

암환자의 식이요법

박 민 선

서울대학교 가정의학교실

□ Basic nutrition principle

□

□ vitamin/mineral supplements

□

Basic nutrition concepts

□ Maintain body wt. and nutrient store

- Better tolerate treatment-related side effects and recover from therapy more quickly
- Maintenance of lean tissue mass during treatment & recovery

□ Protein

- Protein needs?
- Repair and to rebuild tissues
- Maintain a healthy immune system
- As a fuel substance

□ Basic nutrition principle

□

□ vitamin/mineral supplements

□

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N-3
Carotenoids
Vitamin B2, B6, folate, B12,
C, D, E, Ca, Zn, Se
Non-nutrient plant
constituents(allium
compounds, flavonoid,
isoflavones, lignans)

Heterocyclic amines
Polycyclic aromatic hydrocarbons
Nitrosamines

WHO technical report series 916, (2003) ? 식이, 영양 및 만성질환 예방*

Physical fitness and activity and mortality

Table 3. Hazard ratios for all-cause, cardiovascular and cancer mortality according to level of physical fitness and regularity of physical activity

		Physical activity				Physical activity		
		Regular cases/person-years	ID	aHR (95% CI)		No regular cases/person-years	ID	aHR (95% CI)
All cause mortality	1st tertile	81/16,735	484.02	1.00		240/28,123	853.39	1.00
	2nd tertile	58/14,252	408.36	0.71 (0.49-1.02)		50/20,608	242.62	0.49 (0.37-0.65)
	3rd tertile	35/14,482	241.68	0.77 (0.52-1.12)		43/22,027	195.22	0.49 (0.36-0.67)
		p for trend=0.148				p for trend<0.001		
Cardiovascular mortality	1st tertile	13/16,735	77.68	1.00		53/28,123	188.46	1.00
	2nd tertile	8/14,252	56.13	0.62 (0.22-1.73)		14/20,608	67.93	0.41 (0.21-0.79)
	3rd tertile	5/14,482	34.53	1.01 (0.35-2.95)		8/22,027	36.31	0.46 (0.22-0.95)
		p for trend=0.625				p for trend=0.007		
Cancer mortality	1st tertile	44/16,735	262.92	1.00		107/28,123	380.47	1.00
	2nd tertile	26/14,252	182.43	0.49 (0.27-0.85)		49/20,608	237.77	0.57 (0.39-0.85)
	3rd tertile	19/14,482	131.20	0.71 (0.41-1.24)		17/22,027	77.18	0.42 (0.26-0.68)
		p for trend=0.036				p for trend<0.001		

Adjusting for age, study year, total cholesterol, body mass index, smoking status (never, former, current), regular drinking (drinking alcoholic beverages at least once a week) and diagnosis of hypertension or diabetes.
Regular physical activity (PA) means engaging in light, moderate to vigorous activities for at least 30 min more than three times a week.
VO₂ max was categorized as low (VO₂ max <23 mL/kg/min), moderate (24 mL/kg/min <VO₂ max <29 mL/kg/min) and high (VO₂ max >30 mL/kg/min) in the regular PA group and low (VO₂ max <22 mL/kg/min), moderate (23 mL/kg/min <VO₂ max <28 mL/kg/min) and high (VO₂ max >29 mL/kg/min) in the no regular PA group.
ID, incidence density (per 100,000 person-years); aHR, adjusted hazard ratio; CI, confidence interval.

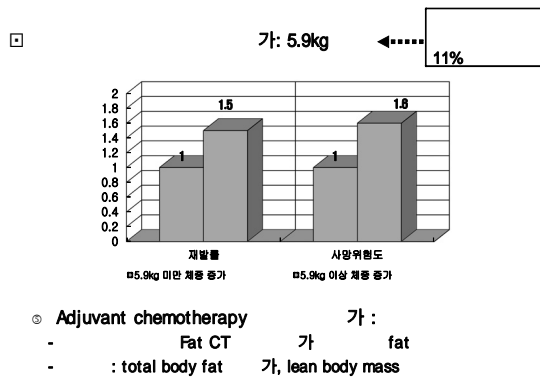
(Park et al, JKMS, 2009;103:1598-)

