

RESEARCH ARTICLE

Impact of nutrition education on nutritional knowledge, attitude and practices of HIV patients attending ART centre of Susheela Tiwari Hospital, Haldwani, Uttarakhand, India

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Manuscript details:	ABSTRACT
<p>Received: 09 January, 2015 Revised : 23 February, 2015 Accepted: 28 February, 2015 Published : 30 March, 2015</p> <p>Editor: Dr. Arvind Chavhan</p> <p>Cite this article as:</p> <p>Baghel SS, Srivastava S and Verma A (2015) Impact of nutrition education on nutritional knowledge, attitude and practices of HIV patients attending ART centre of Susheela Tiwari Hospital, Haldwani, Uttarakhand, India, <i>Int. J. of Life Sciences</i>, 3(1): 1-8.</p> <p>Copyright: © 2015 Author(s), This is an open access article under the terms of the Creative Commons Attribution-Non-Commercial - No Derivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>The study was conducted at ART centre of Susheela Tiwari Hospital, Haldwani, Uttarakhand. The data for the study was collected by personal interview. The impact of nutrition education was assessed by pretested questionnaire before and after imparting nutrition education. The study revealed that majority of the subjects was in the age group 18-60 years. A 10.92 per cent subjects were graduates. The per capita income per month of the subjects was Rs.2125±1512. A significant ($p < 0.05$) improvement in KAP scores was observed in experimental group subjects while no improvement was seen in the subjects of control group. Gain in KAP scores for knowledge, attitude and practices was 4.89, 3.17 and 1.21, respectively in experimental group while in control group, gain in KAP scores was -0.28, 0.3 and 0.12 for knowledge, attitude and practices, respectively. The differences in gain of KAP scores between control and experimental group was comparable at the baseline but a significant ($P < 0.05$) improvement was seen in case of experimental group after six months. The quantum of improvement in knowledge, attitude and practices was 1.71, 1.08 and 1.20 times, respectively which signified that nutrition education imparted to experimental group resulted in significant ($P < 0.05$) improvement in KAP.</p> <p>Key words: HIV, socio-demographic, KAP, Nutrition education.</p>
	<h3>INTRODUCTION</h3> <p>In India, after the first case of HIV was detected in Chennai in 1986, the virus spreads rapidly across the nation in both urban and rural areas. There are around 2.4 million people currently living with HIV and so far 172, 000 people have died with HIV/ AIDS (UNAIDS, 2012). The HIV is transmitted through specific human body fluids. The body fluids that</p>

contain the virus are blood, semen, breast milk, vaginal fluids, and rectal mucosa (www.cdc.gov). In India heterosexual mode of HIV transmission accounts for 88.2 per cent of HIV positive cases (India, NACO, 2012). Many studies found that micronutrients deficiency aggravates the transmission and progression of HIV infection (Schreck *et al.*, 1991; Piwoz and Preble, 2000). In an independent study carried by Tang *et al.* (1996) and Allavena *et al.* (1995) reported that low or deficient serum concentrations of several micronutrients are associated with low CD4 cell count, advanced HIV related diseases, faster disease progression, or HIV-related mortality (Tang *et al.*, 1996; Allavena *et al.*, 1995).

Beisel and Gershwin (2000) reported that nutritionally acquired immune deficiency syndrome, or NAIDS results in impaired immune functions. Whalen *et al.*, (2000) reported that NAIDS not only contribute to the depletion and dysfunction of CD4 cells but also makes the host susceptible to other infections which increase viral replication and hence quicken HIV progression.

WHO (2008) advocate the importance of nutritional counselling as essential component in the management of HIV/AIDS. Nutritional counselling proved to be helpful in raising awareness about the importance of nutrition (Zambelli *et al.*, 1996; de Luis *et al.*, 2003) and hygiene in the effective management of HIV care especially in resource limiting settings. Through nutrition counselling improvement is seen not only in dietary intake but also empowers dietary diversity and thus fulfil the micronutrients intake which in turns improves the quality of life by slowing down the progression of HIV to AIDS (Penny *et al.*, 2005). Piwoz *et al.*, (2004) and SCN, (2004) found that good nutrition increases the host ability to fight the disease and reduces their vulnerability to opportunistic infections (Piwoz *et al.* (2004) reported that nutrition education counselling (NEC) allows PLHIV to modify their diets, using locally available, nutrient dense and culturally acceptable foods to maintain good health, improve their nutritional status and SCN (2004) found that NEC improves daily functioning of PLHIV. ECSA-HC *et al.* (2008) and Bukasuba *et al.* (2010) reported the importance of NEC in improving KAP and thus allows PLHIV to utilise the limited resources, modify diets to boost their immunity and improve response to ART and other treatment.

