Assessment of knowledge and Attitude on HIV/AIDS of students from NDMVPS College of Physiotherapy

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Research Article

Abstract: In the present paper, we describe assessment of knowledge and attitude towards the disease called HIV/AIDS. We carry out questionnaires on 100 students of NDMVPS College of Physiotherapy. The statistical techniques like Pearson's correlation coefficient, one way ANOVA, Tukey HSD, Levene's statistics are used. Results are produced on statistical software SPSS 17.0 and MS-Excel. Result shows the relationship between Knowledge and Attitude on HIV/AIDS of Physiotherapy students.

Keywords: Physiotherapy, HIV/AIDS, Pearson's correlation coefficient, post hoc test, Tukey HSD, Levene's statistics.

Introduction: India is one of the most populated countries in the world with over 1 billion inhabitants of which around 2.4 million people are living with HIV infection. (1) The cumulative number of AIDS cases have reached to 1, 24, 995.(2) Nonetheless all these people living with HIV/AIDS and future additions, like other cases need a comprehensive, ethical and quality care and support. Human discrimination is reported to be alarming in health sector. According to 2006 study 25% of the people living with HIV/AIDS refused medical treatment in India on the basis of their HIV/AIDS status.(3) This poor attitude in refusing treatment to people living with HIV/AIDS is clearly indicative of either lack of adequate knowledge on HIV/AIDS, despite being in the medical profession or absence of internalization. Willingness to treat HIV/AIDS patient appears to be related to knowledge of HIV/AIDS thus influencing attitudes & behavior.

Considering the changing scenario of disease in India, i.e. from infectious to non infectious, acute to chronic, communicable to non communicable and growingly increasing accidents, patients management is no longer a domain of only medical doctors and physiotherapist play a vital role in the management of many patients.

Considering the changing scenario of disease in India, Physiotherapists play a vital role in many of the patients' management. Their inadequate knowledge and negative attitudes in management of HIV/AIDS patient may prevent the application of scientific methods of physiotherapy resulting into fragmented patient care with potential negative impact on patients' management.

It is rather imperative that, during the graduation course adequate knowledge on HIV/AIDS needs to be imparted to all those who will be a part of patient management. This will help them to act on the information, which they receive.

Many studies have been carried out on medical students and school children to assess the knowledge and attitudes on HIV/AIDS and subsequent intervention to impart adequate knowledge on identified gaps. However despite the vital role of the physiotherapist in patient management, we have not come across any study carried out on physiotherapy students to assess their knowledge and attitude on HIV/AIDS in India.

Hence this endeavor is planned with following

Aim & Objectives:

Aim:
To preclude discrimination of PLWHA in their practice

Objective:

1. To assess existing knowledge of physiotherapy student on HIV/AIDS
2. To test their attitude towards people living with HIV/AIDS
3. To identify areas needing intervention

Student Score								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
First	23	23.8261	2.69093	0.5611	22.6624	24.9897	19	28
Second	18	23.3889	2.97319	0.70079	21.9104	24.8674	17	27
Third	19	26.6316	1.97795	0.45377	25.6782	27.5849	23	30
Forth	11	26.2727	1.42063	0.42834	25.3183	27.2271	24	29
Interns	12	25.75	1.86474	0.53831	24.5652	26.9348	22	28
Total	83	24.9759	2.68681	0.29492	24.3892	25.5626	17	30

Table 1: Descriptive Statistics for class wise distribution.

Proposed Methodology

Data collection

- As the number physiotherapy students are small, all the students were included in the study

Data collection instrument
To seek the required information from the respondent, a self administered (anonymous) questionnaire was used involving following sets of questions.

1. Demographic
2. Factual questions to assess the knowledge
3. Opinion questions to test the attitude

To assess the knowledge of respondent set of 27 questions were used of which 26 questions were having two outcome values i.e. yes or no and two questions will be with short fixed answers.
To test the attitudes of the respondents a set of 14 questions was used of which 13 questions with 3 outcome responses (a) Agree (b) Undecided (c) Disagree were used, whereas one question was with open response format.

Score			
Levene Statistic	df1	df2	Sig.
2.356	4	78	0.061

Table 2: Test of Homogeneity of Variances

Scoring System:

To assess the knowledge, the correct responses will fetch the score 1, while wrong answer will fetch zero score.
For the fixed answer questions, the correct fixed response will fetch score 1 while wrong response will fetch zero score.

