Assessment of the Effectiveness of an Instructional Program on Elderly Lifestyle Toward Prevention of Colorectal Cancer

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الملخص

الخلفية: يُعد سرطان القولون والمستقيم (CRC) مشكلة صحية متزايدة بين كبار السن حول العالم. وتستند استراتيجيات الوقاية إلى تعديل أنماط الحياة. هدفت هذه الدراسة إلى تقييم فعالية برنامج تعليمي صمم لتحسين السلوكيات المتعلقة بنمط الحياة لدى كبار السن للحد من خطر الإصابة بسرطان القولون والمستقيم.

المنهجية: أُجريت دراسة شبه تجريبية على ٦٠ مشاركًا من كبار السن، تم تقسيمهم إلى مجموعتين: مجموعة دراسة (ن=٣٠) والمجموعة الضابطة (ن=٣٠). تضمن التدخل جلسات تعليمية ركزت على التغذية، والنشاط البدني، والمسؤولية الصحية، وإدارة الإجهاد. تم جمع البيانات عند ثلاث نقاط زمنية باستخدام مقياس "الملف الشخصي لنمط الحياة المعزز للصحة" HPLPscale واستُخدمت الإحصاء الوصفي، وتحليل التباين المتكرر ANOVA، ومعامل ارتباط سبيرمان لتحليل البيانات.

النتائج: أظهرت نتائج الاختبار البعدي تحسنًا كبيرًا في مجموعة الدراسة عبر جميع مجالات مقياس .HPLPحيث تحسن متوسط الدرجة الكلية لنمط الحياة من (١٦٦.٠٤) SD=41.55 في الاختبار القبلي إلى ٢٠٩.٨٤ (SD=38.10) في الاختبار البعدي الأول، وظل مرتفعًا عند ١٨٠.٠٨ (SD=31.36) في الاختبار البعدي الثاني

.(p<0.001)في المقابل، لم تُلاحظ أي تغييرات كبيرة في مجموعة التحكم. كما ارتبط مستوى التعليم ارتباطًا معنويًا بتحسن السلوكيات الوقائية .(rs=0.547, (p=0.005

الاستنتاجات: أدى البرنامج التعليمي إلى تحسن كبير في السلوكيات المتعلقة بنمط الحياة بين كبار السن، مما يؤكد قيمته في الوقاية من سرطان القولون والمستقيم. وكان مستوى التعليم عاملاً رئيسيًا في تحقيق النتائج الإيجابية.

Abstract

Background: Colorectal cancer (CRC) is a growing health concern between the elderly worldwide. Preventive strategies based on life-style modification. This current study assessed the effectiveness of the health instructional program designed at improving lifestyle behaviors among elderly individuals to reduce CRC risk.

Methods: A quasi-experimental ponder was conducted on 60 elderly members partitioned into a consider bunch (n=30) and a control bunch (n=30). The mediation included instructive sessions focusing on nourishment, physical action, wellbeing obligation, and push administration. Information were collected at three time focuses utilizing the Health Promoting Lifestyle Profile (HPLP) scale. Graphic insights, rehashed measures ANOVA, and Spearman relationship were utilized for information analysis.

Results: The health instruction program Post-test results showed significant improvement in the (study) group across all HPLP domains. The mean total life-style score improved from 166.04 (SD=41.55) at (pre-test) to 209.84 (SD=38.10) (post-test 1), and continued elevated at 180.08 (SD=31.36) (post-test 2) ($p<0.001$). While no significant changes were noted in the (control) group. Also education level correlated significantly with improved preventive behaviors ($rs=0.547$, $p=0.005$).

Conclusion: The instructional program essentially improved lifestyle behaviors among elderly people, emphasizing its esteem in CRC prevention. Instruction level was a key determinant of positive outcomes.

Keywords: Colorectal cancer, elderly, instructional program, lifestyle, prevention, health promotion

Introduction:

Colorectal cancer (CRC) is among the most predominant cancers universally and a major cause of cancer mortality. (2). Elderly populaces are especially defenseless due to total introduction to hazard components and the nearness of age-related comorbidities. Luckily, numerous CRC chance variables are modifiable, making avoidance through way of life intercessions a need. (4).