Knowledge means the ability of pursuing and using information, and by understanding, learning experience, and identifying the studying technologies. Attitude indicates the result of making reaction via some ways in some situations, and observes and explains based on the result of reaction or combine into one point of view. Practice indicates what knowledge and habit work together (Lbrahim, 1995). Lack of knowledge and negative attitude and practice towards the disease and treatment was reported to result in inadequate therapeutic outcomes and therefore counselling on knowledge, attitude and practice of patients suffering from chronic diseases is important (Fish and Lung, 2001; Vervoort *et al.*, 2007; Goujard *et al.*, 2003).

HIV/AIDS is one of the pressing public health problems in India. The impact of HIV/AIDS on the economic front is important as it affects mainly the young, who are in the reproductive age group (Anand *et al.*, 1999). The adverse economic impact of HIV and AIDS occurs at three levels: the individual/household, sector, and national or macro-levels (Ojha and Pradhan, 2000). So the present study was planned to assess the impact of nutrition education in KAP of people living with HIV/AIDS in India.

MATERIALS AND METHODS

The present study was carried out at ART centre of Susheela Tiwari Hospital, Haldwani. The study was done in two phases. The baseline survey was conducted from August to September 2013 and after an interval of six months the survey was again conducted from February to April 2014 at ART centre of Susheela Tiwari Hospital, Haldwani.

The sample size of 136 subjects was calculated according to Kish-Leslie (1965) formula. The subjects were equally divided into experimental and control group, 58 subjects in each group. All adults, non-pregnant, non-lactating women and asymptomatic subjects attending ART centre were included for the study. Whereas pregnant and lactating women, symptomatic, unable to give consent for the study and who could not communicate in the study languages were excluded for the study. The subjects who were fulfilled the inclusion criteria during study period registered for the study. By the end of the study 26 subjects dropped from the study and hence excluded from the study and the results have been reported on

110 subjects, 51 in the control and 59 in the experimental group.

The study was approved by the advisory committee of Department of Foods and Nutrition, College of Home Science, GBPUA&T, Pantnagar, Uttarakhand. Permission was taken from the hospital administration of Susheela Tiwari Hospital, Haldwani to carry out the study. For ethical consideration the subjects were well explained the purpose of the study and their confidentiality in participant information sheet. A written consent was obtained from the subjects in participant information sheet for their willingness in participating in the study. The data was collected by:

Personal Interview

Personal interview was carried out by the researcher with the help of pre designed semi structured questionnaire which contained questions regarding socio demographic and KAP.

Knowledge, attitude and practices: The evaluation of nutrition education imparted was done through a composite interview schedule by pre and post test of knowledge, attitude and practices (KAP) of the subjects in experimental and control group. In each section 15 questions were framed on HIV infection, treatment, nutrition, health and hygiene.

Scoring of KAP

In knowledge 1 score was given and 0 for wrong answer. A respondent could score a maximum of 15 and minimum of 0 in knowledge section each. For attitude, a score of 1 was given to 'disagree', a score of 2 was given to 'don't know', and a score of 3 was given to 'agree'. So that, a respondent could score a maximum of 45 and a minimum of 15 in the attitude section. For practices, a respondent obtained score 1

for correct answer and 0 score for wrong answer. So that a respondent could score a maximum of 15 and a minimum of 0 in the practice section. The final KAP score was calculated by adding the scores of the knowledge, attitude and practices sections individually. The total KAP score ranged from 15 to 75. The higher the score indicates better respondent's nutrition-related knowledge, attitude, and practices (Anand and Puri, 2013). The scores were also classified into poor, average, and good scores, ranges for which are shown in Table 1.

Response from the subjects were recorded by the researcher by explaining question from each section viz. knowledge, attitude and practices from pre-tested interview schedule developed to assess nutrition relation knowledge, attitude and practices of control and experimental group.

