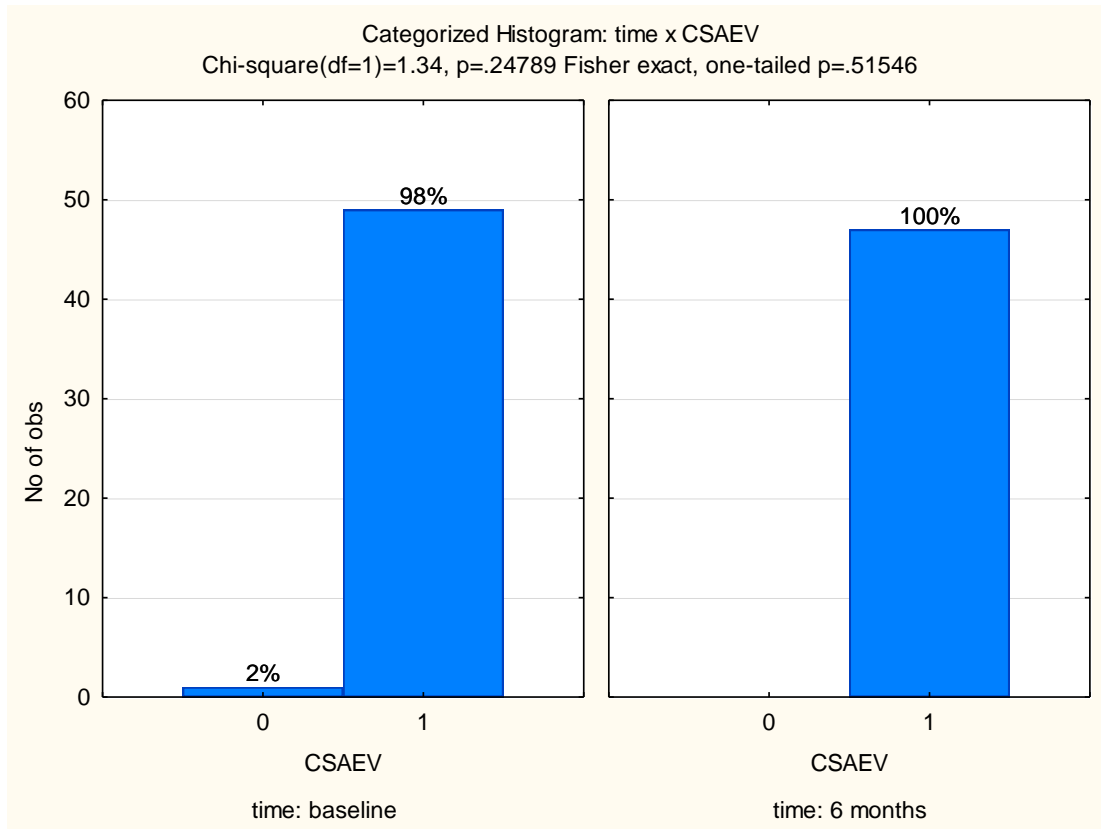


**Figure 3.2: Time | WCAEV**

Table 3.6 and Figure 3.2 shows the histogram of time and WCAEV; and the P-value tested, since P value is more than 0.05 after intervention, the change is not statistically significant.

Time	CSAEV 0	CSAEV 1	Row Totals
Baseline	1	49	50
Row %	2.00%	98.00%	
6 months	0	47	47
Row %	0.00%	100.00%	
Totals	1	96	97

**Table 3.7 Two way Summary Table: Observed Frequencies Time/CSAEV**

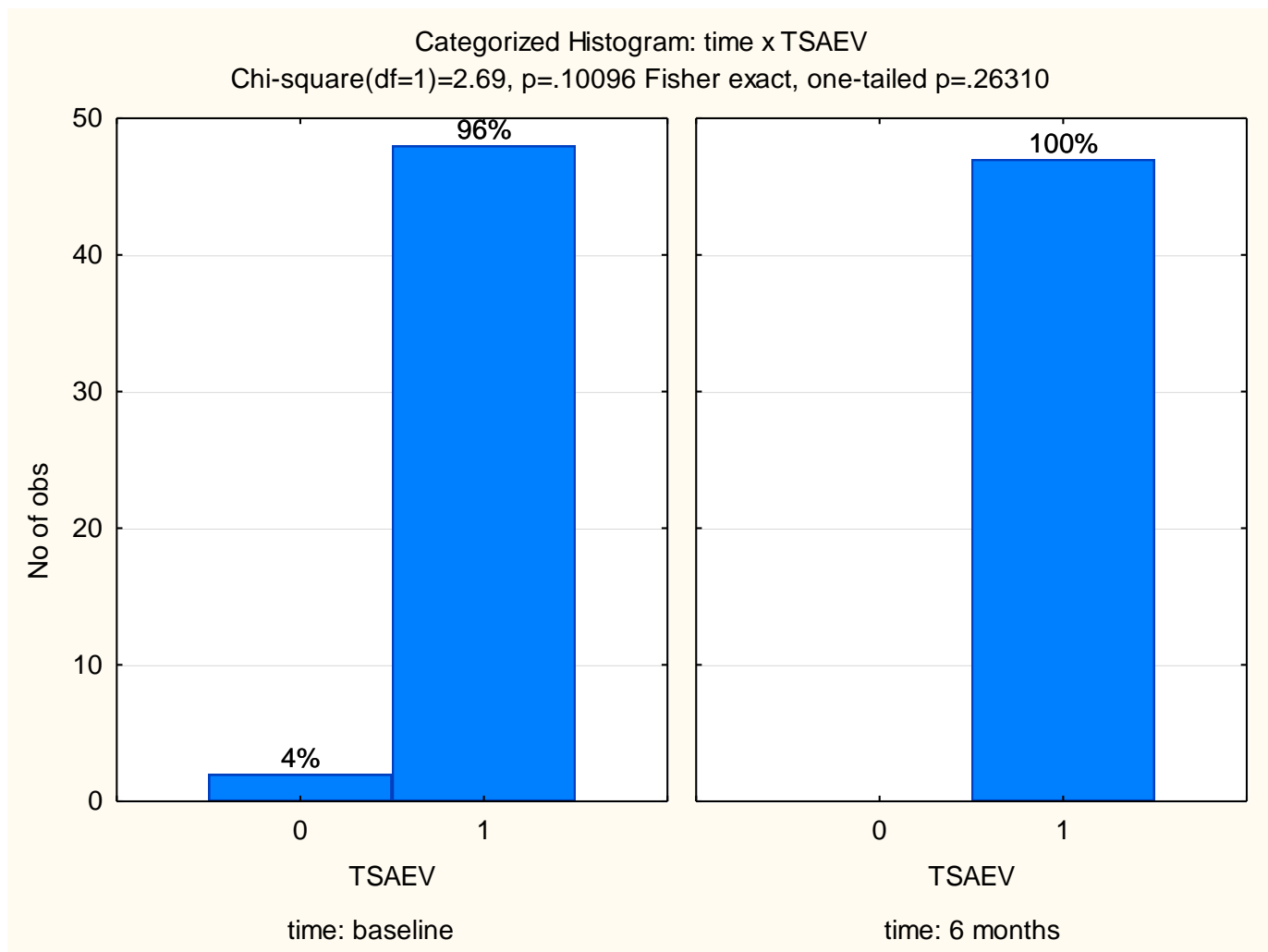


**Figure 3.3 Categorized Histogram: time x CSAEV**

Table 3.7 and Figure 3.3 shows the histogram of time and CSAEV; and the P-value tested, since P value is more than 0.05 after intervention, the change is not statistically significant.

