Nutrition Education improves a nutritional status of School adolescents, in Jimma, South West Ethiopia: A cluster randomized control trial.

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Introduction

- Adolescence defines as the age between 10 -19 years of age and from total world population, 19 % were Adolescence.

- Adolescence is particularly unique period in life and requires special attention to meet their nutritional needs because

  - it is a time of intense growth, psychosocial, and cognitive development
  - the second opportunities for catch up growth next to the first year of life. (Sajjan *et al., 2011 ;* Unicef , 2012).

Con’t

- The quality of children’s diets usually declines as they move from childhood to adolescence (Old wage and Egel, 2010).
- The principal factor associated with nutritional status and intake of foods in adolescence are:-
  - Quality of dietary intake
  - limited knowledge on food choices
  - psychological and social aspects of behavior
  - socio economic status (Choi *et al.,*2008;Old wage and Egel, 2010).
- The implementation of nutritional education programs in schools may help to teach and impress by frequent repetitions in the ability of identifying a healthy food choice in children (Garc´ıa- Casal *et al., 2011).*

Con’t

- Nutrition education for adolescents should have a behavioral focus that will minimize the targeted risk factors.
  - The pre-post experimental study in adolescent of Nicaragua revealed that a significant improvement in nutritional knowledge of adolescents from 2.16 (P< -0.35) to 11.5 (P< 0.001) after imparting nutrition education for 6 months (Preety *et al*.;2015) .

Con’t

- It is hoped that, nutrition education interventions are considered to reduce the level of malnutrition by improving the knowledge of adolescents on dietary choices.

- However in Ethiopia, there is no data weather nutrition education improves the knowledge and nutritional status of adolescents.

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- Therefore, this research intended to assess the:-
  - Nutritional status and nutritional knowledge
  - provided nutritional education
  - evaluated its impact on the nutritional status of adolescent school children in Serbo Schools, Kersa woreda, Jimma, and South West Ethiopia.

Objectives

General objective

- To determine the impact of nutrition education intervention on nutritional status of school adolescents in Kersa Woreda, Jimma Zone, and South West Ethiopia.

Specific objective

- To assess the nutritional status of school adolescent.
- To assess the nutritional knowledge of school adolescent.
- To determine the effect of nutrition education on the nutritional status of adolescent

Hypothesis

- The nutritional status of adolescent school children would be improved in those who received nutrition education than those who had not received.

Methodology

- Study area and period
  - kersa woreda school in Jimma zone southwest Ethiopia, from 2012 to 2013.
  - located 330Km from the capital city of Ethiopia and 30 Km from Jimma town.
- Study design
  - A Cluster randomized control trial
- Population
  - Source population was all adolescent in kersa woreda schools
  - study population was adolescents in Kersa woreda schools who were randomly included in the study.
- Inclusion criteria
  - Adolescents students from 5^{th} to 8^{th} grade were included in the study.

Con’t

- Exclusion criteria
  - Students who had history of current illness .
  - Those children who attended less than 25 % of the nutrition education session, were excluded from the study.

Con't

- **Sample size and technique :-** Sample size was calculated by considering comparison of two proportions of population

$$\frac{(Z1 + Z2)2\ 2p(1-P)}{(P2-P1)2}$$

Where

- *n = Sample size for each group*
- *Z1= 1.96 for 95% CI*
- *Z2= 0.84 for 80% power*
- *P 2= Anticipated value the population proportion of control group, since there were no prevalence of malnutrition as well as in the study area, the investigator was taken the prevalence as 50% (0.5).*
- *P 1= Anticipated value the population proportion of outcome on intervention group reduced by 30% from 50%, it will be 0.15. Then reduced from the P2, anticipated value for the intervention group will be 0.35.*
- *P2-P1 = the difference in mean of intervention and control group will be 0.15.*
- *P = (P1+P2) /2= 0.425*
- n = 170 , 170* 2 = 340
- 10 % of 340 =34+ 340= **374**

Final sample for control and intervention group became 187 for each .