Attitude:

For the question no 1, 7, 9, 10 scoring was done as follows:
Disagree response - 2 score
Undecided response – 1 score
Agree response – 0 score
For the question no 2, 3, 4, 5, 6 & 11 scoring was as follows:
Agree response – 2 score
Undecided response – 1 score
Disagree response – 0 score

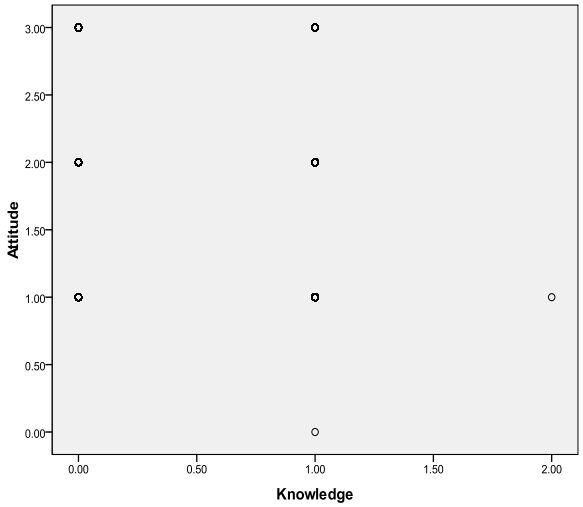

Fig 1: Scatter diagram for Knowledge and Attitude

Analysis :

a. Analysis for assessing the knowledge
b. Analysis to test the attitudes
c. Correlation analysis to understand the relationship between knowledge and attitudes.

Pre test analysis will include following:

1. Stratifical estimation of the mean score class wise.
2. To determine whether there is a difference between the mean score of male and female students and among the mean scores of different level of knowledge, ANOVA test will be used.
3. To determine the relation between the independent variable knowledge and the dependent variable attitudes.

Ethical issues

1. The approval to conduct the research was taken from the principal of physiotherapy college
2. The verbal informed constant was sought and questionnaire was distributed to those who were willing to participate in the research, the questionnaire were collected and information was kept in confidence.

Score					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	153.517	4	38.379	6.828	0
Within Groups	438.435	78	5.621		
Total	591.952	82			

Table 3: One way analysis of variance(ANOVA)

Statistical Techniques:

ANOVA:

When we want to compare means of more than two groups or levels of an independent variable, we use one way ANOVA. It is used to find the significant relations by assuming equal variance. The procedure of ANOVA involves the derivation of two different estimates of population variance. Then statistics is calculated from the ratio of these two estimates where one is between group variance estimate which is measure of effect of independent variable and other estimate within group variance which is error variance itself. The F ratio is ratio of between the groups and within the groups variance. When hypothesis is rejected i.e. when significant different is lies, post hoc analysis and other test needs to be performed to get the results.

Tukey HSD			
		Subset for alpha = 0.05	
Year	N	1	2
Second	18	23.3889	
First	23	23.8261	
Interns	12	25.75	25.75
Forth	11		26.2727
Third	19		26.6316
Sig.		0.055	0.841

Table 4: Means for groups in homogeneous subsets are displayed by Tukey's HSD.

Pearson's correlation coefficient:

A correlation is a number between -1 and +1 that measures the degree of association between two variables (call them X and Y). A positive value for the correlation implies a positive association (large values of X tend to be associated with large values of Y and small values of X tend to be associated with small values of Y). A negative value for the correlation implies a negative or inverse association (large values of X tend to be associated with small values of Y and vice versa). Correlation is symbolically represented by r_{xy}

$$r_{xy} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{(n-1)s_x s_y} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}},$$

Levene's statistics for homogeneity of variance:

Test for Homogeneity of Variances Levene's test is used to test if k samples have equal variances which is first invented by Great Scientist Levene in 1960. The term homogeneity of variance is used when there are equal variance across samples. Levene's test is less sensitive that we can used it for small number of samples also. It is alternative test for Bartlett test. As in ANOVA we assumed that variance are equal overall, we check this by using Levene's Statistics.
The test statistics is W, which is defined as follow:

$$W = \frac{(N-k)}{(k-1)} \frac{\sum_{i=1}^{k} N_i (Z_{i\cdot} - Z_{\cdot\cdot})^2}{\sum_{i=1}^{k}\sum_{j=1}^{N_i}(Z_{ij} - Z_{i\cdot})^2},$$

Where,

- W is the result of the test,
- k is the number of different groups to which the samples belong,
- N is the total number of samples,
- N_i is the number of samples in the ith group,