Time	TSAEV 0	TSAEV 1	Row Totals
Baseline	2	48	50
Row %	4.00%	96.00%	
6 months	0	47	47
Row %	0.00%	100.00%	
Totals	2	95	97

**Table 3.8: 2-Way Summary Table: Observed Frequencies of Time/TSAEV**

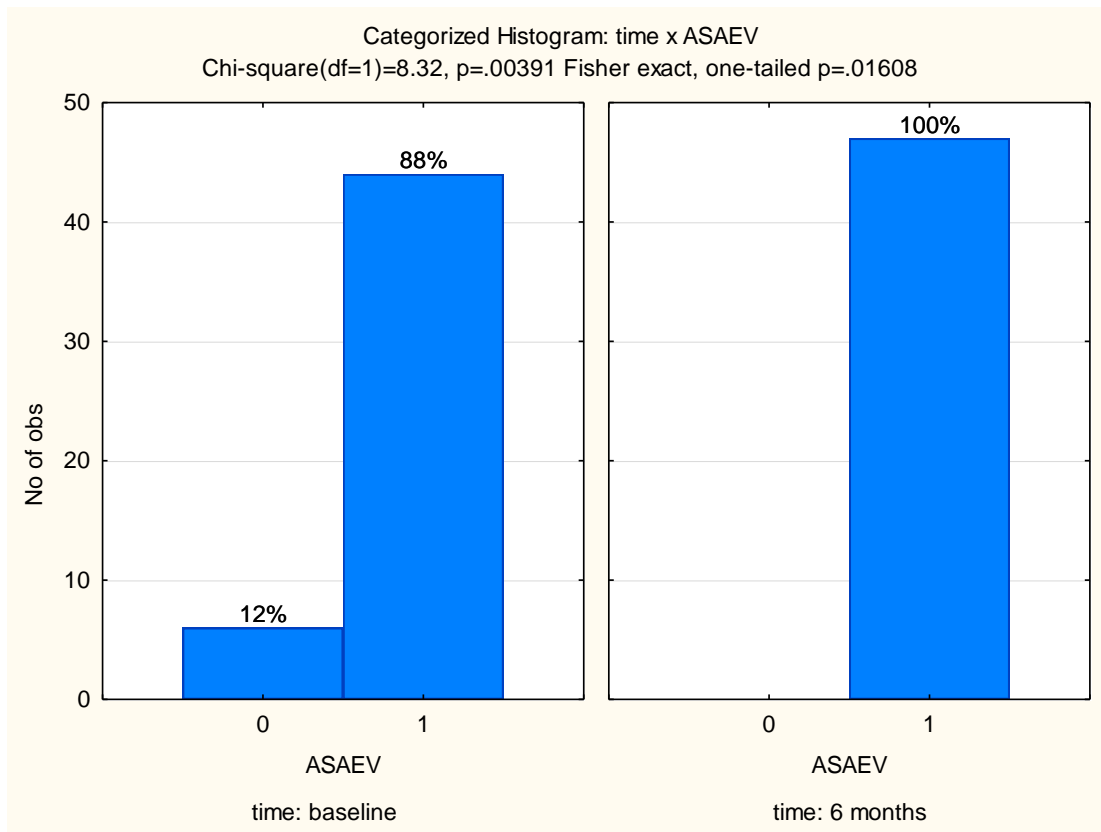


**Figure 3.4 Categorized Histogram: Time x TSAEV**

Table 3.8 and Figure 3.4 shows the histogram of time and TSAEV; and the P-value tested, since P value is more than 0.05 after intervention, the change is not statistically significant.

<b>Time</b>	<b>ASEV 0</b>	<b>ASEV 1</b>	<b>Row Totals</b>
<b>Baseline</b>	6	44	50
<b>Row %</b>	12.00%	88.00%	
<b>6 months</b>	0	47	47
<b>Row %</b>	0.00%	100.00%	
<b>Totals</b>	6	91	97

**Table 3.9-Way Summary Table: Observed Frequencies of Time/ASEV**

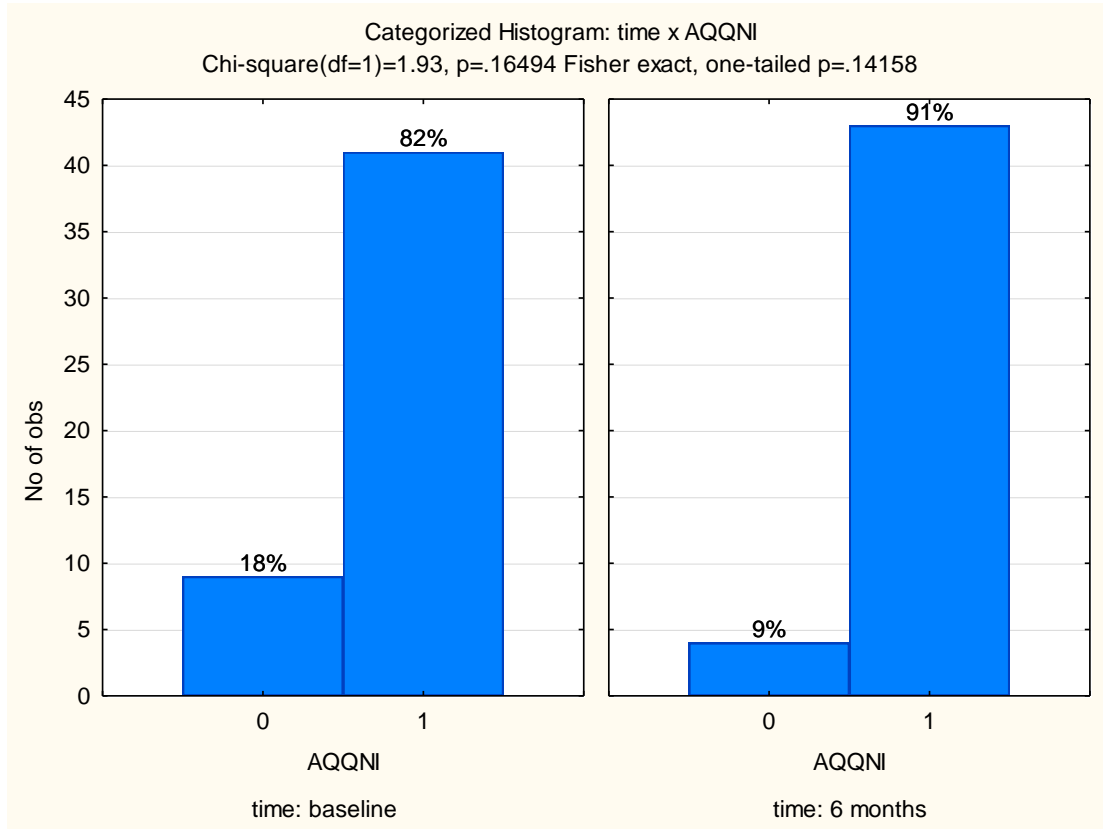


**Figure 3.5 Categorized Histogram Time x ASAEV**

Table 3.9 and Figure 3.5 shows the histogram of time and ASAEV; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant.

<b>Time</b>	<b>AQQNI 0</b>	<b>AQQNI 1</b>	<b>Row Totals</b>
<b>Baseline</b>	9	41	50
<b>Row %</b>	18.00%	82.00%	
<b>6 months</b>	4	43	47
<b>Row %</b>	8.51%	91.49%	
<b>Totals</b>	13	84	97