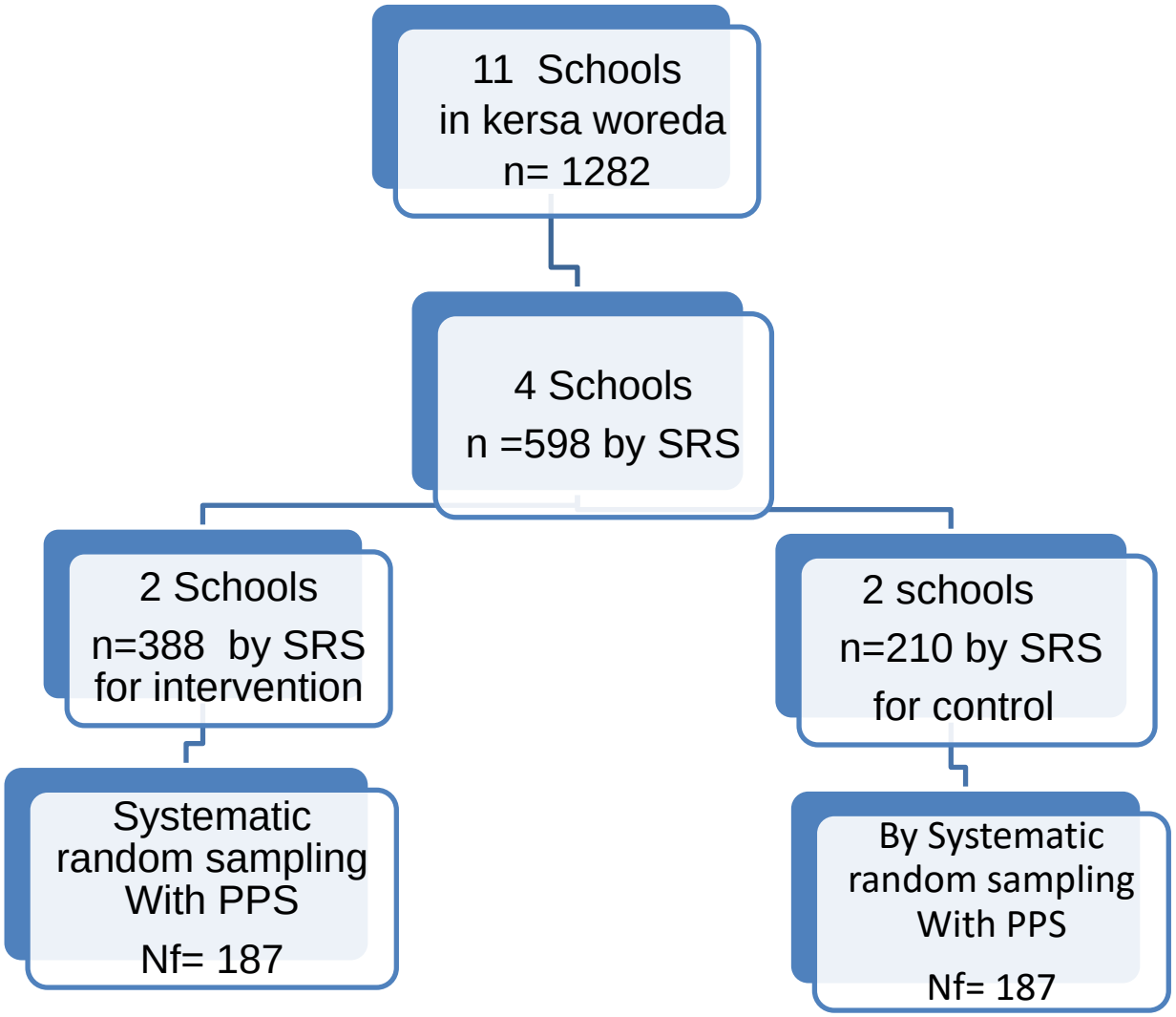

Fig .1 Sampling technique

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Variables

- Dependent Variable
  - Nutritional status (BMI for Age and height for age)
  - Growth (weight and height increment)
- Independent variable
  - Age, sex, household family size, maternal education, paternal education, nutrition knowledge, nutrition education (intervention), individual dietary diversity score and food variety score, animal source food and wealth index.

