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A study to assess the effectiveness of instructional module in terms of knowledge gain about adherence to anti-retroviral therapy & prevention of re-infection among recently diagnosed HIV positive clients in selected ART centre and community care center

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Abstract
HIV/AIDS is the greatest health risk the world faces today. Seeing to the magnitude of the problem 39.5 million people living with HIV/AIDS worldwide and approximately 2.5 million PLWHAs are in India {According to National AIDS Control Organization (NACO) 2007} and about one in six people (16%) are in need for Antiretroviral Therapy. Therefore aim of the study was to assess the effectiveness of instructional module in terms of knowledge gain about adherence to anti retroviral therapy & prevention of re-infection among recently diagnosed HIV positive clients Material and method Pre-experimental design with one group pre and post test was used. A sample size of 40 recently diagnosed HIV positive clients were selected using purposive sampling.

The findings of the study indicated the mean post-test knowledge score (22.95) was higher than the mean pre-test knowledge score (13.88). The 't' test computed ('t' = 14.34, $P < 0.05$) showed a significant difference suggesting that the self instructional module was effective in increasing the knowledge regarding adherence to anti retroviral therapy among recently diagnosed HIV positive clients to prevention of re-infection.

Keywords: Assess, effectiveness, instructional module, knowledge, adherence, anti-retroviral therapy, re-infection, HIV positive clients

Introduction
Background of the Study
HIV/AIDS is the greatest health risk the world faces today. In two decades the pandemic has revealed alarming statistics. An estimated 40 million are now living with HIV/AIDS, 95% of them in developing countries. At present, India ranks second in the total number of HIV/AIDS patients next only to South Africa. The average prevalence rate of HIV among adults in India is about 0.8%, which accounts for 10% of global burden & 65% of that in South & South-East Asia.

Need for the Study
Anti-retroviral therapy contains combination of drugs and become necessary to be taken for long life. Anti-retroviral therapy may cause many side effects and toxicity and if it is taken inadequately and irregularly, it will develop drug resistance. Therefore people living with HIV/AIDS must have the knowledge regarding the short term as well as long term side effects and toxicity, which can be managed at home. Therefore the researcher felt need to prepare self-instructional module regarding anti-retroviral therapy for providing thorough and complete knowledge regarding prevention of drug resistance, reinfection, management of its side effects and toxicity at home, and to keep adherence to ART therapy and report to the doctor if there is worsening of chronic side effects of anti-retroviral therapy occurred.

Objectives
1. To assess the pre-existing knowledge among recently diagnosed HIV positive clients regarding adherence to anti-retroviral therapy and prevention of re-infection.
2. To assess the effectiveness of instructional module regarding adherence to anti-retroviral therapy and prevention of re-infection.

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3. To assess the association between the pre-existing knowledge and selected demographic variables.

Hypothesis
The mean post-test knowledge score of recently diagnosed HIV positive clients regarding adherence to anti-retroviral therapy and prevention of re-infection after administration of information booklet will be significantly higher than mean pre-test knowledge score at <0.05 level.

Review of Literature
The literature review that was undertaken for the purpose of conducting this study has been presented under the following headings:
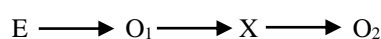
1. **Review related to HIV prevalence and incidence:** Bapu, P.G., Saraswati, N.K., Devapriya, F. and John, T.J. (1993) [14], tested 2 sets of sera, selected from among the samples which had been collected January 1988 and October 1990 from high risk subjects and tested for HIV-1 antibody to determine the prevalence of HIV infection in southern Indian. Findings revealed that in the first set of 604 sera, only one 0.16% was positive for HIV -2. In the second set of 24 sera, selected on the basis of having indeterminate HIV-1 western blot profile, again one 4% was positive for HIV-2.

2. **Review related to adherence to treatment:** Kumarasamy, N. *et al.* (2005) [23], had conducted a study on HAART adherence, demographic variables and CD4 outcomes among HIV+ clients on ART in Chennai. The result of the study showed that there was gain in the CD4 count and also found reduced morbidity and mortality rate among HIV+ clients on ART.

3. **Review related to side effects and toxicity of anti-retroviral therapy:** Danker (2003) [17], had conducted multicenter studies to correlate opportunistic infections in children living with HIV managed before and after HAART. The result showed that the frequency of opportunistic infections in children with HIV in the pre HAART era were higher when compared to post HAART era and it varies with age, pathogen, prior opportunistic infections and immunologic status.