**Table 3.10: 2-Way Summary Table of Observed Frequencies Time | AQQNI**

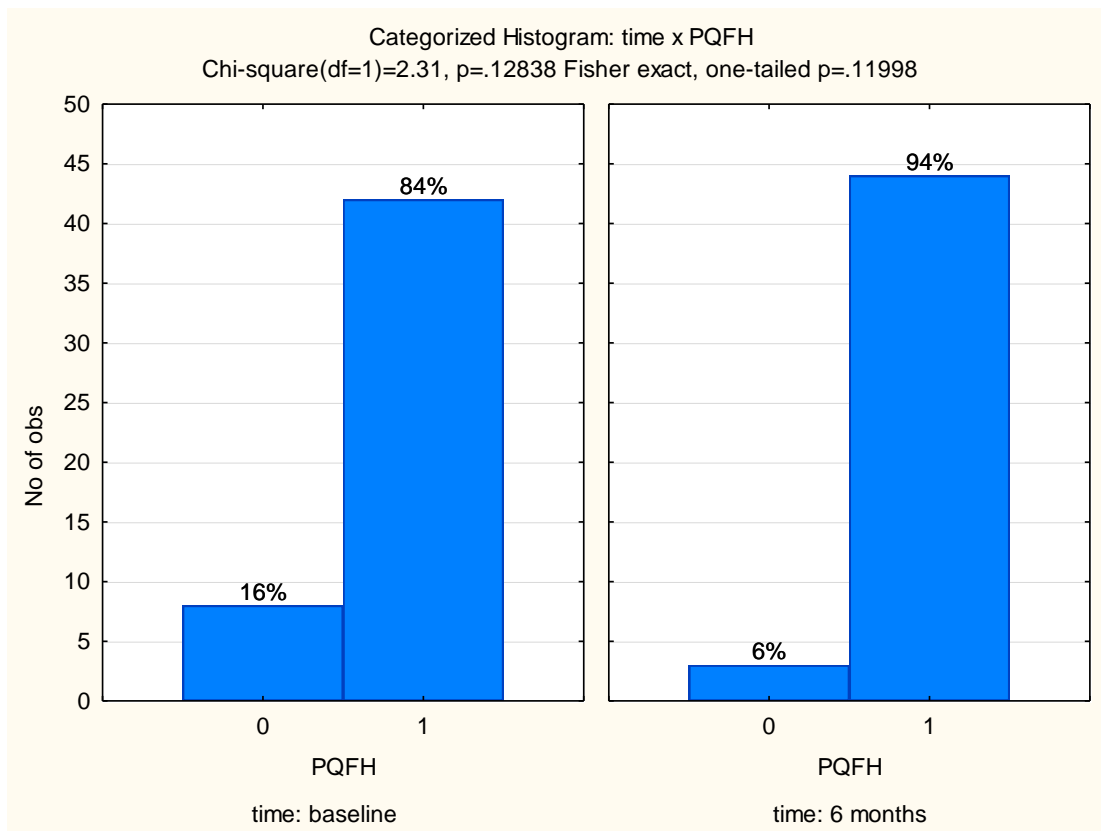


**Figure 3.6 Categorized Histogram Time x AQQNI**

Table 3.10 and Figure 3.6 shows the histogram of time and AQQN; and the P-value tested, since P value is more than 0.05 after intervention, the change is not statistically significant.

Time	PQFH 0	PQFH 1	Row Totals
Baseline	8	42	50
Row %	16.00%	84.00%	
6 months	3	44	47
Row %	6.38%	93.62%	
Totals	11	86	97

**Table 3.11: 2-Way Summary Observed Frequencies Time | PQFH**

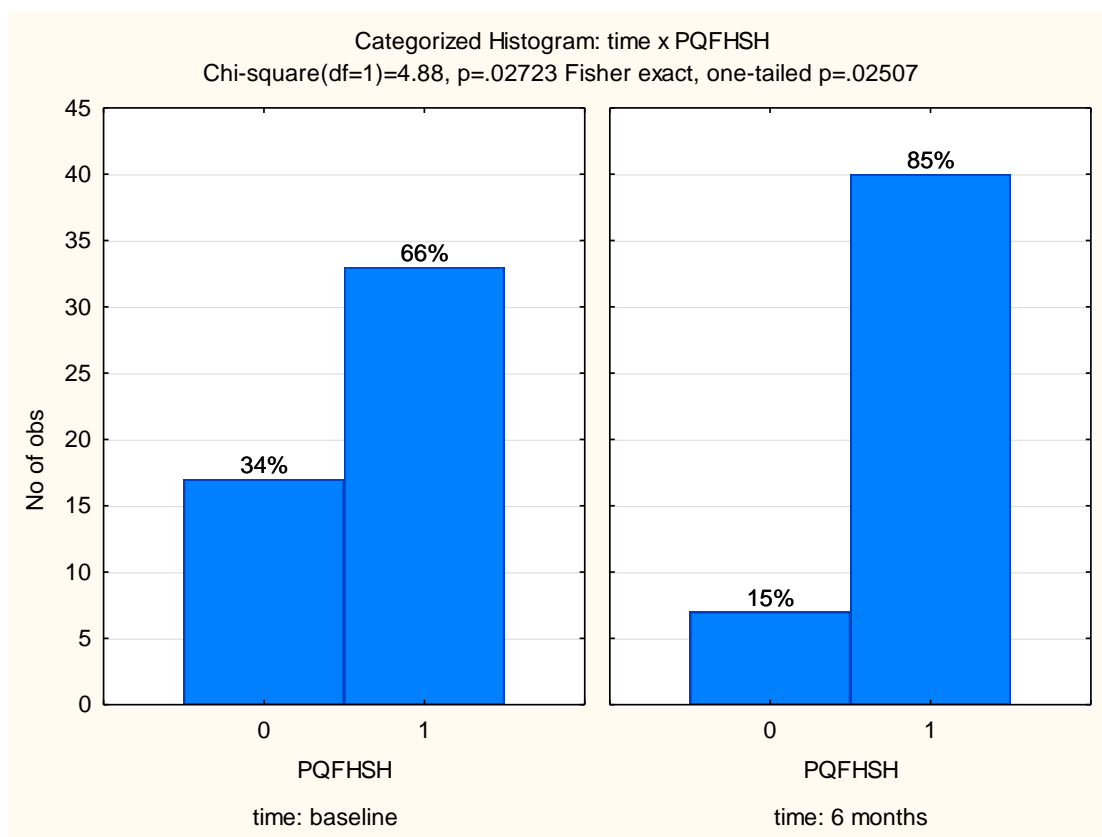


**Figure 3.7 Categorized Histogram Time x PQFH**

Table 3.11 and Figure 3.7 shows the histogram of time and PQFH; and the P-value tested, since P value is more than 0.05 after intervention, the change is not statistically significant.

Time	PQFHSH 0	PQFHSH 1	Row Totals
Baseline	17	33	50
Row %	34.00%	66.00%	
6 months	7	40	47
Row %	14.89%	85.11%	
Totals	24	73	97

**Table 3.12: 2-Way Summary Observed Frequencies Time | PQFHSH**



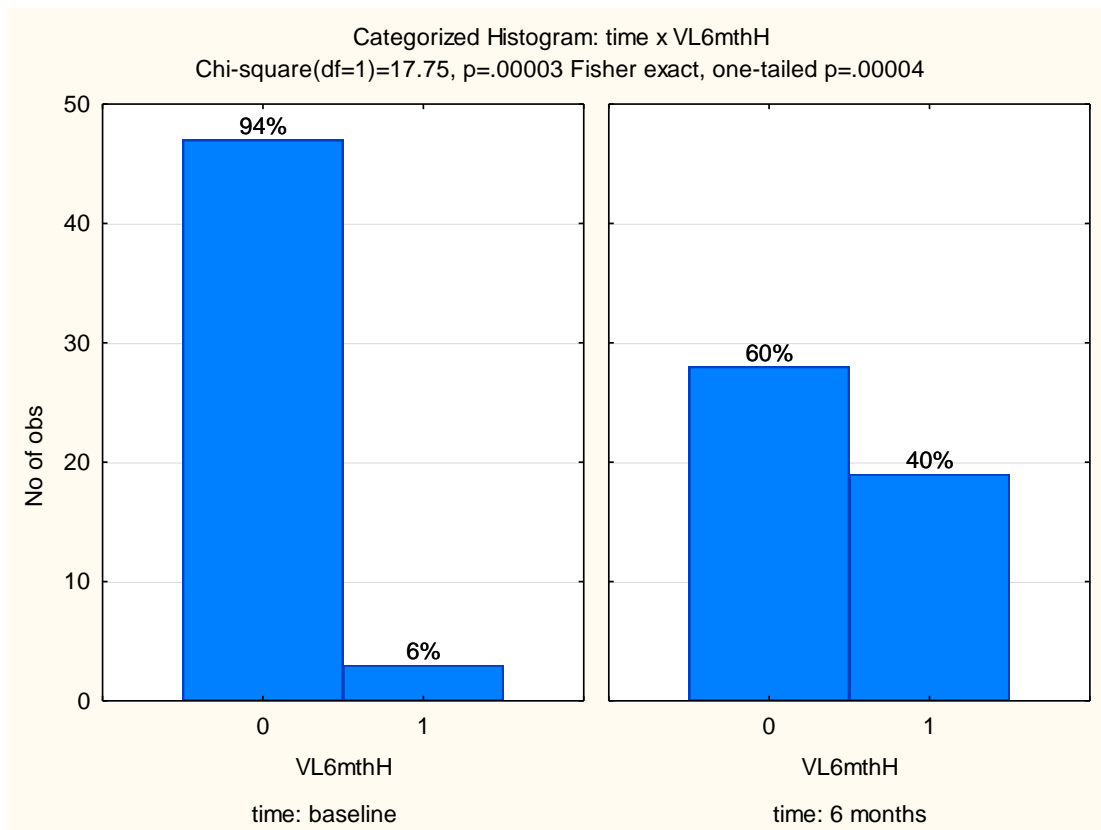
**Figure 3.8 Categorized Histogram Time x PQFHSH**



Table 3.12 and Figure 3.8 shows the histogram of time and PQFHSH; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant.

