



RESEARCH ARTICLE

EFFECTIVENESS OF HIV EDUCATION MODULE IN  
PATIENTS WITH SUBSTANCE USE DISORDERS (PSUD)

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ABSTRACT

HIV/AIDS continues to pose challenges to the health system of developing countries. Substance use has been identified as an important behavioral co-factor for HIV infection.

**Aim:** To evaluate the knowledge and effectiveness of HIV educational programme in Patients with Substance Use Disorders (PSUD). The study was carried out among 30 in-patients with substance use disorder at the Center for Addiction Medicine and male open psychiatric wards in a south Indian psychiatric hospital. A non equivalent control group pretest post test design was adopted. Convenience sampling method was used to recruit the study subjects.

**Results:** The analysis showed that mean pre-intervention knowledge of the experimental and control groups were  $20.53 \pm 5.67$  and  $20.53 \pm 4.53$  respectively indicating that both groups were homogenous. The experimental group showed higher immediate post test and follow up test mean knowledge scores on the Knowledge Questionnaire on HIV prevention (KQ-HIVP) ( $p=0.001$ ) as compared to the scores of the control group following the education program on HIV prevention.

**Conclusion:** Educating and demonstrating protective measures such as precise use of condom and safe use of injections are the prime areas to be addressed in a HIV education program. This educational program should be integrated with other psychosocial therapies to cater to holistic needs of patients receiving treatment at centers' for addiction medicine.

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INTRODUCTION

Substance use has been identified as an important behavioral co-factor for HIV infection and has been consistently associated with HIV-risk behaviors over time. Significantly higher rates of HIV infection are found among clinical samples of substance use disorder and nonclinical samples of individuals who meet criteria for substance use disorder than in the general public. Dandona *et al.* (2008) found that 41% of HIV infected patients meet the criteria for substance use disorder. Consumption of alcohol before sex was a key dimension of sexual risk including unprotected sex and anal sex (Khan and Sateesh 2011). Dandona *et al.* (2008) in a rural clinic of central India, found that alcohol use before sex was a significant predictor of HIV sero positivity in married men of 30–39 years of age. One of the studies (Carey *et al.*, 2006) conducted at Centre for Addiction Medicine (CAM),

NIMHANS, India revealed that one-quarter of all patients tested positive for at least one Sexually Transmitted Infection (STI) in which lifetime sero-prevalence rates were 12.9% for syphilis, 10.3% for chlamydia, 3.1% for hepatitis B, and 1.1% for HIV. Another study at CAM (Carey *et al.*, 2003) reports that among men with alcohol dependence, high risk sexual behaviors like having multiple sexual partners (7%), paying for sex (5%) and having unprotected anal sex (4%) were more frequent. Considering the above facts and prevalence, HIV prevention programme needs to be an integral part of the interventions in patients with Substance Use Disorder (PSUD). This study was conceived to assess and impart the knowledge of HIV prevention in inpatients with substance abuse at CAM unit where inpatients are under treatment and in the recovering stage. The study has incorporated HIV prevention as a primary preventive intervention.

MATERIALS AND METHODS

The study was carried out among 30 in-patients with substance use disorder at the Center for Addiction Medicine and male

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open psychiatric wards in a south Indian psychiatric hospital with the aim of developing and implementing educational module on HIV prevention among individuals with substance use disorder. A non equivalent control group pretest post test design was adopted to test the hypothesis that there would be a statistically significant difference in the experimental group subjects' knowledge score about HIV prevention following the intervention as compared to that of the control group. Convenience sampling method was used to recruit the study subjects. The experimental group consisted of 15 subjects admitted in the Center for Addiction Medicine and the control group comprised of 15 subjects from male psychiatric wards. Apart from the study intervention, all the other interventions were treatment as usual (as decided by the treating team). After scientific review and ethical clearance, the study was carried out from the month of September 2012 to November 2012. Male subjects who were dependent on alcohol and other substances, educated at least up to 8<sup>th</sup> std (able to read and understand either English or regional languages) were invited to participate in the study. The subjects diagnosed with other co morbid psychiatric illnesses and withdrawal states were excluded from the study. HMSE (Hindi Mental Status Examination) compiled by Ganguli *et al.* (1995) was administered to rule out any cognitive impairments. This was to ensure that subjects understood the structured teaching program (STP). The patients who scored more than twenty five in HMSE were invited to participate in the study. The subjects were informed about the purpose of the study following which informed consent was taken.