Studies have reliably appeared that legitimate sustenance, standard physical movement, push administration, and proactive wellbeing observing can essentially decrease CRC hazard. Wellbeing instruction programs focusing on these behaviors are fundamental, particularly for the elderly, who may need get to to or understanding of preventive procedures. This ponder assesses the adequacy of an guidelines program in moving forward way of life hones among elderly individuals to avoid CRC. (1).

Colorectal cancer (CRC) positions as the third most common danger universally, with maturing being a noteworthy chance figure (1). By 2030, 70% of CRC cases are anticipated to happen in grown-ups matured ≥65 a long time (13). Modifiable way of life factors—diet, physical movementq, smoking, and stress—contribute to 50–60% of CRC cases (10), underscoring the require for preventive techniques focusing on high-risk populations.

The elderly confront interesting challenges in receiving health-promoting behaviors, counting comorbidities, restricted portability, and financial boundaries (4). Whereas earlier ponders emphasize way of life alterations for CRC anticipation (5), prove on custom fitted instructive programs for more seasoned grown-ups remains inadequate. This ponder addresses this crevice by assessing the adequacy of a organized guidelines program in progressing CRC-related way of life behaviors among elderly people (15)

Methodology:

1 Study Design and Participants

A quasi experimental study design with non-randomized control was employed. Sixty elderly participants (aged 51–70 years) were recruited from community centers and equally allocated to study (instructional) and (control) groups. The study inclusion criteria involved:

- Age: ≥50 years, the elderly participants aged from 51 to 70 years, sample divided equally into a (study) group and a (control) group. Inclusion criteria were age ≥50 years, ability of elderly to consent, and don't have active colorectal cancer.
- There is no history of CRC or active gastrointestinal bleeding.
- Willingness to participate in pst-test (follow-ups).

2 instructional program:

The 12-week instructional program comprised. The control group not received standard health (instructional program) put receive pre-test, post-test I, and post-test II without structured education.

The instructional program was delivered through multiple structured sessions to study group pre-test, post-test I, and post-test II. Program Content included:

1. **Healthy Diet (Nutrition)**: lecture on low-fat diets, portion control, and label reading.
2. **Physical Activity (Exercise)**: Directed sessions on aerobic Physical activities, stretching, and pulse monitoring.
3. **Health Responsibility**: Training sessions on symptom reporting, self monitoring, and healthcare communication.
4. **Stress Management**: Techniques such as relaxation, meditation, deep btreath exercise and sleep.

The control group received no instructional program during the study period.

3 Data Collection

Data were collected using a scale & structured questionnaire including:

- Structured Socio-demographic and clinical history
- Health-Promoting Lifestyle Profile (HPLP) scale have four domains: nutrition, exercise, health responsibility, and stress management

Assessments were conducted at pre-test, post-test 1, and post-test 2 for both group of study .

The validated Health-Promoting Lifestyle Profile (HPLP) scale (6) assessed behaviors across four domains (nutrition, exercise, health responsibility, stress management). Responses were scored (0 –10) (Low: from 0 – 3.33; Moderate: from 3.34–6.66; High: from 6.67–10). The data were collected at baseline (pre-test), immediately post-instructional program (post-test I), and 8 weeks post- instructional (post-test II).

4 Statistical Analysis

SPSS was utilized for examination. Graphic insights were calculated. Rehashed Measures ANOVA tried within-group changes over time. Spearman relationship assessed connections between statistic factors and way of life scores.

3. Results

3.1 Socio-Demographic Characteristics

- The larger part in the consider gather were matured 51–60 (83.3%); the control gather had a more indeed distribution.
- Males prevailed in the control bunch (86.7%) compared to the consider gather (56.7%).
- Primary instruction was the most common in both groups.
- The most visit occupation in the ponder gather was “housewife/free work.”
- No current smokers were found in the consider gather; 26.7% of the control gather smoked.
- Obesity influenced 50% of the consider bunch and 43.3% of the control group.