4. **Review related to effectiveness of self-instructional module:** Birru (1997) [53], conducted a study "to evaluate the effectiveness of PTP of commercial sex workers regarding the prevention and control of HIV/AIDS". An evaluative research approach with pre-test and post-test control group design was done and the tools used were a structured knowledge questionnaire and an attitude score. The findings revealed that PTP was effective in enhancing knowledge and attitude (t' value (58) =78.37, P>0.01 level).

Research methodology
Research design
The research design selected for the study was pre-experimental one group Pre-test Post-test design.

The design can be represented as

$$E \longrightarrow O_1 \longrightarrow X \longrightarrow O_2$$

Key
E - Experimental group (only one)
O_1 - Pre-test knowledge score

X - Treatment variable (self-instructional module)
O_2 - Post-test knowledge score

Sampling technique
In this study the sample consisted of 40 patients who were recently diagnosed HIV positive clients with high viral load through a purposive sampling technique.

Development and description of tools
Description of the tool
The tool consisted of two sections:

Section I: Demographic variables
It describes the demographic variables. It comprises of 10 items for obtaining information regarding age, sex, education, types of occupation, family income per month, marital status, area of stay, family support, distance of residence to ART center, and any previous information regarding ART among the recently diagnosed HIV positive clients with high viral load.

Section II: It consists of 30 knowledge items categorized under the following broad areas: Meaning of HIV/ AIDS, Mode of infection, Signs and symptoms of disease, Prevention of infection, Anti-retroviral therapy & Side effects and management of anti-retroviral therapy.
The test items were objective type consisting of multiple choice questions with one correct answer. Every correct answer was awarded a score of one point and every wrong answer was assigned a zero (0) score. The maximum total score of the knowledge questionnaire was 30. Score was graded as follows:

Grade	Score
Good	21-30
Average	11-20
Poor	0-10

Reliability of the tool
The reliability co-efficient of the knowledge test was calculated by using Karl's Pearson's formula. The reliability coefficient was found to be 0.81 which proved that the tool was highly reliable. No modification was made. Thus, tool was found to be valid, reliable and feasible for the purpose of study.

Development of self-instructional module
The self-instructional module was developed and based on review of related research and non-research literature, discussion with experts and personal experience of the investigator. Self-instructional module was structured for enhancing knowledge among recently diagnosed HIV positive clients.

Pilot study
A pilot study was conducted (during the period 19-04-2010 to 26-04-2010) in Maharaja Yeshwantrao hospitals at Indore. This gave a basis for investigator to conduct the actual study. The setting and sample which used in pilot study was excluded from main study. Data analysis was done using descriptive and inferential statistics. The reliability co-efficient of the knowledge test was calculated by using Karl's Pearson formula. The reliability coefficient was found to be 0.81 which proved that the tool was highly

reliable. The tool and Information Booklet was found to be feasible and practicable. No further changes were made in the tool and self-instructional module after the pilot study.

Analysis and interpretation
Raw data was collected and entered in a master sheet for the statistical analysis. It was interpreted using descriptive and inferential statistics. The data finding have been organized and presented under following sections:

Section I: Sample Characteristics

Table 1: Frequency and Percentage Distribution of Sample Characteristics

S. No.	Selected demographic variables	Frequency total	Percentage (%)
	Age in years		
1.	▪ 20-30 years	14	35.0
	▪ 31-40 years	17	42.5
	▪ 41-50 years	9	22.5
	▪ >51 years	0	0
	sex		
2.	▪ Male	29	72.5
	▪ Female	11	27.5
	Educational Status		
3.	▪ Primary Education	12	30.0
	▪ Middle Education	11	27.5
	▪ Higher Secondary	12	30.0
	▪ Graduate and Above	5	12.5
	Type of Occupation		
4.	▪ Business	12	30.0
	▪ Service	16	40.0
	▪ Labor	6	15.0
	▪ Unemployed	6	15.0
	Family income Per Month		
5.	▪ <2500/-	20	50.0
	▪ 2501/- to 5000/-	12	30.0
	▪ 5001/- to 10000/-	5	12.5
	▪ >10000/-	3	7.5
	Marital Status		
6.	▪ Married	29	72.5
	▪ Un-Married	11	27.5
	Area of Stay		
7.	▪ Urban	23	57.5
	▪ Rural	13	32.5
	▪ Slums	4	10.0
	Family Support		
8.	▪ Positive Support	22	55.0
	▪ Partial Support	9	22.5
	▪ Friendly Support	4	10.0
	▪ No Support	5	12.5
	Distance of Residence to ART Centre		
6.	▪ 1 to 10 Kilometre	14	35.0
	▪ 11 to 20 Kilometre	3	7.5
	▪ >30 Kilometre	23	57.5
	Previous Knowledge regarding ART		
7.	▪ Yes	21	52.5
	▪ No	19	47.5

The finding on relationship of selected demographic variables to recently diagnosed HIV positive client's pre-test knowledge score regarding adherence to anti-retroviral therapy & prevention of re-infection showed that there was 50% areas (gender, monthly income, marital status, family support, and distance of residence to ART centre) had no

statically significant association with the pre-test knowledge score of recently diagnosed HIV positive clients.