Con’t

Tools and measurment :-

- Structured questionnaires
  - socio-demographic
  - knowledge on nutrition
- anthropometric measurements (weight and height)
- 24 hrs dietary recall to generate dietary diversity, variety foods at base line and end line for both groups.

- There were 9 nutritional Knowledge questions , The responses of all of the questions were summed up to give the total score of knowledge for each adolescent
- DDS were calculated from 9 food groups by summing the number of unique food groups consumed by adolescents in the 24-hour period and calculated by counting food groups (FAO,2011).
- Food variety score (FVS) is computing by summing up all the frequency of individual consuming food among 49 food items taken from 24 hour dietary recall

Con't

- Anthropometric indicators were Z-scores height for age and BMI for age (BAZ) and HAZ < -2SD
- Nutrition education were given for 48 hours within 6 months on relevant topic for intervention group.
- All data were checked and analyzed using the SPSS-16 ,SAS 9.2 , WHO Anthro Plus software.
- Descriptive statistics and chi-square and T-test analysis were used for describing variables .
- Mixed effects model was used to examine differences in heights and weight within individual subjects over the follow up period.
- This study was approved by Ethical Review Committee of Hawassa University

Result and Discussion

- Out of 374 study subjects
  - Only 1.6% were lose to follow up .
  - mean age of the respondents was 14.37 ± 1.75
  - 57.8% were girls.

Table 1Socio demographic characteristics among intervention and control group of adolescents in Kersa Woreda, Jimma Zone, South West Ethiopia, 2013

		Control		Intervention	
		no	%	no	%
Age					
	10-14	99	52.9	111	59.4
	15-19	88	47.1	76	40.6
Gender					
	Male	90	48.1	69	36.8
	Female	97	51.9	118	63.1
Ethnicity					
	Oromo	172	92	169	90.4
	Amhara	8	90.4	9	4.81
	Tigrae	6	3.2	1	0.53
	Gurage	1	0.53	7	3.74
	Dawero	0	0	1	0.53
Religion					
	Muslim	160	85.56	154	82.35
	Orthodox	21	11.22	28	14.97
	Protestant	6	3.2	5	2.67

		Control		Intervention	
		No.	%	No	.%
Maternal education					
	informal education	114	61	110	58.8
	primary	53	28.3	59	31.6
	High school	17	9.1	17	9.1
	college	3	1.6	1	0.5
Paternal education					
	Informal education	62	33.2	60	32.1
	Primary	99	52.9	96	51.3
	Highschool	21	11.2	24	12.8
	College	5	2.7	7	3.7
mother occupation					
	Housewife	136	72.7	99	529
	Daily laborer	27	14.4	45	24.1
	Farmer	19	10.5	30	16
	Merchant	4	2.1	12	6.4
	Employed	1	0.5	1	0.53