Time	VL6mthH 0	VL6mthH 1	Row Totals
Baseline	47	3	50
Row %	94.00%	6.00%	
6 months	28	19	47
Row %	59.57%	40.43%	
Totals	75	22	97

**Table 3.13: 2-Way Summary Observed Frequencies Time | VL6mthH**

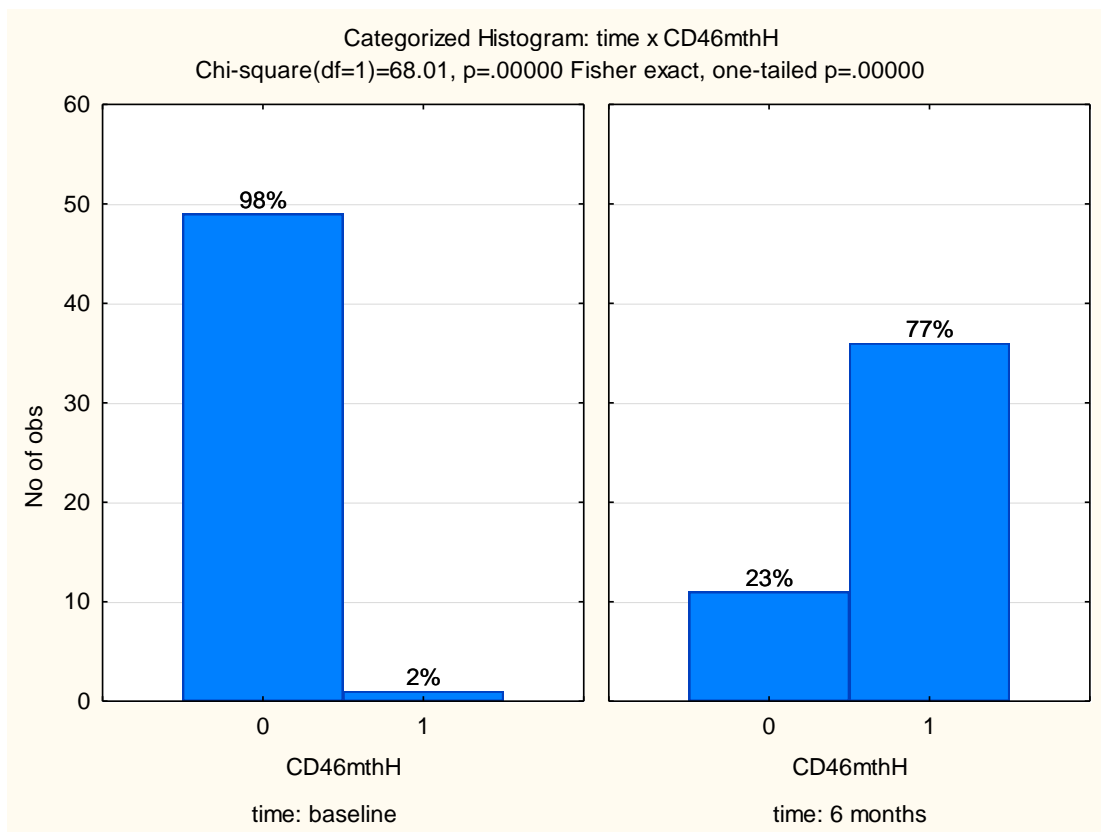


**Figure 3.9 Categorized Histogram Time x VL6mthH**

Table 3.13 and Figure 3.9 shows the histogram of time and VL6mthH; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>CD46mthH 0</b>	<b>CD46mthH 1</b>	<b>Row Totals</b>
<b>Baseline</b>	49	1	50
<b>Row %</b>	98.00%	2.00%	
<b>6 months</b>	11	36	47
<b>Row %</b>	23.40%	76.60%	
<b>Totals</b>	60	37	97

**Table 3.14: 2-Way Summary Observed Frequencies Time | CD46mthH**

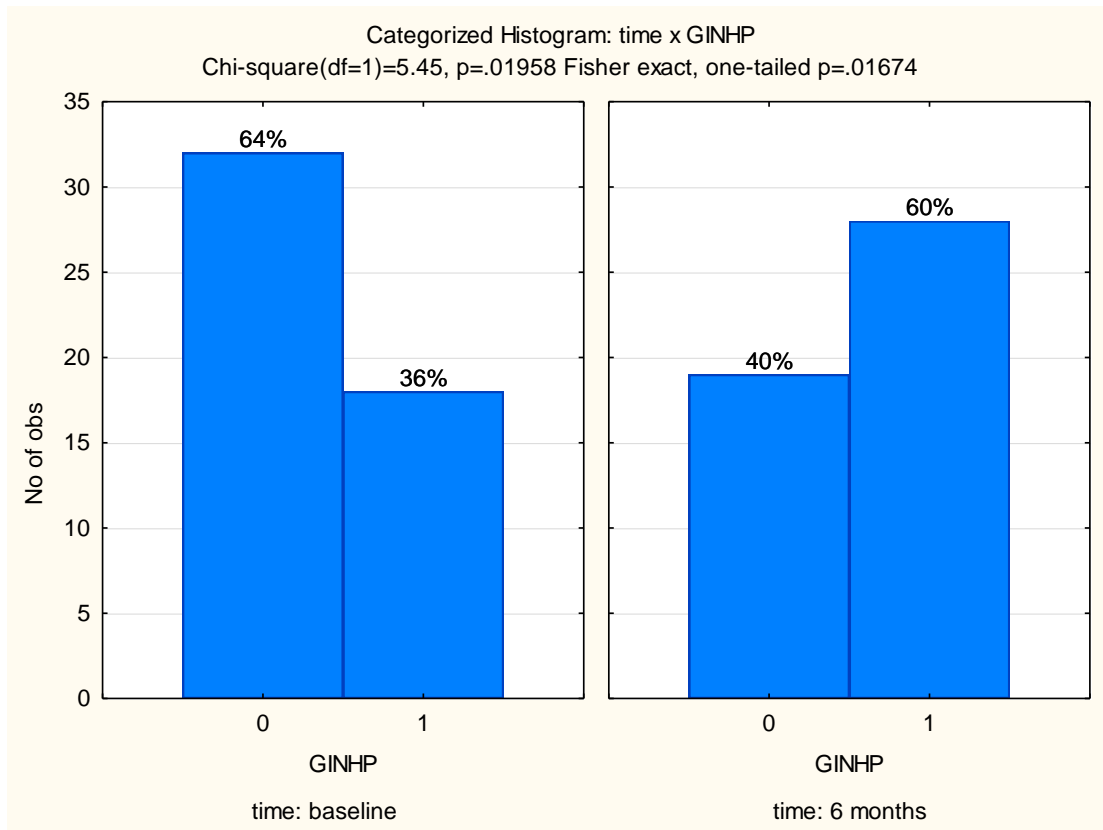


**Figure 3.10 Categorized Histogram Time xCD46mthH**

Table 3.14 and Figure 3.10 shows the histogram of time and CD46mthH; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