After screening of the inpatients with HMSE (to exclude patients with significant cognitive deficits), the data was collected using a tool which assessed -socio-demographic profile and clinical details (type of substance abused, mode of consumption, sources of information about HIV, sources of information about drop in center and any indulgence in high risk behavior) of the study subjects. A Knowledge questionnaire on HIV prevention (KQ-HIVP) was another tool prepared for this study. The extensive information about HIV prevention was collected by referring various online patient education materials such as AIDS India, Medline patient education, NAACO FAQs guidelines, recent preventive measures, Karnataka AIDS Prevention Society's patient educational materials, Center for Disease Control website and psychosocial intervention for addiction. The tool consisted of 45 items that were presented as multiple choice questions. The questionnaire consisted of five domains; D1-Concept of substance abuse (7 items), D2-Basics of HIV (17 items), D3-Safe sexual practices (8 items), D4-Prevention of HIV transmission through blood (6 items) and D5-Substance use and HIV progression, care services for people living with HIV/AIDS, ART and prevention of opportunistic infections (7 items). The maximum possible score is 45 and the minimum possible score is 0. The results were interpreted as the higher the score, more the knowledge. The investigators translated the English tool into regional language (Kannada) and back translation was done to ensure reliability. The content validity of the tool and education program was sought from experts from the Integrated Council and Testing Center ICTC, Neuro virology, psychiatric nursing, clinical psychology, psychiatry and psychiatric social work. Pearson's correlation showed that

the tool had high reliability score of 0.9. The authors administered the KQ-HIVP to both experimental and control groups.

The experimental group received five sessions on HIV prevention for five consecutive days. The intervention package consisted of a structured teaching program of 5 sessions was administered on five consecutive days. The first session included a lecture cum discussion about 'Concept of substance' abuse; the second session was on basics of HIV which was delivered through explanation, discussion and video presentation on HIV. The third session was on safe sexual practices which included condom demonstration, return - demonstration by the patients, and lecture cum discussion with the use of AV aids. The fourth session on 'Prevention of HIV transmission through blood' focused on safe injection practices by utilizing Karnataka AIDS Prevention Society (KASAPS)'s video on 'HIV and safe use of injective drugs'. The fifth session was directed towards association between HIV progression and alcohol, care and services for People Living with HIV/AIDS. Immediately at the end of the fifth session, a post test was conducted using KQ-HIVP and follow up post test was conducted seven days after the last session. At the end of the follow up post-test, an information booklet on HIV prevention developed by the researchers was given to the subjects in the experimental as well as control group. The control group was exposed only to the first session on 'Concept of substance abuse'. On the 4<sup>th</sup> day which was four days following the first session on 'concept of substance abuse', the immediate post-test was done and follow up test was administered after seven days following the immediate post-test. Data were analysed using SPSS (version15) and descriptive statistics was used to analyse demographic profile of the subjects. The homogeneity of both groups was assessed using chi-square test, Independent t test and Mann Whitney test. The effectiveness of the intervention was tested by using Repeated Measures ANOVA for the total score and Fried-man test for the domain scores. Bonferroni post-hoc test was done for pair wise comparison of the means to identify the mean that significantly differed among them.