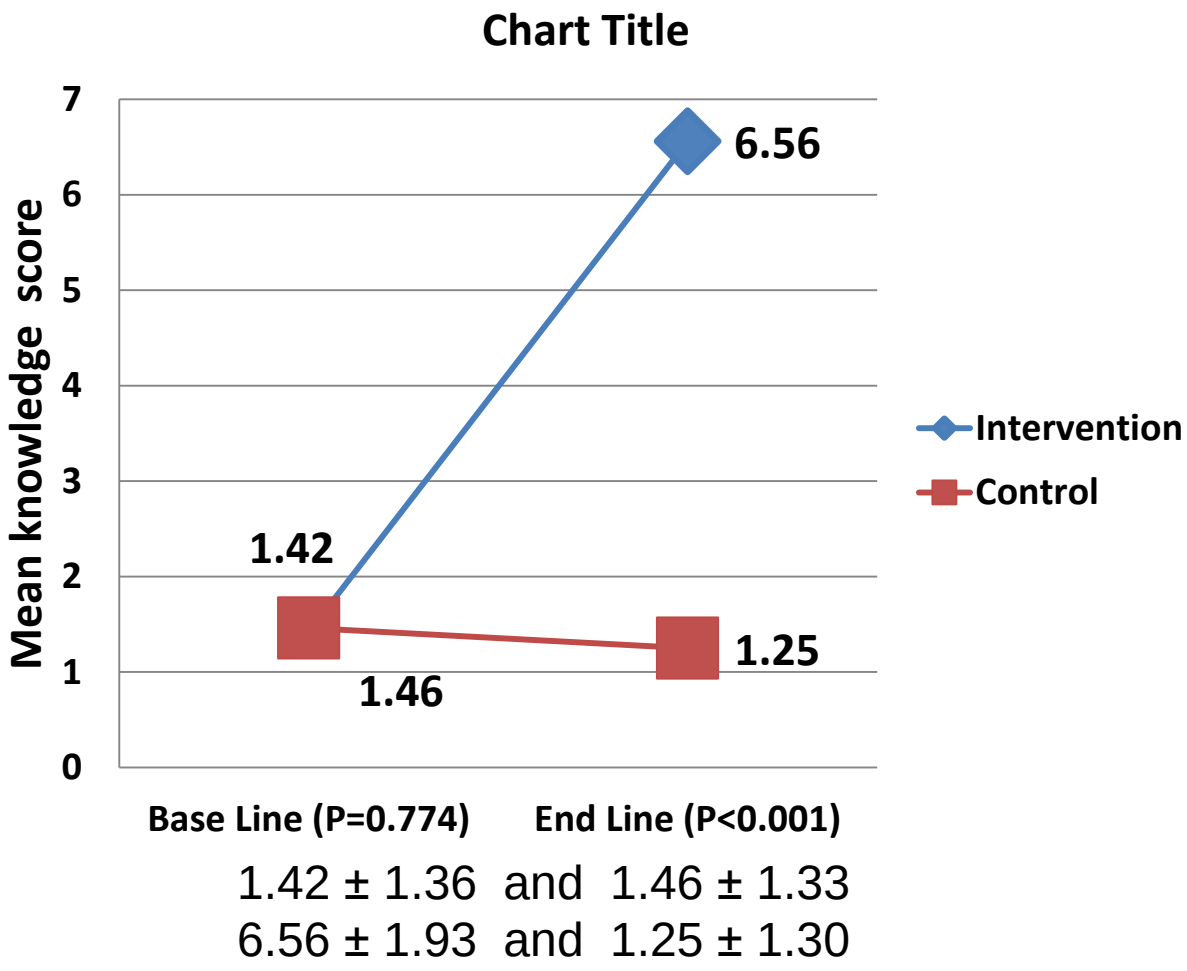

Fig. 1 Mean knowledge scores of adolescents among intervention and controls by round in school adolescents in Kersa Woreda, Jimma Zone, South West Ethiopia, 2013.