Y_{ij} is the value of the jth sample from the ith group

$$Z_{ij} = \begin{cases} |Y_{ij} - \bar{Y}_{i\cdot}|, & \bar{Y}_{i\cdot} \text{ is a mean of i-th group} \\ |Y_{ij} - \tilde{Y}_{i\cdot}|, & \tilde{Y}_{i\cdot} \text{ is a median of i-th group} \end{cases}$$

$$Z_{\cdot\cdot} = \frac{1}{N}\sum_{i=1}^{k}\sum_{j=1}^{N_i} Z_{ij}$$

is the mean of all Z_{ij}
and

$$Z_{i\cdot} = \frac{1}{N_i}\sum_{j=1}^{N_i} Z_{ij}$$

is the mean of Z_{ij} for i^{th} group
We check the significance of W is tested against $F(\alpha, k-1, N-k)$ where F is a quantile of the F test distribution, with $k-1$ and $N-k$ its degrees of freedom, and α is the chosen level of significance (usually 0.05 or 0.01).

Result and Discussion:

[Table 1] shows the mean scores reveal that the senior class students had better knowledge as compared with the junior class students. The standard deviation data reveals the greater homogeneity in senior classes with more mean values i.e. a class with more mean value for knowledge is also more homogenous. The difference between the minimum and maximum score also corroborates the fact that there is less difference in classes with more mean scores for knowledge. From [Table 2] we come to know that, Since Homogeneity of Variances should not be there for conducting ANOVA tests, which is one of the assumptions of ANOVA, we see that Levene's test shows that homogeneity of variance is not significant ($p>0.05$). As such, we can be confident that population variances for each group are approximately equal.

Score						
(I) Year	(J) Year	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
First	Second	0.4372	0.7461	0.977	-1.6464	2.5208
	Third	**-2.80549***	0.735	0.002	-4.8581	-0.7529
	Forth	**-2.44664***	0.86913	0.047	-4.8738	-0.0195
	Interns	-1.92391	0.84428	0.163	-4.2817	0.4338
Second	First	-0.4372	0.7461	0.977	-2.5208	1.6464
	Third	**-3.24269***	0.77982	0.001	-5.4204	-1.065
	Forth	**-2.88384***	0.90734	0.018	-5.4177	-0.35
	Interns	-2.36111	0.88357	0.067	-4.8286	0.1063
Third	First	**2.80549***	0.735	0.002	0.7529	4.8581
	Second	**3.24269***	0.77982	0.001	1.065	5.4204
	Forth	0.35885	0.89824	0.995	-2.1496	2.8673
	Interns	0.88158	0.87422	0.851	-1.5598	3.3229
Forth	First	**2.44664***	0.86913	0.047	0.0195	4.8738
	Second	**2.88384***	0.90734	0.018	0.35	5.4177
	Third	-0.35885	0.89824	0.995	-2.8673	2.1496
	Interns	0.52273	0.98965	0.984	-2.241	3.2864
Interns	First	1.92391	0.84428	0.163	-0.4338	4.2817
	Second	2.36111	0.88357	0.067	-0.1063	4.8286
	Third	-0.88158	0.87422	0.851	-3.3229	1.5598
	Forth	-0.52273	0.98965	0.984	-3.2864	2.241
*. The mean difference is significant at the 0.05 level.						

Table 5: Multiple comparisons by Tukey's HSD for each class

[Table 3] above shows that the F test values along with degrees of freedom (4,78) are significance of 0.000. Given that $p<0.05$, you can reject the null hypothesis and accept the alternative hypothesis that there is significance difference in scores from different classes. $F(4,78)=6.828$, $P<0.05$.

Post Hoc analysis involves hunting through data for some significance. This testing carries risks of type I errors. These tests are designed to protect type I errors, given that all the possible comparisons are going to be made. Post hoc tests are stricter than planned comparisons and it is difficult to obtain significance. We used Tukey test/honestly significant difference (HSD) test

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		Knowledge	Attitude
Knowledge	Pearson Correlation	1	.011
	Sig. (2-tailed)		.613
Attitude	Pearson Correlation	.011	1
	Sig. (2-tailed)	.613	

Table 6: Pearson's correlation coefficient for attitude and knowledge

The harmonic means of the study group are in the increasing order of second (23.38), First (23.82), Interns (25.75), Forth (26.27) and Third (26.63) classes. The data confirms the increase in the mean score of knowledge with the increase in the class with the exception of interns, i.e. the students who spend more time in education their chances of having better knowledge are more. It is shown in [Table 4]. Fig 1 avails the scatter diagram for knowledge and attitude, While in [Table 5] Using Tukey HSD, we can conclude that first and Forth & first and third have significant difference in their scores. There is significant difference between second and third and second and forth class. Also there is no significant difference between interns and other classes. [Table 6] shows the relationship between attitude and knowledgeIn general this shows that as the class level increases the level of knowledge also increases with exception of interns.

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