Time	GINHP 0	GINHP 1	Row Totals
Baseline	32	18	50
Row %	64.00%	36.00%	
6 months	19	28	47
Row %	40.43%	59.57%	
Totals	51	46	97

**Table 3.15: 2-Way Summary Observed Frequencies Time | GINHP**

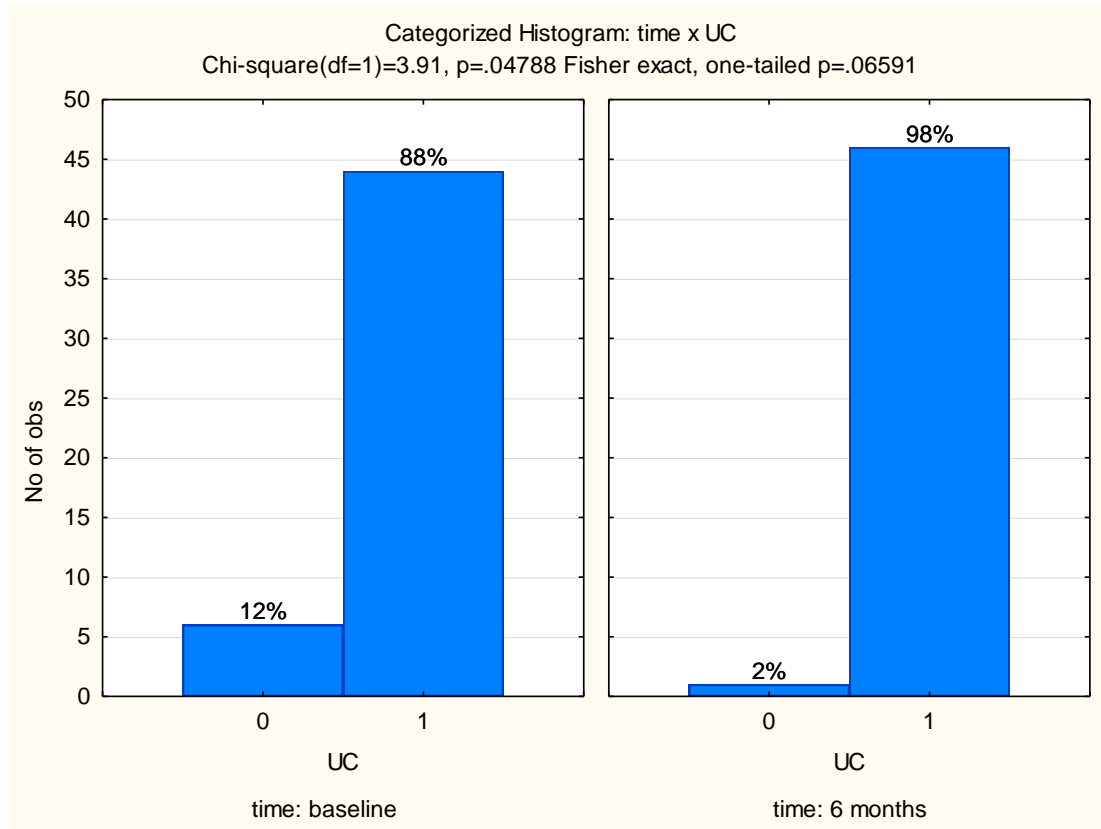


**Figure 3.11 Categorized Histogram Time x GINHP**

Table 3.15 and Figure 3.11 shows the histogram of time and GINHP; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>UC 0</b>	<b>UC 1</b>	<b>Row Totals</b>
<b>Baseline</b>	6	44	50
<b>Row %</b>	12.00%	88.00%	
<b>6 months</b>	1	46	47
<b>Row %</b>	2.13%	97.87%	
<b>Totals</b>	7	90	97

**Table3.16: 2-Way Summary Observed Frequencies Time | UC**

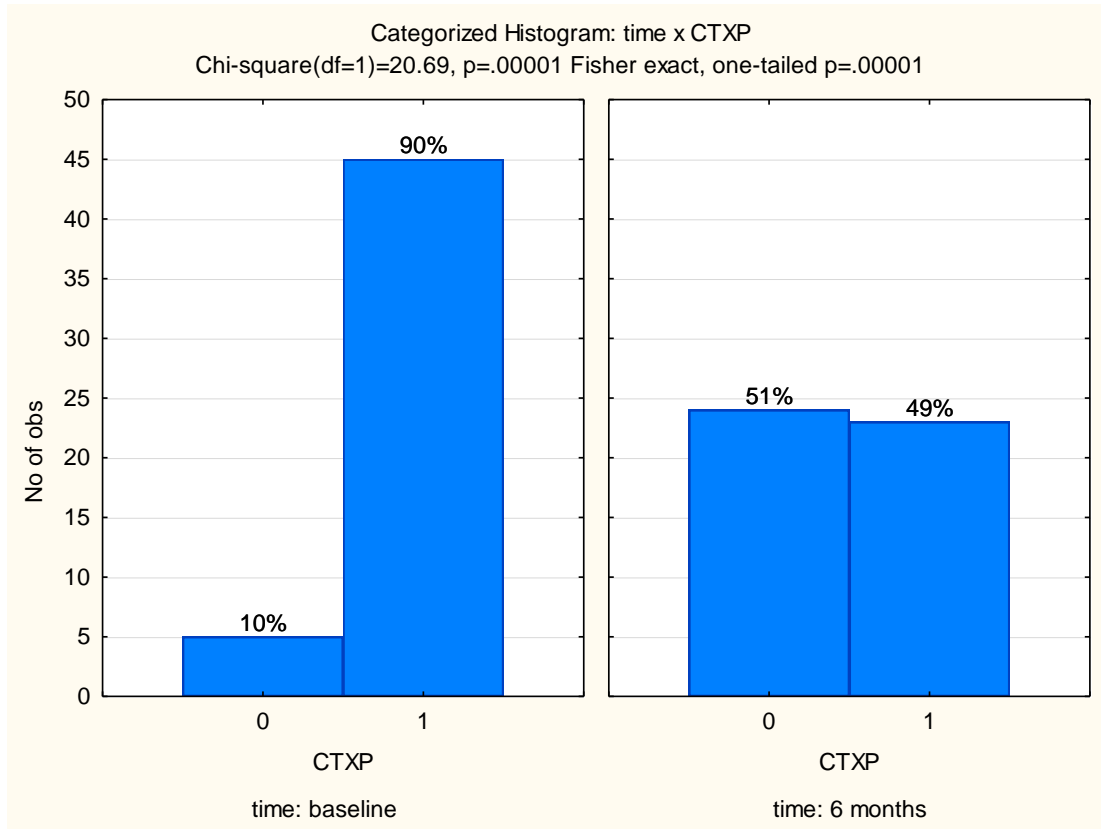


**Figure 3.12 Categorized Histogram Time x UC**

Table 3.16 and Figure 3.12 shows the histogram of time and UC; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>CTXP 0</b>	<b>CTXP 1</b>	<b>Row Totals</b>
<b>Baseline</b>	5	45	50
<b>Row %</b>	10.00%	90.00%	
<b>6 months</b>	24	23	47
<b>Row %</b>	51.06%	48.94%	
<b>Totals</b>	29	68	97