A pretested manual containing varied aspect of HIV infection, health, hygiene and nutrition was designed to impart nutrition education to experimental group. The baseline information from all registered subjects was collected and the nutritional status, nutritional need and nutritional knowledge were assessed. The Nutrition education was imparted to experimental group through individual counselling with personalized diet chart. During counselling the manual was explained to the subject and handed over to them for their reference. The experimental group was followed every month for the period of six months. After six months KAP of both groups were assessed using interview schedule. The impact of nutrition education on KAP was calculated by formulae used by Monga *et.al* (2008) for gain in scores and quantum of improvement.

Gain in scores = Post test score – Pre test score

Quantum of improvement = $\frac{\text{Post test score}}{\text{Pre test score}}$

Table 1: Scoring and classification of KAP

	Knowledge	Attitude	Practices	KAP
Scoring	1 for correct answer 0 for incorrect answer	1=Disagree 2=Don't know 3=Agree	1=Yes 0=No	Knowledge score + Attitude score + Practices score
Range	0-15	15-45	0-15	15-75
Classification	Poor: 0-5 Average: 6-10 Good: 11-15	Poor: 15-25 Average: 26-35 Good: 36-45	Poor: 0-5 Average: 6-10 Good: 11-15	Poor: 15-35 Average: 36-55 Good: 56-75

Statistical Analysis

Data were cleaned, coded, entered and analyzed for Sample size, per cent, central tendency, dispersion and student *t*-test using the Microsoft Excel 2007. . Socio demographic profile and KAP were subjected to per cent, central tendency, dispersion and *t*-test.

RESULTS AND DISCUSSION

The investigation was done to assess the impact of nutrition education on KAP of HIV/AIDS patients attending of ART centre of Susheela Tiwari Hospital, Haldwani. Data related to socio demographic profile of the subjects has been given in Table 2.

Table 2: Socio- demographic profile of the subjects

	Control (n 51)		Experimental (n 59)		Total (N 110)
	Females (n 28)	Males (n 23)	Female (n 30)	Male (n 29)	
Age (years)					
18-30	37.71	13.04	63.33	48.28	41.82
30-60	60.71	82.61	36.67	48.28	55.45
>60	1.58	4.35	0	3.44	2.73
Educational status					
illiterate	28.6	30.4	23.33	10.34	22.72
Primery	21.4	13.05	10	13.79	14.55
Middle	21.4	13.05	20	10.34	16.36
High School	7.1	17.4	20	37.93	20.90
Intermediate	14.3	17.4	16.66	10.34	14.55
Graduate	3.6	8.7	3.33	13.79	7.27
Post graduate	3.6	0	6.68	3.47	3.65
Religion					
Hindu	89.3	69.6	0	41.37	48.18
Muslims	10.7	30.4	80	55.17	45.45
Sikh	0	0	20	3.46	6.37
Marital status					
Married	32.1	69.6	56.67	68.96	56.36
Unmarried	0	8.7	0	27.59	9.09
Widow/widower	64.3	13	43.33	3.4	31.82
Separated	3.6	8.7	0	0	2.73
Type of family					
Nuclear	78.6	73.9	90	79.31	80.90
Joint	21.4	26.1	10	20.69	19.1
Family size					
0-4	71.4	47.8	83.331	75.86	70.90
5-8	28.6	47.8	16.67	24.14	19.09
Above 8	0	4.4	0	0	10.01
Occupation					
House wife	64.3	0	56.66	0	31.81
Private job	10.7	30.4	13.33	58.62	30
Government job	3.6	0	0	3.45	1.81
Labour	7.1	17.4	10	13.79	11.81
Self employed	0	26.1	0	13.79	9.90
Farmer	14.3	21.7	20.34	6.9	15.45
Retired	0	4.4	0	3.45	1.81
Activity					
Sedentary	78.57	39.13	70	58.62	62.7
Moderate	21.43	60.87	30	41.38	37.3
Per capita income (Rs/month)					
Mean \pm SD	1895 \pm 1282 (583-5500))	1769 \pm 1351 (400-5500)	2650 \pm 1830 (666-7500)	2184 \pm 1586 (300-6666)	2125 \pm 1512 (300-7500)
Location					
Hill	42.86	34.78	50	24.14	39.09
Plain	46.43	60.87	40	65.52	52.73
Bhabhar	10.71	4.35	10	10.34	9(8.18)

Assessment Knowledge, Attitude and Practices

The per cent of male and female subjects were 47.27 and 52.73, respectively. The per cent of the subjects in the age groups 18-30, 30-60 and above 60 years were 41.82, 55.45 and 2.73, respectively.