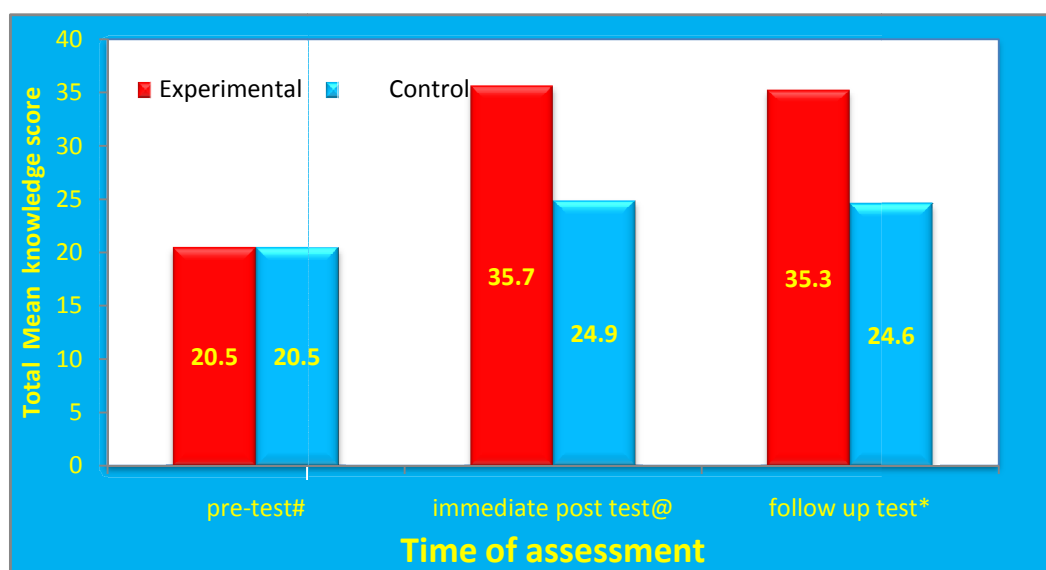
## RESULTS

The study involved only male subjects. Majority of the subjects in both the experimental group 8 (53.3%) and the control group 8 (53.3%) were above 35 years of age. Majority of the study subjects (86.7%) belonged to Hindu religion and only 13.3% were Christians. Most of the subjects from the experimental (11, 84.6%) and control group (12, 80%) had an annual income less than 50,000 INR from urban background and were married. Mann-Whitney Test was used to compare the domain wise pretest knowledge score about HIV prevention between both the groups because the study sample did not follow the normal distribution. Domain wise mean of pre-test knowledge score of KQ-HIVP (D1:  $p=0.931$ , D2:  $p=0.917$ , D3:  $p=0.848$ , D4:  $p=0.729$ , D5:  $p=0.199$ ) indicated that there was no statistically significant difference in the pre-test knowledge scores in all domains between the two groups. The pre-test mean knowledge score of the subjects indicated fair knowledge about HIV in both the groups.

**Table 1. Comparison between the experimental and control groups**

Variables	Experimental Group (n=15)	Control Group (n=15)	'p' value
	f(%)	f(%)	
Substance abuse			
Alcohol	3(20)	1(6.7)	0.549 NS
Alcohol and smoking	9(60)	11(73.3)	
Alcohol, smoking and cannabis	3(20)	3(20)	
Source of information about HIV			
Mass media	4 (26.7)	6 (40)	0.839 NS
Health personnel	2(13.3)	1(6.7)	
Friends and family	4(26.7)	4(26.7)	
Nil	5(33.3)	4 (26.6)	
Source of information about Drop In Center (DIC)			
Mass media	2 (13.3)	0	0.483 NS
Nil	13(86.7)	15(100)	
Indulgence in high risk activities			
Yes	12(80)	12(80)	1.000 NS
No	3(20)	3(20)	

Significant at p&lt;0.05 NS: No significance

#: before the 1<sup>st</sup> STP. @: after the 5<sup>th</sup> STP (experimental group) and 4<sup>th</sup> day following the 1<sup>st</sup> STP (control group). \*: 7 days following immediate post test**Fig. 1. Total Mean knowledge score of the experimental group and the control group****Table 2. Domain wise comparison of the pre-test, immediate post-test and follow up test knowledge score on HIV prevention between the experimental group(n=15) and control group(n=15)**

Domains	Groups	Pre-test	Immediate post-test	Follow up	df	$\chi^2$	p
		Mean $\pm$ SD					
D1: Concept of substance abuse	Experimental	3.0 $\pm$ 1.0	6.48 $\pm$ 0.9	6.40 $\pm$ 0.9	3	82.0	0.001**
	Control	3.07 $\pm$ 1.2	5.6 $\pm$ 0.9	5.6 $\pm$ 0.8			
D2: Basics of HIV/AIDS	Experimental	6.9 $\pm$ 2.4	12.0 $\pm$ 1.9	11.9 $\pm$ 1.9	3	70.9	0.001**
	Control	6.7 $\pm$ 2.5	7.6 $\pm$ 2.6	7.6 $\pm$ 2.7			
D3: Safe Sexual practices	Experimental	4.4 $\pm$ 0.9	6.8 $\pm$ 0.9	6.6 $\pm$ 1.1	3	70.7	0.001**
	Control	4.4 $\pm$ 1.5	4.6 $\pm$ 1.4	4.5 $\pm$ 1.4			
D4: Prevention of transmission of HIV through blood	Experimental	2.6 $\pm$ 1.2	4.7 $\pm$ 1.03	4.7 $\pm$ 1.1	3	61.9	0.001**
	Control	2.8 $\pm$ 0.9	3.5 $\pm$ 1.1	3.4 $\pm$ 1.2			
D5: Substance use and HIV progression, care and services for PLWHA*	Experimental	3.6 $\pm$ 4.1	5.7 $\pm$ 1.0	5.6 $\pm$ 1.0	3	60.7	0.001**
	Control	3.4 $\pm$ 1.2	3.5 $\pm$ 1.3	3.5 $\pm$ 1.4			

Persons Living With HIV/AIDS, \*\* Significant at p&lt;0.01 (2 tailed)

Repeated Measure ANOVA was used to analyze total significant difference in the means of pre-test, immediate post-test and follow up test of knowledge on HIV prevention within and between the experimental and control groups. Analysis revealed that the pre-test mean score was significantly lesser than the immediate post-test and follow up test mean scores.

than immediate post-test and follow up test mean score. The immediate post-test mean score was not significantly different from the follow up test.