**Table 3.17: 2-Way Summary Observed Frequencies Time | CTPX**

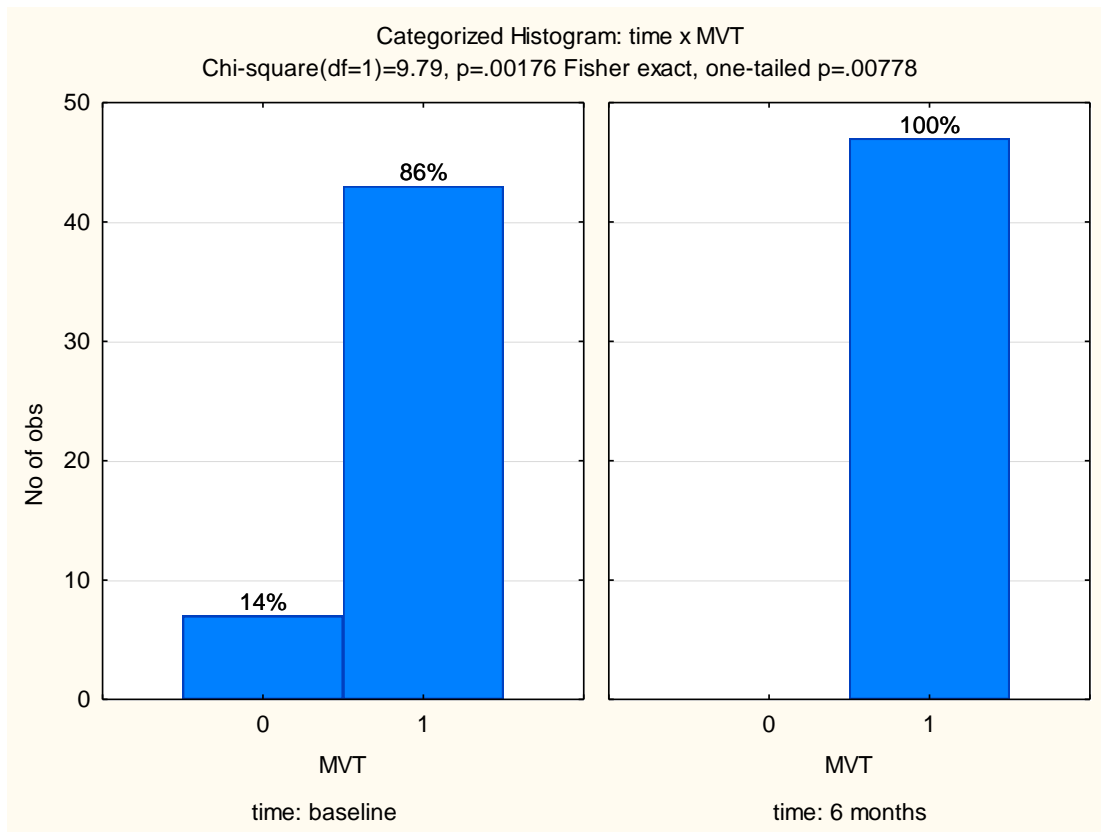


**Figure 3.13 Categorized Histogram Time x CTXP**

Table 3.17 and Figure 3.13 shows the histogram of time and CTXP; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>MVT 0</b>	<b>MVT 1</b>	<b>Row Totals</b>
<b>Baseline</b>	7	43	50
<b>Row %</b>	14.00%	86.00%	
<b>6 months</b>	0	47	47
<b>Row %</b>	0.00%	100.00%	
<b>Totals</b>	7	90	97

**Table 3.18: 2-Way Summary Observed Frequencies Time | MVT**

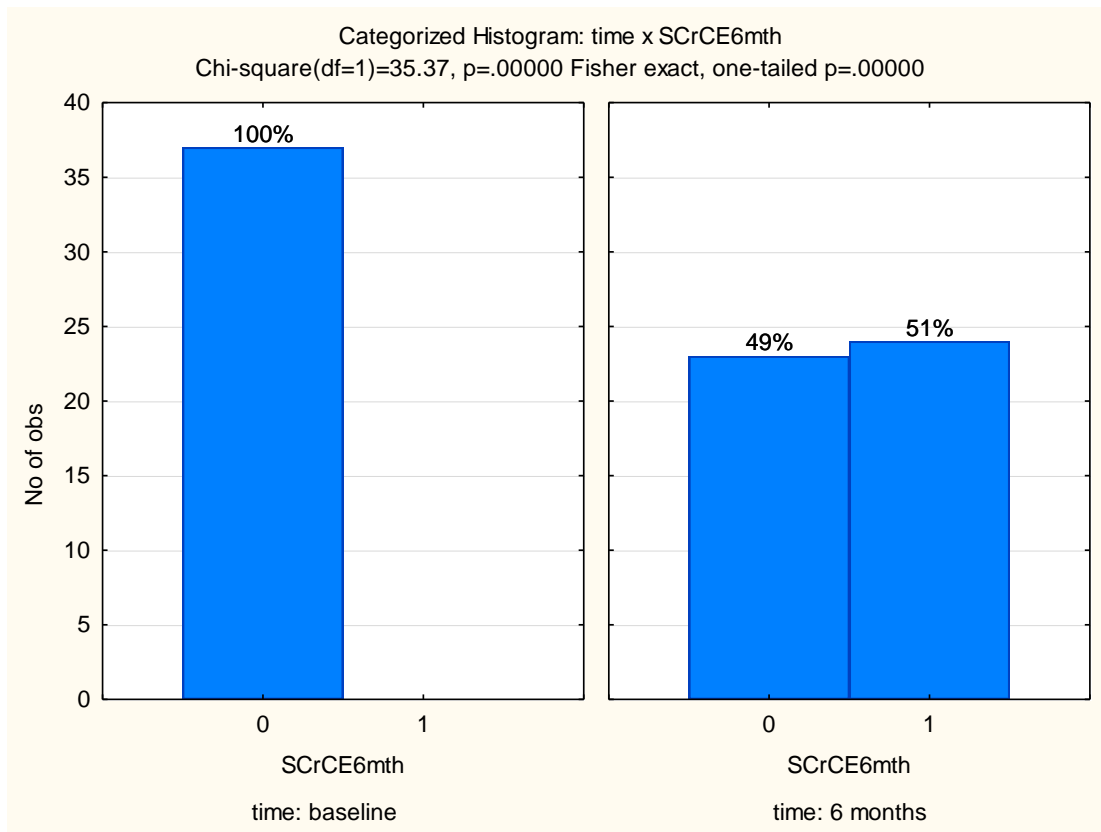


**Figure 3.14 Categorized Histogram Time x MVT**

Table 3.18 and Figure 3.14 shows the histogram of time and MVT; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>SCrCE6mth 0</b>	<b>SCrCE6mth 1</b>	<b>Row Totals</b>
<b>Baseline</b>	37	0	37
<b>Row %</b>	100.00%	0.00%	
<b>6 months</b>	23	24	47
<b>Row %</b>	48.94%	51.06%	
<b>Totals</b>	60	24	94

**Table 3.19: 2-Way Summary Observed Frequencies Time | SCrCE6mth**



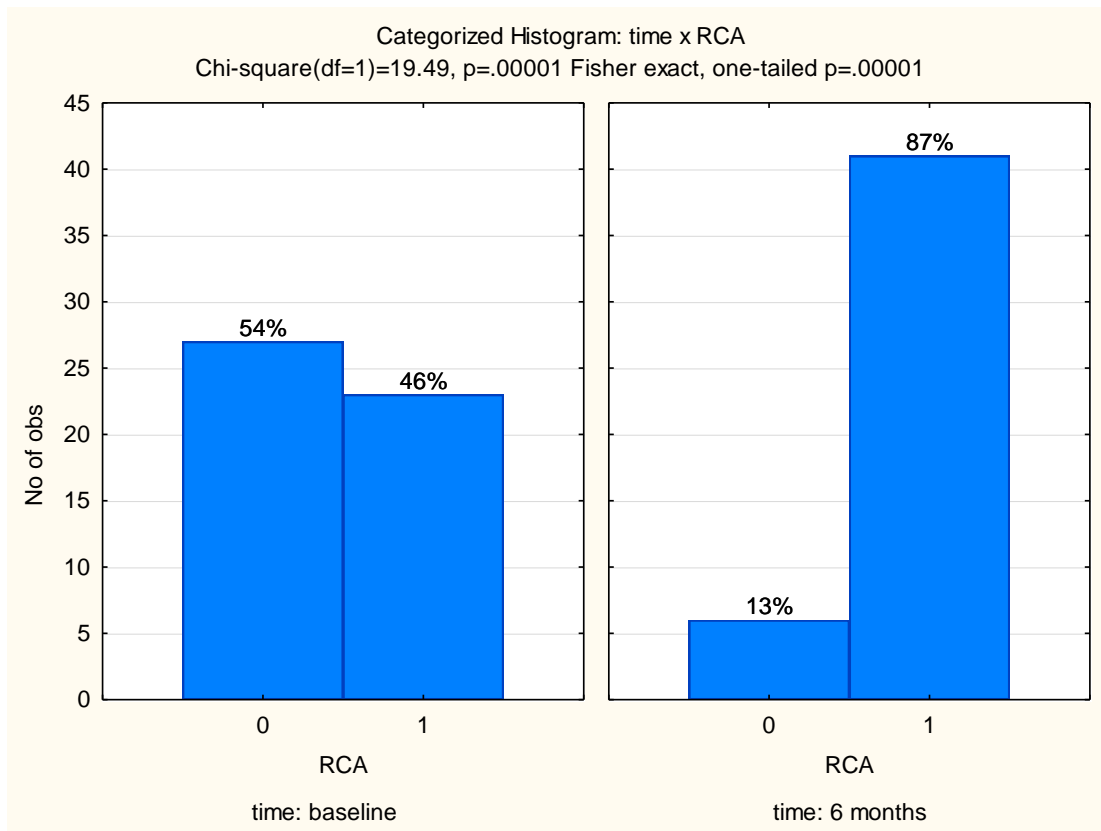
**Figure 3.15 Categorized Histogram Time x SCrCE6mth**