Section II: The Pre-test knowledge score of recently diagnosed HIV positive clients regarding adherence to Anti retro viral therapy & prevention of re-infection

Table 2: Pre-Test Knowledge Score of the Sample

S. No.	Score	Grading	Pre-test Frequency	Pre-test Percentage
1.	21-30 (70-100%)	Good	5	12.5
2.	11-20 (37-67%)	Average	20	50.0
3.	0-10 (0-33%)	Poor	15	37.5

Pre-test mean score = 13.88
S.D. = 6.36

This data shows that 50% of sample had average knowledge score ranging between 11-20, 37-5% samples had poor knowledge score ranging between 0-10, and 12-5% samples had good knowledge score ranging between 21-30 regarding adherence to anti-retroviral therapy and prevention of re-infection.

Section III: Effectiveness of self-instructional module in terms of gain in knowledge scores.

Table 3: Mean, Standard Deviation and 'T' Value of Pre-Test and Post-Test Knowledge Score

(N=40)

	Mean	Standard Deviation	Mean difference	't' value
Pre-test Score	13.88	6.36	9.07	14.34
Post-test Score	22.95	4.76		

't' (39) = 14.34, $P< 0.05$.

The data presented in Table No. 3 shows that the mean post-test knowledge score (22.95%) is apparently higher than the mean Pre-test knowledge score (13.88%). The dispersion of Pre-test scores (SD ± 6.36) is more than that of their post-test scores (SD ± 4.76) and the computed 't' value shows that there is a significant difference between Pre-test and Post-test mean knowledge score (t39=14.34, $P< 0.05$ level). This indicates that self-instructional module is effective in increasing knowledge score of recently diagnosed HIV positive clients regarding adherence to anti retro viral therapy & prevention of re-infection.
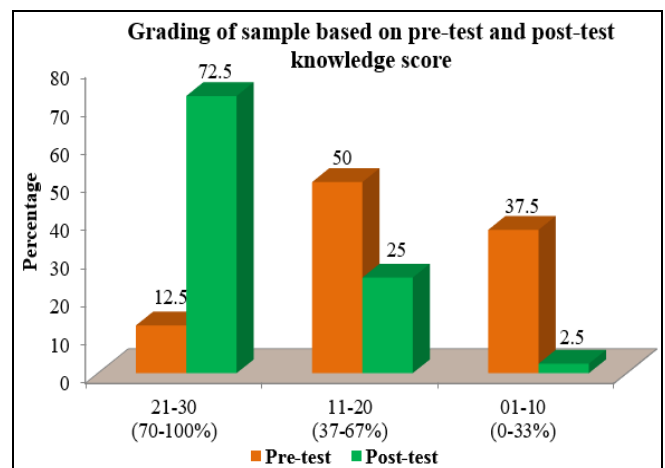