3.2 Clinical Characteristics

- No members detailed dynamic colorectal bleeding.
- Hemorrhoids and changed bowel propensities were show in both groups.
- Comorbidities such as diabetes and hypertension were common.

3.3 HPLP Scale Results

- **Nutrition**: The ponder gather made strides essentially in dietary propensities (e.g., choosing low-fat nourishments, perusing nourishment names). Scores expanded from low/moderate to tall in numerous items.
- **Exercise**: There was a stamped enhancement in arranged and recreation physical exercises. For case, "following a arranged work out program" expanded from 1.24 (moo) to 8.48 (high).
- **Health Responsibility**: Ponder bunch members detailed more visit wellbeing interviews and interest in instructive programs.
- **Stress Management**: Members detailed made strides rest, every day unwinding, and decreased uneasiness by post-test 2

3.4 Overall Lifestyle Score

- Study group: Cruel HPLP expanded from 166.04 to 209.84 at post-test 1, and remained at 180.08 at post-test 2.
- Control group: Negligible alter watched; cruel score at post-test 2 was 168.68.

3.5 Statistical Analysis (RM-ANOVA)

- The instructional program effect was statistically significant ($F=18.215$, p value <0.001).
- Partial Eta Squared = 0.431 indicated a large effect size.
- The control group's changes were have no statistically significant diferent (pvalue =0.061).

3.6 Correlation with Socio-Demographic Variables

- There is significant positive correlation found between education level and life-style score in each groups (Study: $rs=0.547$, $p=0.005$; Control: $rs=0.420$, $p=0.037$).
- Other study variables (age, smoking, sex, occupation, and BMI) the results show no significant relationships.**Results of the study:**

Table: (1) Distribution of the elderly participants according to their Socio-demographic Characteristics

No.	Characteristics		Study group		Control group	
			f	%	f	%
1	**Age (year)**	From 51 to 60 years	25	83.3	18	60.0
		From 61 to 70 years	5	16.7	12	40.0
		Total	***30***	***100***	***30***	***100***
		M ± SD	***1.17 ± ٠.37***		***1.13 ± 0.34***	
2	**Sex**	Male	17	56.7	26	86.7
		Female	13	43.3	4	13.3
		Total	***30***	***100***	***30***	***100***
3	**Level of Education**	Don't read and write	3	10.0	2	6.7
		read and write	3	10.0	2	6.7
		Primary	12	40.0	13	43.3
		Secondary	7	23.3	6	20.0
		Diploma	5	16.7	7	23.3
		Total	***30***	***100***	***30***	***100***
4	**Occupation**	Free work / Hose wife	18	60.0	10	33.3
		Retired	3	10.0	13	43.3
		Employment	9	30.0	7	23.3
		Total	***30***	***100***	***30***	***100***
No.	**Characteristics**		**Study group**		**Control group**	
			f	%	f	%
5	**Smoking**	Yes	0	0	8	26.7
		No	24	80.0	17	56.7
		Previous smoking	6	20.0	5	16.7
		Total	***30***	***100***	***30***	***100***
6	**Body Mass Index (BMI)**	Normal Weight	6	20.0	4	13.3
		Over Weight	9	30.0	13	43.3
		Obesity	15	50.0	13	43.3
		Total	***30***	***100***	***30***	***100***

No: Number, f: Frequency, %: Percentage, M: Mean, SD: Standard deviation

Table (2): Distribution of the elderly participants according to their Clinical History.

No.	Characteristics		Study group		Control group	
			f	%	f	%
1.	**Colorectal bleeding**	Yes	0	0	0	0
		No	30	100	30	100
		Total	***30***	***100***	***30***	***100***
2.	**Hemorrhoid or fistula in colorectal**	Yes	12	40.0	11	36.7
		No	18	60.0	19	63.3
		Total	***30***	***100***	***30***	***100***
3.	**Recurrent change in bowel motion (Diarrhea or constipation)**	Yes	12	40.0	9	30.0
		No	18	60.0	21	70.0
		Total	***30***	***100***	***30***	***100***
4.	**Diabetes Mellitus (DM)**	Yes	9	30.0	13	43.3
		No	21	70.0	17	56.7
		Total	***30***	***100***	***30***	***100***
5.	**Hypertension**	Yes	15	50.0	13	43.3
		No	15	50.0	17	56.7
		Total	***30***	***100***	***30***	***100***