Table 3.19 and Figure 3.15 shows the histogram of time and SCrCE6mth; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>RCA 0</b>	<b>RCA 1</b>	<b>Row Totals</b>
<b>Baseline</b>	27	23	50
<b>Row %</b>	54.00%	46.00%	
<b>6 months</b>	6	41	47
<b>Row %</b>	12.77%	87.23%	
<b>Totals</b>	33	64	97

**Table 3.20: 2-Way Summary Observed Frequencies Time|RCA**



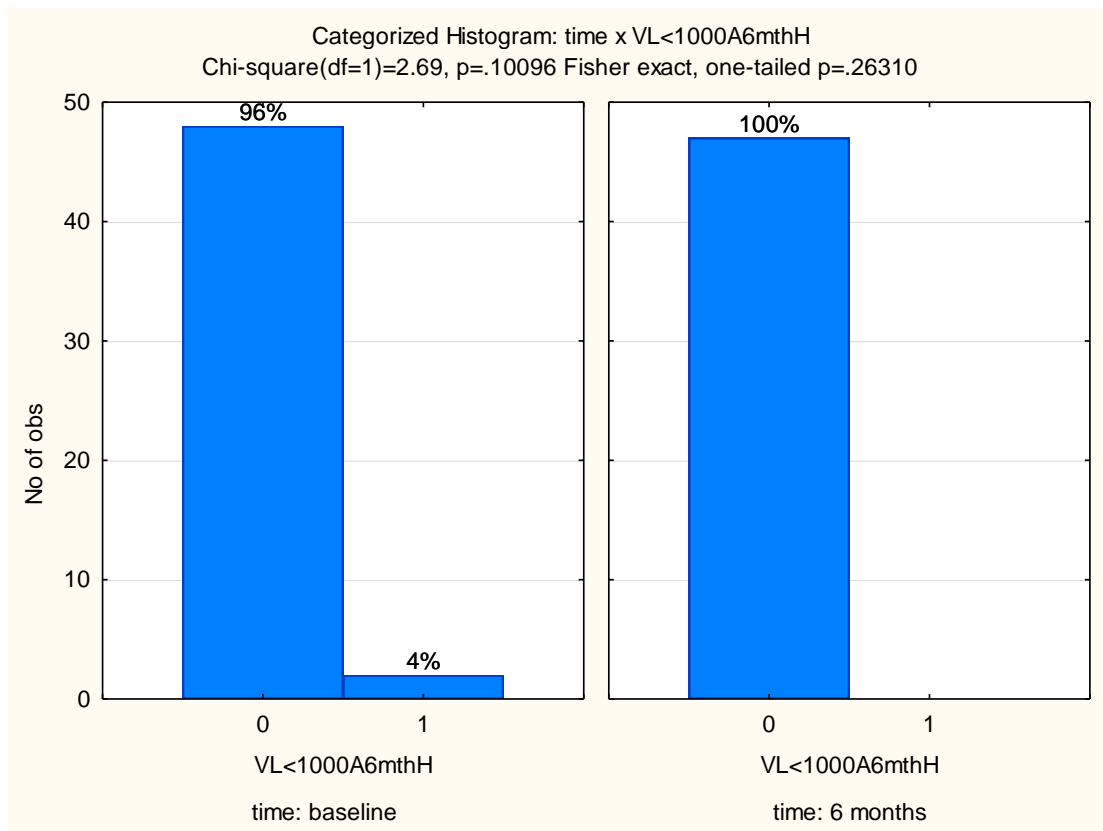


**Figure 3.16 Categorized Histogram Time x RCA**

Table 3.20 and Figure 3.16 shows the histogram of time and RCA; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

<b>Time</b>	<b>VL&lt;1000A6mthH 0</b>	<b>VL&lt;1000A6mthH 1</b>	<b>Row Totals</b>
<b>Baseline</b>	48	2	50
<b>Row %</b>	96.00%	4.00%	
<b>6 months</b>	47	0	47
<b>Row %</b>	100.00%	0.00%	
<b>Totals</b>	95	2	97

**Table3.21: 2-Way Summary Observed Frequencies Time | VL<1000A6mthH**

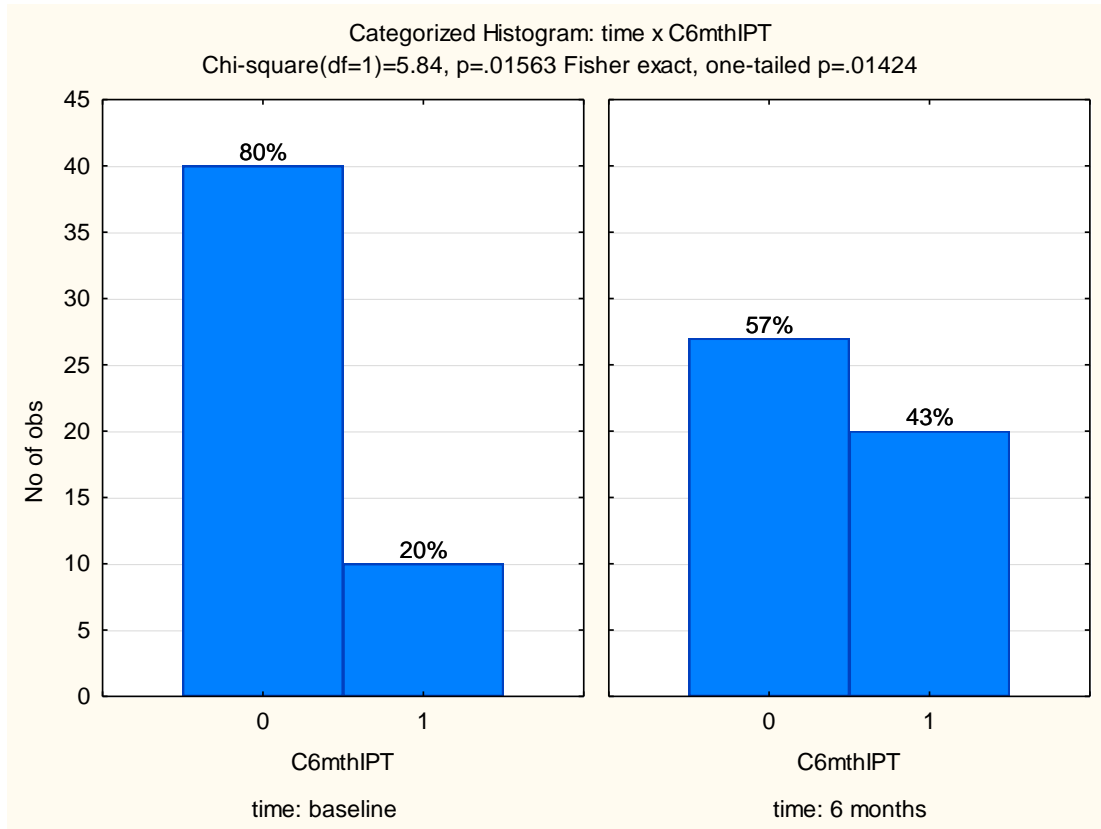


**Figure 3.17 Categorized Histogram Time x VL<1000A6mthH**

Table 3.21 and Figure 3.17 shows the histogram of time and VL <10006mthH; and the P-value tested, since P value is more than 0.05 after intervention, the change is not statistically significant

