# Life Skills Paradigm Based Intervention on Decision Making Skill for Healthy Eating Habits of Adolescent Girl Students

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**Abstract**

*The present study employed the pre-test, post-test control group design on ninety adolescent girl students to examine the effect of Life Skills Paradigm (intervention) on their decision making skill for healthy eating habits. The major findings of the study indicated: (i) significant differences in the mean scores of decision making skill in Life Skills Paradigm interventional and non-interventional group, (ii) significant difference in pre-post mean scores of decision making skill in life skills paradigm interventional group, (iii) no significant difference in pre-post mean scores of decision making skill in non-interventional group, and (iv) significant effect of life skills paradigm based intervention on decision making skill by taking pre-decision making skill scores as covariate.*

## Introduction

The sudden growth during adolescent period is not only concerned with the rate of physical growth but also with the hormonal, cognitive, and emotional changes that affect the adolescents' eating behaviour (Laura, 2003). The eating patterns of adolescents now-a-days include snacking, skipping breakfast, dieting, adoption of specific diets (such as vegetarian diet), confectionery, and fast food consumption (Shepherd & Dennison, 1996). Other factors which contribute to their poor eating habits include, but are not limited to, easy availability of low cost, high-fat and/or high-sugar, low nutrient food, limited access to healthy food that appeals to teen at

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home and when they are away from home (Higdon, 2005) and peer influence. Idealised media images of the female (and male) body also influences food choices of the adolescents.

Women are often responsible for producing and preparing food for the household, so their knowledge or lack thereof about nutrition can affect the health and nutritional status of the entire family. Hence, promoting greater gender equality, including increasing women's control over resources and their ability to make decisions is crucial (Ransom & Elder, 2003). According to World Health Organisation (WHO, 1993), *decision-making* is a process which occurs during problem-solving. It is, therefore, presented as a separate thinking skill. This process contains a few well defined stages, including describing, prescribing and controlling the problem. Each decision makes the one successful, as the decision becomes rules, which afterwards serves to make decisions towards appropriate food choices, to read food labels, to shop rationally, to evaluate their own diets and to evaluate dietary and nutritional information.

### *Life Skills Paradigm*

Life Skills Paradigm (LSP) identifies significant life skills that can be used in a specific way to overcome the different problems of life and various critical issues found among youth. For example, on the issue of health education, the life skills to be used include decision-making, refusal skills, identifying personal preferences among nutritious foods and snacks. The steps of LSP can be understood from the following Figure no. 1:

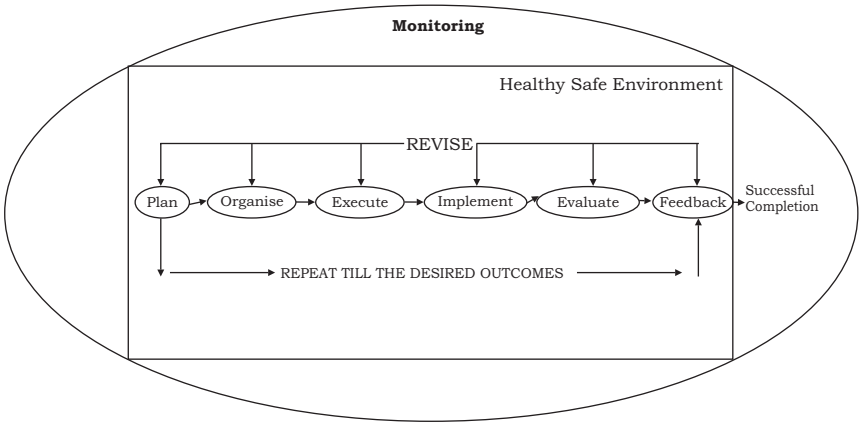


**Figure : Life Skills Paradigm**

Various checklists, inventories, simulation, exercises, training sessions or workshops etc. based on life skills training programme can be used under LSP for enhancing the different life skills (Meena, 2010).

### *Significance of the Study*

The LSP can be utilised to facilitate healthy eating habits of adolescent girl students in collaboration with their decision making skill. This means that instead of coaxing the adolescents about healthy eating habits they must be given an opportunity with conviction to explore themselves about their unresolved issues in this context. The present study considered 'adolescents' as people in the 10-19 years age range as defined by WHO.