Friedman test was adopted to calculate the domain wise difference in the Mean of pre-test, immediate post-test and

follow up test of the experimental and control groups as the domain scores did not follow the normal distribution. The analysis revealed that statistically significant difference in the pre-test and immediate post-test mean knowledge score existed within and between the groups following the education program on 'Concept of substance abuse'. Similarly, there was a significant increase ( $p=0.001$ ) in the knowledge scores in the other 4 domains from pre-test to immediate post-test and follow up test of the experimental group following the intervention. However, significant change was not evident in knowledge scores of other 4 domains of the control group. This was probably because the education programme on 4 sessions was withheld from the control group.

## DISCUSSION

The study revealed that there was no statistically significant difference ( $p > 0.05$ ) in the pre-test knowledge scores in all domains between the two groups. This homogeneity could be due to random selection of subjects and almost equal pre-intervention knowledge levels could have been due to subjects in the experimental group and control group getting knowledge from mass media (26% and 40%), friends and family (26% and 26%) and health personnel (13.3% and 6.7%). Similar findings were also recorded by Lisa *et al.* (2011) where the subjects from both the experimental and control groups had almost equal knowledge score on HIV prevention of 55% -57% at pretest. In the study carried out by Deas-Nesmith *et al.* (1991) which explored HIV-risk behaviors and knowledge about HIV/AIDS among substance use disorders, psychiatric disorders and controls revealed that HIV prevention knowledge score among substance use group, psychiatric group and control group were not significantly different.

The study findings revealed that there was a significant increase in the knowledge score in the first session on 'concept of substance abuse', from the pre-test to immediate post-test and follow up test of both the groups. This was probably because both groups were exposed to this session. The total follow up mean score was congruent with mean score of immediate post-test probably indicating that the subjects in both the groups maintained the gained knowledge over the period of 7 days after the immediate post-test.

The study analysis showed a significant increase ( $p=0.001$ ) in the knowledge scores in all 4 domains from pre-test to immediate post-test and follow up test of the experimental group following the education program of 4 sessions, but no significant change was evident from the pre-test to the immediate and follow up post-test knowledge score of the control group. These findings support the study hypotheses.

The study findings were consistent with the study conducted by Carey *et al.* (1997) where the findings suggested that there was higher increase in the mean score ( $86.56 \pm 12.02$ ) of the post-test and follow up test ( $85.47 \pm 12.77$ ) from the pre-test score ( $75.19 \pm 16.43$ ) of the experimental group than that of the pre-test ( $70.35 \pm 19.58$ ), post-test ( $71.51 \pm 19.69$ ) and follow up test ( $70.17 \pm 21.48$ ) scores of the control group. This probably could be attributed to the STP on HIV prevention in the experimental group.

In contrast, James *et al.* (1993) found that a comparison of ARBKT(AIDS Risk Behavior Knowledge Test) score at 3 month follow up indicated no significant difference between inpatients who received AIDS education ( $M=34.4$ ,  $SD=3.8$ ) and those who did not receive ( $M=35.6$   $SD=2.2$ ). The researcher justified in the discussion that no changes in the knowledge level could be attributed to a ceiling effect related to the high initial level of knowledge possessed by the study subjects or lack of power associated with small sample size at follow up.

## Limitations of the study

The small sample size is a limitation of the study. Another limitation was that the study didn't look for changes in the knowledge and practice over long term. But the study has validated the assessment instrument (KQ-HIVP) and intervention package which can be used in further studies and these limitations can be addressed.

## Conclusion

Many individuals with substance abuse have propensity to engage in high risk activities such as unsafe sexual practices and using syringes of others for injecting drugs which would increase their risk of contracting STI, HIV and other blood borne diseases. Therefore, this is the targeted area that requires tailored intervention on HIV prevention to decrease the incidence and prevalence of HIV. The nurses employed in addiction medicine should take up frontier roles in providing value based education which increases patients' need, awareness and risk perception of HIV thereby help assist them in assimilating safe and healthy practices. The nurse researchers should expand their research on developing interventions that emphasize both on enhancing knowledge on HIV and behavioral modification that curtails high risk behaviors and practices to make India a HIV free nation.

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