<b>Time</b>	<b>C6mthIPT 0</b>	<b>C6mthIPT 1</b>	<b>Row Totals</b>
<b>Baseline</b>	40	10	50
<b>Row %</b>	80.00%	20.00%	
<b>6 months</b>	27	20	47
<b>Row %</b>	57.45%	42.55%	
<b>Totals</b>	67	30	97

**Table3.22: 2-Way Summary Observed Frequencies Time|C6mthIPT**

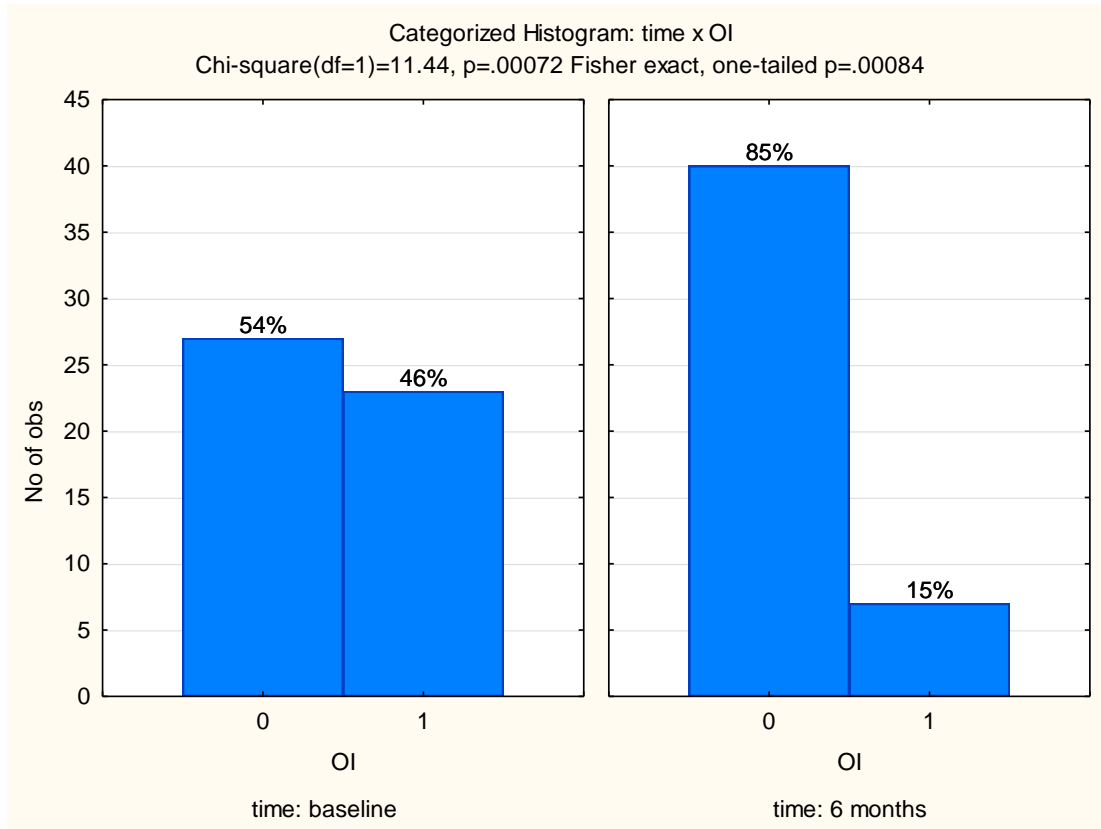


**Figure 3.18 Categorized Histogram Time x C6mthIPT**

Table 3.22 and Figure 3.18 shows the histogram of time and C6mthIPT; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

Time	OI 0	OI 1	Row Totals
Baseline	27	23	50
Row %	54.00%	46.00%	
6 months	40	7	47
Row %	85.11%	14.89%	
Totals	67	30	97

**Table3.23: 2-Way Summary Observed Frequencies Time|OI**



**Figure3.19 Categorized Histogram Time x OI**

Table 3.23 and Figure 3.19 shows the histogram of time and OI; and the P-value tested, since P value is less than 0.05 after intervention, the change is statistically significant

## Chapter 4

### DISCUSSION

Opuwo district has one of the lowest prevalence of HIV/AIDS in Namibia but despite this, the current quality of care is poor and needs to be improved. Proper documentation is poor, patients are not started on HAART when due, and even when initiated; viral load is not checked at six months after starting treatment. INH not given to patient to prevent tuberculosis despite recommended by Namibian National Guidelines for Antiretroviral Therapy and part of the indicators for assessment of the quality of care render to patient. It would have been good to know the percentage of patient smoking cigarette, but it is not part of the indicators used in Namibia for HIV/AIDS monitoring.

The results of the audit show improvement in the quality of care, even though not all the indicators met the standard. This did not come handy, as the staffs at the clinic were rally round when the initial audit finding was concluded. Teamwork and simple changes like re-enforcement in certain areas, placement of posters on the wall to remind staffs of some parameters that need to be checked during visit etc.

#### **Comparison with the literature**

Evidence-based guidelines are often under-used in clinical practice (10). The current guideline for the management of HIV/AIDS in Namibia is fantastic but not implemented at the primary level of care. When the Quality Improvement Team was presented with initial audit finding, they all agreed that guideline is not followed in the process of management of the patients. The way forward to improve in the use of guidelines include developing it to meet the need of the primary health care setup.

The quality of care provided to control conditions receives considerably less attention (20). This is seen in the thesis finding, INH that is given to all HIV patients to reduce incidence of tuberculosis have low percentage and also IPT that is too help to reduce opportunistic infections.

As argued by Wager and Kanouse standard of care activities may affect adherence bahviours and clinical outcome (21). Patients attending the clinic know what processes are to be carried out during every visit because they were informed through the media. When the normal process of evaluating patient when that come to the clinic where carried out after the initial audit, the attendance of patients to the clinic improve and the indicators for the outcome after the re-audit also improved and opportunistic infections like TB declined; this reflect improvement in the state of patient's health.

Studies on drug adherence in the developed world have demonstrated that higher levels of drug adherence have been associated with improved virological, immunological and clinic outcome and that adherence rates exceeding 95% are necessary in order to

maximize the benefit of ART (22)(23). When attendance increased, opportunistic infection declined because when medication is taken regularly viral load decline in the blood and immunity to infection improve. clinic attendance increased from 46% to 82%, though did not reach the set standard but is vital in general patient's management.

Tables 3.4a and 3.4b shows the P-value tested, when the P value is less than 0.05, the change is statistically significant and when P-value is more than 0.05, the change is not statistically significant. And when the P value is zero, it shows there is no change in the indicator despite intervention.

### **Limitations and strengths of this study**

The number of patients reduced to 47 after the initial audit, missing files would affect the outcome of the data.

Appreciable improvement would have been achieved, if one or two indicators have intervention implement at a time.

The strength of the study is that there is no inter-observer bias.

### **Recommendations and implications**

Quality Improvement Cycle is an ongoing process and auditing of Opuwo HIV/AIDS clinic should be continuous to maintain high quality of care and sustain the achievement already made through this audit.

With regard to structure, the government should speed up the construction of separate HIV/AIDS clinic as in the two other district hospitals in Kunene region; this will bring about needed privacy for the patients.

Staffing at the clinic should be adequate to prevent burnout and stress because the clinic staff complain of these during presentation of audit finding.

### **Conclusion**

The quality of care at HIV clinic Opuwo is not to the desired standard. The quality improvement cycle enabled simple changes to be made at the clinic, which led to appreciable improvement over a short period. The audit should be continuous to attain and maintain high quality of care needed for good outcome of patients living with HIV/AIDS.

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