### *Objectives of the Study*

- To develop the interventional modules based on LSP for healthy eating habits of adolescent girl students.
- To study the Decision Making Skill (DMS) for healthy eating habits of the adolescent girl students.
- To study the effectiveness of LSP on DMS for healthy eating habits of adolescent girl students as compared.

### *Hypotheses*

**Ho.1** : LSP interventional and non-interventional group will yield equal level of mean scores for DMS.

**Ho.1(a)** : There will be no significant difference in pre-post mean scores of DMS in LSP interventional group.

**Ho.1(b)** : There will be no significant difference in pre-post mean scores of DMS in non-interventional group.

**Ho.2** : There will be no significant effect of LSP based intervention on DMS by taking pre-decision making skill scores as covariate.

## Method

### *Design of the Study*

The present study employed the quasi-experimental design (i.e. pre-test, post-test control group design), where LSP was an independent variable and DMS was a dependent variable. The schematic layout of the design has been given in Table 1.

**Table 1**
**Pre-test, Post-test Control Group Design**

| | Pre-Test | Intervention | Post-Test |
|---|---|---|---|
| Experimental Group | DMSQ | LSP Based | DMSQ |
| Control Group | DMSQ | Not LSP Based | DMSQ |

LSP= Life Skills Paradigm

DMSQ= Decision Making Skill Questionnaire

### *Sample*

There exist only three Government Model Girls Senior Secondary Schools in the Union Territory of Chandigarh. These three schools had almost the same classroom climate; physical facilities; teacher-taught ratio; single sex (girls) etc. Out of these three schools, one school was randomly selected for the present study. The selected school i.e., Government Model Girls' Senior Secondary School, Sector-20 B, Chandigarh has four sections at Class XI, each comprising 45 students. The investigators then randomly selected two sections (out of four sections of Class XI) as intact groups for the experimental and the control group. Thus the study followed the non-randomised pre-test post-test control group design with a purposive sample in the form of intact sections. The structure of the two groups has been shown in the Table 2.

**Table 2**
**Details of the Sample**

| Name of the school | Nature of the group | Number of girl students |
|---|---|---|
| Government Model Girls' Senior Secondary School, Sector-20 B, Chandigarh | Experimental Group | 45 |
| | Control Group | 45 |
| | Total | 90 |

### *Tools Used*

*Tool I:*

Modules based on LSP for healthy eating habits of adolescent girl students (developed and validated by the investigators themselves) were used in the study. The LSP based Interventional Modules contains six modules which address the key concepts concerned with healthy eating habits (Table 3). Each module stands alone but follows the similar format and specifications. Each module

required two days and duration per day was approximately 35-40 minutes for administration. The validation of the interventional programme was done at Government Girls' Higher Secondary School, Sector-23, Chandigarh. Thirty students (adolescent girls in the age group of 16-17 years) were taught through Interventional Modules based on LSP. This school was not considered under the sample for the study. On the basis of experts' observation and feedback from students the ambiguous terms found in two of the sessions were identified and were modified accordingly.

**Table 3**
**Brief Description of Interventional Modules Based on Life Skills Paradigm**

| Modules | [Objectives + Module Content + Learning Outcomes] revolve around |
|---|---|
| *Module No.1* **Health** | Meaning of Health; Dimensions of Health: Mental Well-being, Physical Well-being and Social Well-being. Relationship among dimensions of health, Importance of good health. |
| *Module No.2* **Eating Wisely** | Meaning of Food; Functions of Food-Group I-Cereals; Group II- Fats and Oils; Group III -Pulses and Legumes, Nuts and oil seeds; Group IV-Milk and Meat products; Group V-Vegetables and Fruits. Nutritious food-Meaning, Healthy food need not be always expensive, Dietary Recommendations for adolescent girls as according to ICMR. |
| *Module No.3* **Junk Foods** | Meaning of Junk Food; Harmful effect of excessive eating of junk food, Health problems/ concern due to Junk Food: Obesity, Cardio-vascular disorders. |
| *Module No.4* **Balanced Diet** | Meaning of balanced Diet, Important nutrients: Carbohydrates, Proteins, Fats. Over-nutrition, Under-nutrition. |
| *Module No.5* **Ways to Enhance the Nutritive value of Food** | Need to enhance nutritive value of food, Ways of enhancing nutritive value of food: Sprouting, Fermentation and Mixing. Ways of preventing nutrient loss while cooking. |
| *Module No.6* **Body Image** | Meaning of Body Image; What decides our body image; Harmful effects of poor body image; Meaning of poor body image; Common body image concerns of girls; Tackling poor body image; Role of Body Mass Index; Harmful impact of excessive weight control. |