The literacy level of the subjects revealed that 77.28 per cent of subjects were literate and 22.72 per cent of subjects were illiterate. Among literate only 10.92 per cent were graduates and the majority of the subjects (66.36 per cent) had education up to intermediate. The religion wise distribution shows that 48.18 per cent of subjects were Hindus and 45.45 and 6.37 per cent were Muslim and Sikh respectively. Majority (56.36 per cent) of subjects were married and 9.09, 31.82 and 2.73 per cent were unmarried, widow/widower and separated, respectively. A large per cent of subjects (80.90) were from nuclear family and only 19.1 per cent of subjects were living in joint family. Majority (70.90 per cent) of subjects had small family size (0-4) while 19.09 and 10.01 per cent subjects had family size of 5-8 and above 8 members, respectively.

A 62.7 per cent of subjects were engaged in sedentary activity and rest 37.3 per cent were moderate worker. Per cent of working subjects was 68.19 while non working subjects were 31.81 per cent. Among nonworking all were females and housewives. Among working subjects majority of subjects (30 per cent) had private job and 15.45, 11.81, 9.90, 1.81 and 1.81 per cent subjects were farmers, labourer, self employed, government job and retired respectively. The per capita income per month of the subjects was Rs. 2125±1512, ranged (300-7500). The study shows that the majority (52.73 per cent) were located in plain where as 39.09 and 8.18 per cent of subjects were located in hill and bhabhar region, respectively.

Distribution of KAP scores: Distribution of KAP scores of subjects at baseline and after six months has been presented in Table 2. The knowledge scores of the control group showed that 37.25 and 35.29 per cent subjects obtained poor scores (0-5) at baseline and after six months, respectively. A 35.29 and 37.25 per cent subjects obtained average scores (6-10) at baseline and after six months, respectively. A 27.45 per cent subjects obtained good scores (11-15) at baseline as well as after six months. The knowledge scores of experimental group show that 30.51 and 5.08 per cent subjects obtained poor scores (0-5) at baseline and after six months, respectively. A 57.63 and 22.03 per cent subjects obtained average scores (6-10) at baseline and after six months, respectively.

The subjects in both the group showed to have better attitude as revealed in table that none of the subjects had poor score (15- 25) for attitude. There was no change in attitude of control group after six months and 21.57 per cent subjects obtained average scores (26-35) and 78.43 per cent subjects obtained good scores (36-45). The experimental group show that the 25.42 and 11.86 per cent subjects obtained average scores (26-35) at baseline and after six months, respectively. A 74.58 and 88.14 per cent subjects obtained good scores (36-45) at baseline and after six months, respectively.

Regarding practices, the control group show 41.18 and 27.45 per cent subjects obtained poor scores (0-5) at baseline and after six months, respectively. A 30.51 and 44.07 per cent subjects obtained average scores (6-10) at baseline and after six months, respectively. A 20.34 and 32.20 per cent subjects obtained good scores (11-15) at baseline and after six months, respectively.

Table 3: Distribution of KAP scores of subjects

Section	Score	Control (n= 51)		Experimental (n= 59)	
		Baseline	6 months	Baseline	6 months
Knowledge	Poor: 0-5	37.25	35.29	30.51	5.08
	Average: 6-10	35.29	37.25	57.63	22.03
	Good: 11-15	27.45	27.45	11.86	472.88
Attitude	Poor: 15-25	0	0	0	0
	Average: 26-35	21.57	21.57	25.42	11.86
	Good: 36-45	78.43	78.43	74.58	88.14
Practices	Poor: 0-5	41.18	27.45	49.15	23.73
	Average: 6-10	45.10	64.71	30.51	44.07
	Good: 11-15	13.73	7.84	20.34	32.20