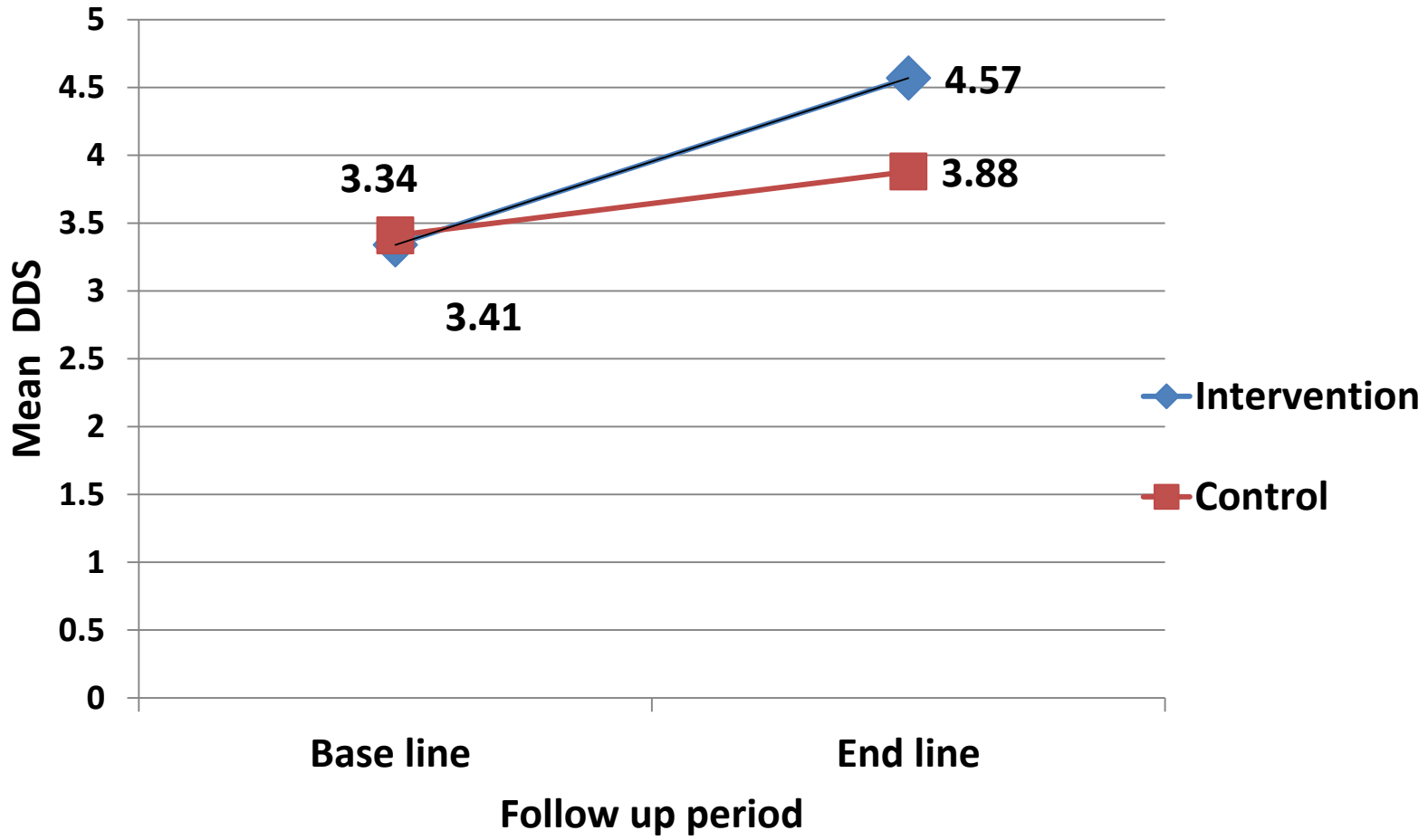

Fig. 2 Mean dietary diversity score of the adolescents in Kersa Woreda, Jimma Zone, and South West Ethiopia, 2013.

Table 2 Mean food variety score of adolescents among intervention and control adolescents in Kersa Woreda, Jimma Zone, and South West Ethiopia,2013.

	Base line	End Line	P-value
Intervention	6.33±2.3	10.23 ± 2.17	P < 0.05
control	5.74 ±1.9	6.98 ± 2.10	P< 0.001