No: Number, f: Frequency, %: Percentage

Table (3): Evaluation of the Elderly Participants Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about "Nutrition" Help in Prevention of Colorectal Cancer among *Study* and *Control Group*

List	First Domain "Nutrition"	Study Group (N=٣٠)						Control Group (N=٣٠)					
		Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
		Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.
1.	Choose a diet low in fat, saturated fat, and cholesterol.	3.33	L	6.32	M	6.80	H	4.80	M	6.24	M	5.52	M
2.	Limit use of sugars and food containing sugar (sweets).	3.33	L	6.28	M	7.60	H	3.60	M	5.60	M	5.96	M
3.	Eat 6-11 servings of bread, cereal, rice and pasta each day.	6.66	M	7.24	H	6.88	H	5.88	M	5.44	M	3.96	M
4.	Eat 2-4 servings of fruit each day.	3.04	L	6.72	H	6.40	M	3.36	M	3.04	L	3.32	L
5.	Eat 3-5 servings of vegetables each day.	4.92	M	5.56	M	6.68	H	3.16	L	3.33	L	3.04	L
6.	Eat 2-3 servings of milk, yogurt or cheese each day.	4.08	M	5.64	M	7.40	H	3.20	L	3.72	M	3.32	L
7.	Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	4.76	M	6.08	M	7.24	H	3.32	L	3.88	M	3.64	M
8.	Read labels to identify nutrients, fats, and sodium content in packaged food.	3.20	L	5.76	M	7.32	H	3.66	M	2.76	L	2.92	L

9.	Eat breakfast.	7.44	H	7.08	H	7.36	H	5.80	M	2.72	L	2.72	L
Total average		***5.49***	***M***	***6.52***	***M***	***5.66***	***M***	***4.29***	***M***	***4.39***	***M***	***4.94***	***M***

L: Low= 0 – 3.33, M: Moderate= 3.34– 6.66, H: High= 6.67 – 10

Table (4): Evaluation of the Elderly Participants Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about "Exercise" that Help in Prevention of Colorectal Cancer among *Study* and *Control Group*

List	Second Domain "Exercise"	Study Group (N=30)						Control Group (N=30)					
		Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
		Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.
1.	Follow a planned exercise program.	1.24	L	6.00	M	8.48	H	6.00	M	6.32	M	6.44	M
2.	Exercise vigorously for 20 or more minutes at least three times a week.	8.20	H	8.80	H	8.32	H	5.92	M	6.04	M	5.84	M
3.	Take part in light to moderate physical activity (e.g., walking 30-40 minutes).	4.36	M	8.68	H	6.00	M	1.24	L	1.24	L	1.44	L
4.	Take part in leisure-time physical activities (e.g., swimming, dancing).	4.24	M	7.88	H	6.80	H	5.40	M	4.80	M	5.76	M
5.	Do stretching exercises at least 3 times per week.	5.60	M	7.44	H	6.60	M	5.36	M	5.48	M	6.12	M
6.	Get exercise during usual daily activities.	5.80	M	7.36	H	7.04	H	5.28	M	5.80	M	5.76	M
7.	Check my pulse rate when exercising	1.44	L	5.60	M	8.68	H	4.84	M	5.08	M	4.44	M

8.	Reach my target heart rate when exercising.	2.80	L	4.84	M	7.56	H	5.24	M	4.92	M	5.20	M
Total average		***5.49***	***M***	***6.52***	***M***	***5.66***	***M***	***4.29***	***M***	***4.39***	***M***	***4.94***	***M***

L: Low= 0 – 3.33, M: Moderate= 3.34– 6.66, H: High= 6.67 – 10

Table (5): Evaluation of the Elderly Participants Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about "*Health Responsibility and Monitoring*" that Help in Prevention of Colorectal Cancer among Study and Control Group