| ***Module Specifications*** | |
|---|---|
| **Target group** | Adolescent girl students |
| **Objectives considered for each module** | Knowledge, Understanding, Application, Skill, Attitude-Formation |
| **Steps of Life Skills Paradigm** | Planning, organising, execution, implementation and feedback. |
| **Life Skills used** | Decision Making |
| **Activities** | Ice breaking session, individual activity, group activity, interactive-activity, brainstorming, and PowerPoint presentations, opinion-seeking activity depends upon the specific objectives of each session. |

*Tool II.*

DMS questionnaire for healthy eating habits of adolescent girl students (developed and validated by the investigators) was used. The face validity and content validity of the items were ensured from the experts. The reliability of each item of the questionnaire was ensured through *Chi-square* value. On the basis of the calculated *chi-square* values, all the 55 items of the questionnaire were found to be significant at 0.01 level of confidence (Table 4).

**Table 4**
**Chi-Square Values and Significance of the items of the Questionnaire**

| Item No. | Calculated Chi-square value | Item No. | Calculated Chi-square value | Item No. | Calculated Chi-square value | Item No. | Calculated Chi-square value | Item No. | Calculated Chi-square value |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 62.11* | 12. | 59.67* | 23. | 49.25* | 34. | 56.52* | 45. | 72.34* |
| 2. | 43.33* | 13. | 75.35* | 24. | 37.55* | 35. | 46.77* | 46. | 55.32* |
| 3. | 23.03* | 14. | 30.72* | 25. | 51.95* | 36. | 70.55* | 47. | 36.78* |
| 4. | 31.15* | 15. | 125.05* | 26. | 60.37* | 37. | 78.36* | 48. | 76.23* |
| 5. | 50.55* | 16. | 41.20* | 27. | 72.25* | 38. | 32.33* | 49. | 56.77* |
| 6. | 58.62* | 17. | 60.65* | 28. | 92.13* | 39. | 29.34* | 50. | 87.34* |
| 7. | 42.02* | 18. | 75.35* | 29. | 105.76* | 40. | 56.71* | 51. | 46.39* |
| 8. | 25.79* | 19. | 71.37* | 30. | 70.37* | 41. | 66.44* | 52. | 19.87* |
| 9. | 52.71* | 20. | 47.15* | 31. | 18.56* | 42. | 101.46* | 53. | 87.55* |
| 10. | 66.44* | 21. | 54.22* | 32. | 45.36* | 43. | 34.89* | 54. | 92.43* |
| 11. | 37.36* | 22. | 65.36* | 33. | 32.33* | 44. | 105.67* | 55. | 78.56* |

*P<.01*

***Procedure***

The experiment was conducted in three phases as stated below:-

*Phase I: Administration of the DMS Questionnaire for Healthy Eating Habits for adolescent girl students (Pre-test):*

Both the experimental and control groups were administered the questionnaire before implementing the intervention to the experimental group. The scoring was done according to the prescribed procedure for both the groups to get an insight about the knowledge and understanding of the adolescent girls' students' healthy eating habits and their ability to make valid decisions in this regard.

*Phase II: Implementing the Interventional Module based on LSP to the experimental group:*

The experimental group was given the intervention modules for 15 days. The content of the interventional modules were prepared and validated by the investigators themselves. The control group on the other hand was not given any interventional modules based on LSP.

*Phase III: Administration of the DMS Questionnaire for Healthy Eating Habits for adolescent girl students (Post-test):*

The experimental as well as the control groups were administered the post test to determine the effect of the intervention.

**Results**

Table 5 shows the post-test mean scores, standard deviation (S.D.) and t-ratio of the two groups. It is evident that the mean of the post- test scores of the experimental group was significantly higher than that of the control group. Thus, we reject the null hypothesis Ho.1 that LSP interventional and non-interventional group will yield equal level of mean scores for DMS.