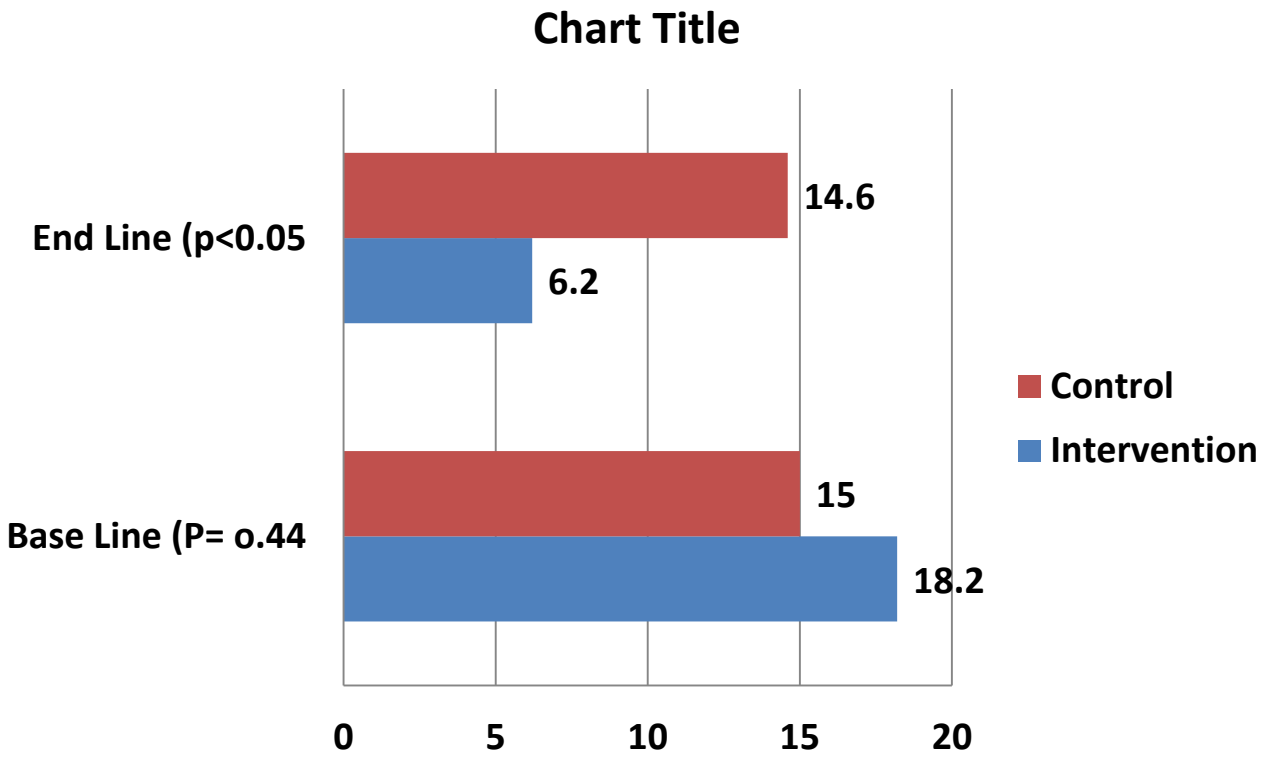

Fig. 1 : BMI for age (Z score < -2 sd) among the adolescents in intervention and control over time in Jimma Zone, 2013.

Con’t

- Findings showed that the nutrition education intervention produced significant improvements in nutrition knowledge, dietary diversity score (DDS), food variety score (FVS) and underweight among adolescents who received a nutrition education.
- Similar findings were reported in India regarding improvement of student knowledge towards nutrition in intervention groups after imparting nutrition education (Tarvinder *et al*., 2007; Sajaan *et al*., 2011).

- The majority of the students consumed less diversified and low variety food in both groups and this trends were improved after 6 months of nutrition education .

Con’t

- In turn their nutritional status of the adolescents who received nutritional education were improved comparing to those who didn’t receive .this finding was in a line with meta analysis of canadian study (Harris et al., 2009).
- after imparting education the intervention group were dropped from 18.2 % to 6.3 %,

. This is likely due to low awareness toward diversified diet and having monotonous diets which mainly source of energy contribute to the burden of underweight and stunting (Belachew *et al*., 2013).

- However, the nutrition education didn’t make differences on stunting (*P*= 0.148).

Con’t

- In current study, a significant difference was seen in thinness at end line survey within six months education in intervention and control groups ($P<0.017$).

- This shows that the nutritional education has impacts directly to nutritional status as the retained knowledge changes in to practice.

Con’t

- The linear mixed models predicted that weight of boy increased by 2.79 times in the intervention group during the follow up period (β=2.79, P=0.0005) .
- The height of boys and girls increased by 2.88cm (β=2.88, p<0.0001) and 1.61 cm (β= 1.61, p<0.001) for a unit increase in the following year respectively in those adolescents height was normal at base line .

Conclusion and Recommendation

- This study showed that the nutrition education intervention conducted over a period of 6 month has a positive impact on nutritional status, knowledge and habits dietary quality.

- Based on this study findings, we suggested that :-

  - Encourage and motivate the study on adolescents nutritional status and knowledge related to dietary practice
  - Identified and strengthened existing skills on good dietary practices in adolescents and communities
  - The school curriculum should need modification and add nutrition education.

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THANK YOU