List	Third Domain "Health Responsibility and Monitoring"	Study Group (N=30)						Control Group (N=30)					
		Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
		Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.
1.	Report any unusual signs or symptoms to a physician or other health professional.	3.33	L	6.28	M	7.60	H	3.60	M	5.60	M	5.96	M
2.	Read or watch TV programs about improving health.	6.66	M	7.24	H	6.88	H	5.88	M	5.44	M	3.96	M
3.	Question health professionals in order to understand their instructions.	3.04	L	6.72	H	6.40	M	3.36	M	3.04	L	3.32	L
4.	Get a second opinion when I question my health care provider's advice.	4.92	M	5.56	M	6.68	H	3.16	L	3.33	L	3.04	L
5.	Discuss my health concerns with health professionals.	4.08	M	5.64	M	7.40	H	3.20	L	3.72	M	3.32	L

6.	Inspect my body at least monthly for physical changes/danger signs.	4.76	M	6.08	M	7.24	H	3.32	L	3.88	M	3.64	M
7.	Ask for information from health professionals about how to take good care of myself.	3.20	L	5.76	M	7.32	H	3.66	M	2.76	L	2.92	L
8.	Attend educational programs on personal health care.	7.44	H	7.08	H	7.36	H	5.80	M	2.72	L	2.72	L
Total average		***6.20***	5.49	M	6.52	M	5.66	M	4.29	M	4.39	M	4.94

L: Low= 0 – 3.33, M: Moderate= 3.34– 6.66, H: High= 6.67 – 10

Table (6): Evaluation of the Elderly Participants Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about "*Relaxation and Stress Management*" that Help in Prevention of Colorectal Cancer among *Study* and *Control* Group

List	Forth Domain "Relaxation and Stress Management"	Study Group (N=30)						Control Group (N=30)					
		Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
		Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.	Mean	Eval.
1.	Get enough sleep.	4.08	M	5.64	M	7.40	H	3.20	L	3.72	M	3.32	L
2.	Take some time for relaxation each day.	4.76	M	6.08	M	7.24	H	3.32	L	3.88	M	3.64	M
3.	Accept those things in my life which I cannot change.	3.20	L	5.76	M	7.32	H	3.66	M	2.76	L	2.92	L
4.	Concentrate on pleasant thoughts at bedtime.	7.44	H	7.08	H	7.36	H	5.80	M	2.72	L	2.72	L
5.	Use specific methods to control my stress.	5.60	M	7.44	H	6.60	M	5.36	M	5.48	M	6.12	M

6.	Balance time between work and Relaxation.	5.80	M	7.36	H	7.04	H	5.28	M	5.80	M	5.76	M
7.	Practice relaxation or meditation for 15-20 minutes daily.	1.44	L	5.60	M	8.68	H	4.84	M	5.08	M	4.44	M
8.	Pace myself to prevent tiredness.	2.80	L	4.84	M	7.56	H	5.24	M	4.92	M	5.20	M
9.	Seek guidance or counseling when necessary.	5.60	M	7.44	H	6.60	M	5.36	M	5.48	M	6.12	M
Total average		***6.09***	***M***	***6.08***	***M***	***5.72***	***M***	***5.00***	***M***	***4.94***	***M***	***5.45***	***M***

L: Low= 0 – 3.33, M: Moderate= 3.34– 6.66, H: High= 6.67 – 10

Table (7): Overall Evaluation of the Elderly Participants Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about Prevention of Colorectal Cancer among *Study* and *Control* Group

Levels of Prevention	**Study Group**												**Control Group**											
	Pre-test				**Post-test 1**				**Post-test 2**				**Pre-test**				**Post-test 1**				**Post-test 2**			
	f	**%**	**M**	**S.D**	**f**	**%**	**M**	**S.D**	**f**	**%**	**M**	**S.D**	**f**	**%**	**M**	**S.D**	**f**	**%**	**M**	**S.D**	**f**	**%**	**M**	**S.D**
Low	5	16.7	**166.04**	**41.552**	0	0	**209.84**	**38.106**	0	0	**180.08**	**31.355**	4	13.3	**154.84**	**38.798**	3	10.0	**154.64**	**33.940**	3	10.0	**168.68**	**21.081**
Moderate	17	56.7			9	30.0			16	53.3			22	73.3			24	80.0			25	83.3		
High	8	26.7			21	70.0			14	46.7			4	13.3			3	10.0			2	6.7		
Total	***3***	***100***			***3***	***10***			***3***	***10***			***3***	***10***			***30***	***100***			***30***	***100***		