**Table 5**
**Post-test Mean scores of Decision Making Skill**

| Groups | N | Mean | S.D. | *t* value |
|---|---|---|---|---|
| Experimental Group | 45 | 221.44 | 29.68 | 10.36* |
| Control Group | 45 | 162.77 | 24.19 | |

*$P<.01$

Table 6 shows that pre-post mean scores difference was significant for the experimental group as compared to the control group. It may be concluded that after effects of the intervention based on LSP caused significant changes in the mean scores of the experimental group. Our null hypothesis that Ho.1 (a) there will be no significant difference in pre-post mean scores of DMS in LSP interventional group stands rejected. On the other hand, hypothesis Ho.1 (b) that there will be no significant difference

**Table 6**
**Pre-test and Post-test mean scores on Decision Making Skill**

| Group | | N | Mean | S.D. | t-ratio |
|---|---|---|---|---|---|
| Experimental Group | Pre-test | 45 | 167.08 | 22.27 | 11.35** |
| | Post-test | | 221.44 | 29.68 | |
| Control Group | Pre-test | 45 | 163.82 | 24.28 | 0.45 |
| | Post-test | | 162.77 | 24.19 | |

**P<.01

in pre-post mean scores of DMS of LSP in non-interventional group stands accepted. It was inferred from the comparisons of experimental and control group in respect of the pre-post mean scores of DMS that these were not equal. To ascertain whether these differences were significant or not, a one-way ANCOVA was employed.

### *Analysis of Covariance on Scores of Skill of Decision Making*

The one-way ANCOVA was used to study the effect of LSP based interventional approach on DMS for healthy eating habits of adolescent girl students by taking the pre-experimental scores on DMS as a covariate. To achieve this, the final (post-test scores on DMS) scores were corrected for differences in the initial (pre-test scores on DMS) scores. For that, $SS_y$ has been adjusted to any variability in the 'Y' contributed by 'X'. The adjusted sum of the squares of 'Y' i.e., $SS_{yx}$ (means that the sum of square for y have been adjusted for any variability in Y contributed by X or that the variability in X is held constant) were computed and the F ratio ($F_{yx}$) was calculated. The summary of analysis of covariance of pre-test and post-test scores of DMS of the experimental and control groups have been given in Table 7.

**Table 7**
**Summary of ANCOVA of pre-test and post-test scores on Decision Making Skill**

| Source of variation | df | $SS_x$ | $SS_Y$ | $SS_{XY}$ | $SS_{YX}$ | $MS_{YX}$ | $SD_{YX}$ |
|---|---|---|---|---|---|---|---|
| Among means | 1 | 240 | 77440 | 4312 | 71478.24 | 71478.24 | 12.91 |
| Within groups | 87 | 20472.33 | 21964.89 | 12370.45 | 14490 | 166.55 | |
| TOTAL | 88 | 20712.33 | 99404.89 | 16682.45 | 85968.24 | | |

Where, MSyx = Adjusted sum of square from the variances
SDyx = Adjusted Standard Deviation
$F_x$ =1.03 $F_y$ = 310.26 For df=1/88 (before adjustment of mean scores)

The obtained value of $F_x$ and $F_y$ ratios were tested for significance. The calculated value of $F_x$ was 1.03, which was not significant even at 0.05 level of confidence. The value of $F_y$ obtained ($F_y$ = 310.26) was significant at 0.01 level of confidence. This indicates that there was significant difference in post-test mean scores of DMS of the adolescent girl students in experimental group ($F_{yx}$ = 429.17, df=1/87, *P*<.01) as compared to the control group. It is clear from the significant $F_{yx\ ratio}$ that the two final means of the experimental and control group differ after they have been adjusted for initial difference in the pre-test scores of DMS. The adjusted means for post-test scores ('Y' means) of adolescent girl students in the experimental and control groups were computed using correlation and regression. The difference between the adjusted 'Y' means of post-test scores of pupils in experimental and control groups have been given in Table 8.