Table 4 : KAP scores of the subjects

Section	Score	Control (n = 51)		t value	Experimental (n= 59)		t value
		Baseline	6 months		Baseline	6 month	
Knowledge	0-15	7.37± 3.89 (1-14)	7.09±3.76 (1-14)	1.85	6.91±3.45 (0-14)	11.80±3.32 (1-15)	18.52*
Attitude	15-45	38.58±3.83 (29-44)	38.88±3.9 (30-44)	1.87	38.09±5.14 (26-45)	41.26±4.39 (29-45)	11.72*
Practices	0-15	6.66±2.86 (2-12)	6.78±2.39 (2-12)	0.63	6.88±3.39 (1-13)	8.09±3.52 (1-14)	8.06*
Total KAP	15-75	50.06±3.1	50.31±2.95		51.88±3.98	61.15±3.73	

Table 5: Impact of nutrition education on KAP

Section	Period	Total		t value
		Control (n = 51)	Experimental (n = 59)	
Knowledge	Baseline	7.37± 3.89	6.91±3.45	0.64
	6 months	7.09±3.76	11.80±3.32	6.34*
Gain in score		-0.28	4.89	
Quantum of improvement		1.03	1.71	
Attitude	Baseline	38.58±3.83	38.09±5.14	0.47
	6 months	38.88±3.9	41.26±4.39	3.16*
Gain in score		0.3	3.17	
Quantum of improvement		1.01	1.08	
Practices	Baseline	6.66±2.86	6.88±3.39	0.35
	6 months	6.78±2.39	8.09±3.52	2.34*
Gain in score		0.12	1.21	
Quantum of improvement		1.02	1.2	

*Significant difference ($p < 0.05$)

The distribution of scores at baseline and after six months revealed that the experimental group subjects shifted from lower to higher scores contrary to control group where subjects shifted from higher to lower scores. Monga *et al.* (2008) also reported that after nutrition education a highly significant ($p < 0.01$) shift of scores from to lower to higher scores.

Mean KAP score of the subjects has been depicted in Table 3 .Control group obtained 7.37±3.89, 38.58 ±3.83 and 6.66 ± 2.86 at baseline and 7.09±3.76, 38.88±3.9 and 6.78±2.39 scores after six month in reference to knowledge, attitude and practices respectively. Experimental group obtained 6.91±3.45, 38.09 ±5.14 and 6.88 ± 3.39 at baseline and 11.80±3.32, 41.26±4.39 and 8.09±3.52 scores after six month in reference to knowledge, attitude and practices, respectively and gained a significant ($p < 0.05$) change in respective scores.

Impact of nutrition education on knowledge, attitude and practices

A comparative gain in scores by both groups at baseline and after six months has been depicted in Table 4. The table revealed that gain in KAP scores were 4.89, 3.17 and 1.21 in reference to knowledge, attitude and practices, respectively in experimental group , while in case of control group, gain in KAP scores were negligible i.e. -0.28, 0.3 and 0.12, respectively. The differences in gain of KAP scores between control and experimental group were comparable at the baseline but a significant ($P < 0.05$) improvement was seen in case of experimental group after six months It was found that the quantum of improvement in knowledge, attitude and practices was 1.71, 1.08 and 1.20 times, which signified that nutrition education imparted to experimental group resulted in significant ($P < 0.05$) improvement. Whereas in control group quantum of score was only

1.03, 1.01, and 1.02 times in reference to knowledge, attitude and practices, respectively.

At the baseline both group had KAP scores at average range category (36-55) after six months experimental group obtained 61.15 ± 3.73 score and shifted from average range to good score range (56-75) and shows a significant ($p < 0.05$) improvement in KAP scores while non-significant change in case of control group. Mini *et al.* (2010) found a significant ($p < 0.01$) improvement in knowledge attitude and practice after the educational sessions to HIV/AIDS. Through nutrition education significant improvement was noticed in knowledge, attitude and practices but there is need to improve especially nutrition and health related practices. Torheim *et al.* (2004) stated that low socioeconomic status, level of education, personal beliefs, availability of food, and low nutritional knowledge were the reasons for poor dietary practices.

Monga *et al.* (2008) found that the quantum of improvement in knowledge, attitude and practices was 1.40, 1.57 and 1.14 times through nutrition counselling.

CONCLUSION

The subjects of the present study belong to lower socio-economical group with low education level and most of them are engaged in unskilled job. Nutrition education showed to have significant impact on KAP of people living with HIV/AIDS.

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