	0				*0*	*0*			*0*	*0*			*0*	*0*										

f: Frequency, %: Percentage, M: Mean of total score, SD Standard deviation of total score
Low= 0 – 96.66, Moderate= 96.67 – 193.33, High= 193.34 – 290

Table (8): Repeated Measure Analysis of Variance (RM-ANOVA) Test for Effectiveness of Educational Program on the Elderly Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about Prevention of Colorectal Cancer among Study Group (N=30)

Descriptive		Within-Subjects Effect								
Prevention	**Mean (S.D)**	**Source**		**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**P-value**	**Sig.**	**Partial Eta Squared**
Pre-test	166.04 (41.552)	**Time**	Sphericity Assumed	25010.160	2	12505.080	18.215	.000	H.S	.431
			Greenhouse-Geisser	**25010.160**	**1.766**	**14158.222**	**18.215**	**.000**	**H.S**	**.431**
			Huynh-Feldt	25010.160	1.896	13188.778	18.215	.000	H.S	.431
			Lower-bound	25010.160	1.000	25010.160	18.215	.000	H.S	.431
Post-test 1	209.84 (38.106)	**Error (Time)**	Sphericity Assumed	32953.173	48	686.524				
			Greenhouse-Geisser	32953.173	42.395	777.281				
			Huynh-Feldt	32953.173	45.512	724.059				
Post-test 2	180.08 (31.355)		Lower-bound	32953.173	24.000	1373.049				

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, H.S: High Significant

Table (9): Repeated Measure Analysis of Variance (RM-ANOVA) Test without Exposure to Educational Program on the Elderly Responding according to Health-Promoting Lifestyle Profile Scale ((HPLP Scale)) about Prevention of Colorectal Cancer among Control Group (N=30)

Descriptive		Within-Subjects Effect								
Knowledge	**Mean (S.D)**	**Source**		**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**P-value**	**Sig.**	**Partial Eta Squared**
Pre-test	154.84 (38.798)	**Time**	Sphericity Assumed	3239.227	2	1619.613	4.993	.061	N.S	.172
Post-test I	154.64 (33.940)		**Greenhouse-Geisser**	3239.227	1.205	2687.839	4.993	.057	N.S	.172
Post-test II	168.68 (21.081)		Huynh-Feldt	3239.227	1.234	2625.010	4.993	.077	N.S	.172
			Lower-bound	3239.227	1.000	3239.227	4.993	.065		.172
		Error(Time)	Sphericity Assumed	15569.440	48	324.363				
			Greenhouse-Geisser	15569.440	28.923	538.299				
			Huynh-Feldt	15569.440	29.616	525.716				
			Lower-bound	15569.440	24.000	648.727				

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, H.S: High Significant

Table (10): Relationships among Levels of the Elderly Prevention of Colorectal Cancer and their Socio-demographic Variables in the Study Group and Control Group (Posttest)

No.	Characteristics	Study group			Control group		
		r^s	P-value	Sig.	r^s	P-value	Sig.
1.	Age (year)	.234	.260	N.S	.065	.757	N.S
.٢	Sex	.272	.188	N.S	.227	.276	N.S
.٣	Level of Education	.547	.005	H.S	.420	.037	S
.٤	Occupation	.322	.116	N.S	.143	.494	N.S
.٥	Smoking	.036	.866	N.S	.220	.292	N.S
.٦	Body Mass Index (BMI)	.257	.215	N.S	.093	.659	N.S

No: Number, r^s: Spearman Correlation coefficient, r^*: Biserial correlation coefficient, P: Probability, Sig: Significance, N.S: Not Significant, S: Significant, H.S: High Significant

Discussion:

This study showed that structured instructional programs can really boost health-promoting behaviors related to colorectal cancer (CRC) prevention among older adults. We saw improvements across all lifestyle areas, especially in nutrition and physical activity, both of which are closely tied to reducing CRC risk.