**Table 8**
**Group-wise Comparison of data for Adjusted Means of Post-test scores of Decision Making Skill**

| Groups | $M_x$ | $M_y$ | $M_{yx}$(Adjusted) |
|---|---|---|---|
| Experimental Group | 167.08 | 221.44 | 220.42 |
| Control Group | 163.82 | 162.77 | 163.75 |
| Grand Means | $GM_X$=164.45 | 384.17 | 384.17 |

Adjusted means for the post-test scores were tested for significance. The obtained value of the difference between adjusted means value 56.27 was significant at 0.01 level. This implies that the experimental group and control group differed significantly in their effect of LSP on DMS for healthy eating habits of adolescent girl students. The *t*-ratio for the difference in means of experimental

and control group was found to be significant at 0.01 level of confidence, suggesting that differences were not due to chance. The hypothesis Ho.2 that there will be no significant effect of LSP based intervention on DMS by taking Pre-Decision Making Skill scores as covariate was rejected at the specified level. An examination of the mean score of the adjusted post test scores of two groups suggested that experimental group yielded higher means (M= 220.42) than the control group (M=163.75). It may be concluded that experimental group yielded higher mean scores for effect of LSP on DMS for healthy eating habits of adolescent girl students.

The within-group correlation of 0.60 is a better measure of the relationship between pre and post scores than is the total correlation of 0.37, as systematic differences in means have been eliminated from the within r. The relationship between pre (initial) and post test (final) scores for the total sample was found out using the Pearson's product moment method. It is this correlation between X and Y which accounts for the marked significance among Y means when the variability in X is held constant.

**Discussion**

The analysis of the data led to the rejection of the hypotheses Ho.1: LSP interventional and non-interventional group will yield equal level of mean scores for skill of decision making skill and Ho.1 (a) that there will be no significant difference in pre-post mean scores of DMS in LSP interventional group, and Ho.2 that there will be no significant effect of LSP based intervention on DMS by taking Pre-Decision Making Skill scores as covariate. This suggested that LSP based intervention yielded higher scores in DMS in the experimental group than their control group counterparts.

These results do get a support from studies done by Story and Resnick (1986), and Paglia (2008), where the role of more effective nutrition interventional models were considered in strengthening internal locus of control about health and nutrition, that is, improving the individual's sense of mastery over diet and the ability to effect change could, in turn, promote better food and health behaviour among adolescents. Also, studies done by Ellis (2007) and Harrison (2008) strongly supported this notion and added that the programme can be beneficial for assisting health care providers in assessing students at risk for obesity, metabolic syndrome, and diet-related diseases as well as in positively affecting eating behaviours and body mass index percentages. Wilson et al. (2012)

study suggested that participating in related intervention showed improved dietary habits in those with Binge Eating Disorders (BED). The intervention programs are effective in reducing binge eating symptoms through increases in self-esteem and positive mood. A report released after a one- year monitoring and evaluation of the programme clubbed under *Nestle Healthy Kids Programme* (2014) also concluded that when parents were involved in educating children on good nutrition to help them make choices in relation to eating healthy diets, the programme became effective in improving the overall nutrition knowledge of pupils in some cocoa growing areas of the country (Ghana).

Other null hypothesis that Ho.1 (b) that there will be no significant difference in pre-post mean scores of DMS of LSP in non-interventional group stands accepted leading to a conclusion that without LSP the students DMS yielded lower scores than their counterparts, which were non-significant. These results also get a support from studies done by Bauer's (2010) who suggested that school-based interventions offer an opportunity to decrease the risk of obesity among all adolescent girls as compared to those who receive less support and resources for healthful behaviour from their families.

In sum, it can be said that LSP based intervention has a significant effect on the DMS of the adolescent girl students. Further, after effects of the intervention caused significant changes in the mean scores of the experimental group. There was significant difference in post-test mean scores of DMS of the adolescent girl students in experimental group as compared to the control group.

### *Educational implications*

While imparting LSP interventional approaches or activities or programmes to the school students, the teachers, the counsellors, experts and educationists must have positive and rational attitude towards the following issues:

- Implementation of interventional modules requires pre-planning and facilitation skills.
- It demands thorough understanding of various steps involved in the LSP and the related strategies on the part of teachers, to be effective.
- The results of LSP based intervention-based studies can be utilised by the policy-makers while drafting policies related to health and development of children or adolescents.

- The results of such studies can also be utilised by the clinicians while planning programme such as obesity-control, weight-management, etc.
- The adolescents need guidance and direction in developing healthy eating habits and decision-making skills when dealing with health issues.
- The results of such studies can be utilised for maintaining the health of any age group of people by appropriately modifying the environmental conditions leading to desirable behaviour modification pertaining to healthy eating habits and healthy lifestyle.

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