Fig 1: Bar diagram showing percentage distribution of pre-test and post-test knowledge score
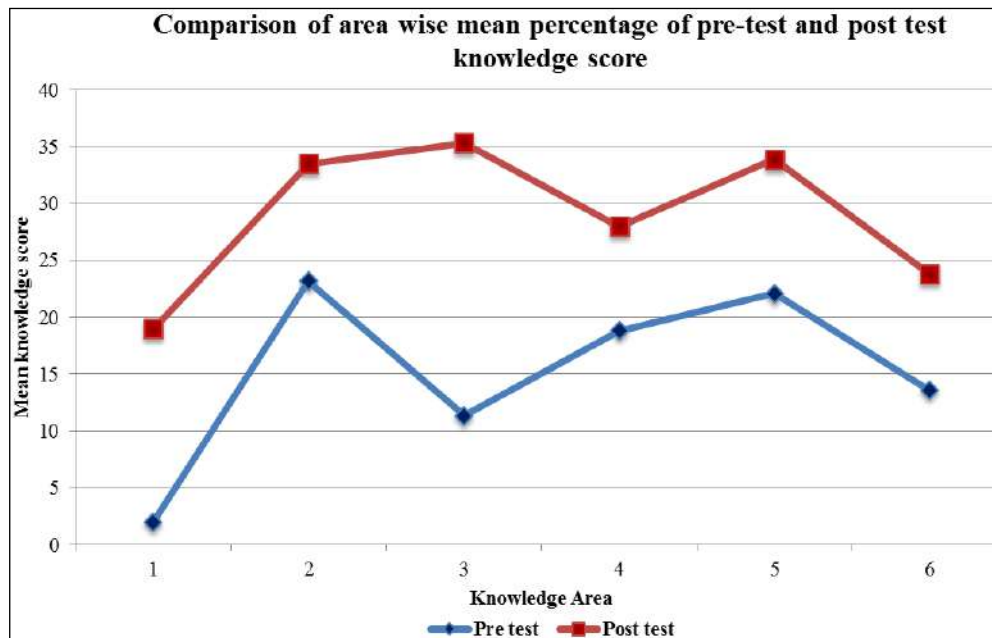
Fig 2: Polygon showing area wise mean percentage of pre-test and post-test knowledge score

Section IV: Association between Pre-test Knowledge Score and Selected Demographic Variables
In this section findings showed that computed Chi-square value indicates that there is 50% values show no significant difference and 50% values show significant difference in many areas of selected demographic variable and Pre-test knowledge score of recently diagnosed HIV positive clients at 0.05 levels.

Discussion, Summary, Conclusion, Recommendations, Implications and Limitations
The data showed that recently diagnosed HIV positive clients have deficit knowledge regarding adherence to anti-retroviral therapy & prevention of re-infection. The total mean score secured by the patient is 13.88 on the scale of 1-30. These findings show that the pre-test knowledge levels of all subjects were inadequate in most areas of regarding adherence to anti-retroviral therapy & prevention of re-infection. The above finding is supported by study conducted by Birru (1997), "to evaluate the effectiveness of PTP of commercial sex workers regarding the prevention and control of HIV/AIDS ".The findings revealed that PTP was effective in enhancing knowledge and attitude (t' value (58) =78.37, P>0.01 level).

Recommendations
i. A similar study may be replicated on a larger sample using random sampling so that the findings can be generalized.
ii. A comparative study can be conducted to find out the effectiveness between self-instructional module and plan teaching programme regarding the same topic.
iii. Studies can be conducted to identify the occurrence of opportunistic infections among recently diagnosed HIV positive clients.
iv. A similar study could be replicated with a control group.
v. A comparative study can be undertaken to evaluate different teaching strategies, self-instructional module (SIM), peer evaluation and education by health care teams.

Implications
The findings of this study have implications for nursing practice, nursing education, community health nursing, nursing administration and nursing research.

Nursing Practice
Health education is an important tool of health care agency. It is one of the most cost effective interventions. The findings of the study indicated that there is need for health education regarding adherence to anti-retroviral therapy & prevention of re-infection at home.

Nursing education
Today, more emphasis is given on self-reliance and client preparation in health care system. The study also implies that nurse plays a vital role in health care delivery system to teach the recently diagnosed HIV positive clients regarding adherence to anti retroviral therapy & prevention of re-infection. The nursing curriculum has to emphasize self-care in chronic illness, especially HIV/AIDS.

Community health nursing
Home-based individual planned teaching programme is very effective to improve knowledge regarding preventive measures, self-awareness and self-care. Community-based screening programmes are effective to identify the cases in the risk group.

Nursing administration
Nurse administrator are responsible for conducting in-service education programme, workshop, seminars and conferences for the staff and students to create awareness about HIV/AIDS so that this knowledge can be imparted to the general public and also protect themselves by keeping standard safety precautions in their practice.

Nursing research
Research can be conducted to assess the knowledge and self-care practices of recently diagnosed HIV positive clients in different areas in term of life modification like

diet, drugs, exercise, symptoms management and prevention of opportunistic infections.

Limitations

The few limitations of the study are listed below:

1. The finding of the study cannot be generalized because of the small sample (40) and purposive sampling technique.
2. Limited time was available for data collection.
3. Structured knowledge questionnaire was used for data collection which restricted the amount of information that could be obtained from the patient.
4. No attempt was made to measure the retention of knowledge regarding self-care activities after post-test.
5. The study did not use a control group. The investigator had no control over the events that took place between Pre-test and post-test.

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