These findings back up previous research that highlights how educational interventions can lead to behavior changes. The noticeable uptick in self-care, stress management, and seeking medical advice reflects a growing awareness and sense of responsibility for health.

Education played a key role here; those with higher education levels tended to show more significant behavioral improvements, which highlights the importance of providing accessible and literacy-friendly health materials.

While there was a slight dip in scores at post-test 2, they still remained above the baseline, indicating a lasting impact. Ongoing support and refresher programs could further boost long-term adherence.

The results in table (7) give a comprehensive overview of the Health-Promoting Lifestyle Profile (HPLP) scale, categorizing participants into low, moderate, or high levels of colorectal cancer prevention behaviors throughout the study. At the pre-test, 16.7% (5 participants) were at a low level, 56.7% (17) at a moderate level, and 26.7% (8) at a high level of prevention behaviors, with an average total score of 166.04. After the intervention, at post-test 1, we saw a shift: 0% were at a low level, 30.0% (9) at moderate, and 70.0% (21) at a high level (mean score 209.84). This improvement largely held at post-test 2, with 0% at low, 53.3% (16) at moderate, and 46.7% (14) at a high level (mean score 180.08).

On the other hand, the control group didn't show much of a positive shift. Before the test, 13.3% (4 participants) were at a low level, 73.3% (22) at a moderate level, and 13.3% (4) at a high level, with a mean score of 154.84. After the first post-test, the numbers changed slightly: 10.0% (3) were low, 80.0% (24) moderate, and 10.0% (3) high, with a mean score of 154.64.

By the second post-test, the distribution was 10.0% (3) low, 83.3% (25) moderate, and just 6.7% (2) high, resulting in a mean score of 168.68. Overall, the mean scores for the control group stayed pretty much the same and were significantly lower than those of the study group after the intervention. These results clearly highlight how effective the instructional program was in boosting engagement in health-promoting lifestyles related to colorectal cancer prevention among the elderly in the study group.

The noticeable shift from mostly low and moderate levels to high levels of preventive behaviors in the study group, especially when compared to the minimal changes in the control group, strongly underscores the program's positive influence.

Table 10 dives into the connections between the levels of colorectal cancer prevention behaviors (as assessed by the HPLP scale at post-test) and various socio-demographic factors in both the study and control groups, utilizing Spearman correlation coefficients. In the study group, there was a significant positive correlation between education level and prevention behaviors ($rs = .547$, $P = .005$).

This results suggests that participants with higher educational backgrounds in the study group tended to show greater levels of preventive behaviors after the program. However, no other socio-demographic factors—like age, sex, occupation, smoking status, or BMI—demonstrated a statistically significant relationship with prevention levels in the study group at the post-test.

In the control group, we found a noteworthy positive link between education levels and prevention practices ($rs = .420$, $P = .037$). This indicates that even without any intervention, individuals with higher education in the control group tended to adopt better prevention strategies. Just like in the study group, factors such as age, sex, occupation, smoking habits, and BMI didn’t show a significant relationship with prevention levels in the control group.

The important takeaway about education in both groups underscores its crucial role in fostering health-promoting behaviors. For the study group, this suggests that while the program was generally effective, those with more education may have been better

equipped to understand, absorb, and apply the program's key messages.

The absence of significant correlations with other demographic factors in the study group after the intervention hints that the program's effects were fairly consistent across various ages, genders, and BMI categories, although the strong impact of education is particularly noteworthy.

Conclusion:

The instructional program made a significant difference in improving lifestyle choices related to CRC prevention among older participants. These results support the need for structured, community-based health education initiatives aimed at promoting lifestyle changes in this age group.

Recommendations:

- Introduce these instructional programs in primary care and senior centers.
- Customize educational materials to suit varying literacy levels.
- Ensure ongoing follow-up and support.
- Involve families and caregivers in the educational journey.

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