체력 (Fitness) 의 긍정 인자

Variable	42-48 yrs			54-60 yrs		
	Standardized	In Original Units	p Value	Standardized	In Original Units	p Value
Weight (kg)	0.563	30.926	<0.001	0.395	21.282	<0.001
Heart rate at maximal exercise (beats/min)	0.430	14.917	<0.001	0.540	12.786	<0.001
Heart rate at rest (beats/min)	-0.243	-14.234	<0.001	-0.179	-9.466	<0.001
Intensity of conditioning physical activity (METs) [†]	0.204	73.433	<0.001	0.129	44.745	<0.001
Intake of carbohydrates (g/day)	0.167	1.343	<0.001	0.102	0.905	0.001
Fasting serum insulin (mU/L)	-0.130	-12.597	<0.001	-0.085	-7.083	0.019
CHD (yes vs no)	-0.092	-178.380	0.005	-0.085	-108.839	0.014
Duration of conditioning physical activity (h/wk)	0.087	28.499	0.004	*	*	*
Waist-to-hip ratio	-0.083	-884.061	0.020	-0.121	-1,274.426	0.002
FEV ₁	*	*	*	0.989	80.495	0.005
Asthma (yes vs no)	-0.062	-248.250	0.037	-0.101	-281.878	0.001
Alcohol hemoglobin (g/dL)	*	*	*	0.099	6.072	0.002
Cardiomyopathy (yes vs no)	*	*	*	-0.065	-302.345	0.036

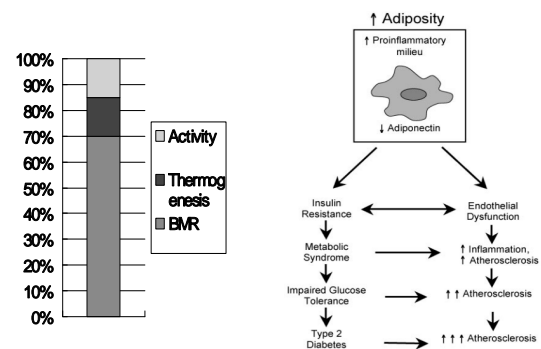
(AJC, 2009;103:1598-)

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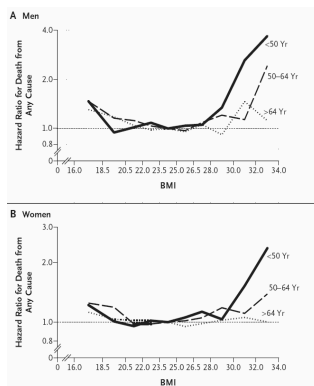


Irwin et al. Cancer 2003;97:1746-57

Adiposity ↑
Energy intake expenditure imbalance



BMI and mortality in Korean men and women



(Jee, NEJM, 2006)

적정 체중 (Kg)

신장 (cm)	정상 (BMI=21 kg/m ²)	과체중 (BMI=23 kg/m ²)	비만 (BMI=25 kg/m ²)	고도비만 (BMI=30kg/m ²)
150	47	52	56	67
155	50	55	60	72
160	54	59	64	77
165	57	63	68	82
170	61	66	72	87
175	64	70	77	92
180	68	75	81	97
185	72	79	86	103

식사횟수와 복부비만과의 관계

(data from 2005 KNHANES III)

	Total (n=4434) OR (95%CI)	P-value	20-45 years (n=2203) OR (95%CI)	P-value	≥65 years (n=2231) OR (95%CI)	p-value
Eating Frequency ✱ 3 1-2	1 1.09 (0.95-1.25) 1.34 (1.06-1.70)	0.046	1 1.08 (0.87-1.35) 1.09 (0.77-1.55)	0.768	1 1.14 (0.95-1.37) 1.64 (1.16-2.31)	0.017
Snack Frequency ✱ 1 0	1 1.02 (1.85-1.22) 1.10 (0.91-1.31)	0.499	1 0.94 (0.73-1.22) 0.99 (0.74-1.31)	0.878	1 1.03 (0.80-1.34) 1.16 (0.90-1.50)	0.371
Regular Meal 3 2 1	1 1.16 (0.98-1.37) 1.81 (1.17-2.79)	0.011	1 1.13 (0.68-1.22) 2.00 (1.27-4.24)	0.037	1 1.20 (0.94-1.54) 1.90 (0.84-4.32)	0.130

after adjusting for age, sex, physical activity, total calorie intake, smoking and alcohol consumption

Appropriate protein intake

□ Breast cancer (Holmes MD, 1999) Survival advantage of diet factors

□ Cohort, N=1982, 18yr, NHS, 가

FFQ

□ No association with fat or red meat

□ Inverse association with increasing intake of protein and poultry

- Lowest (≤ 0.1 serving/d) vs. highest (≥ 0.4 serving/d)
- without metastasis, 35% lower risk for protein intake, 30% lower risk for poultry intake
- With metastasis, weaker association
- Protein from poultry and dairy, fish

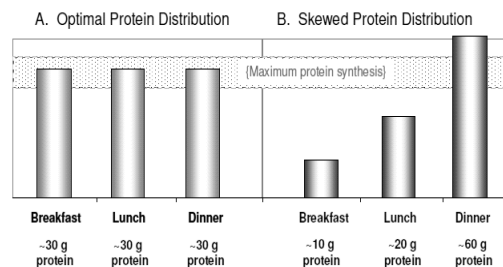
Holmes MD et al. Cancer 1;86(5):826-35.



동물성 vs 식물성 단백

동물성		식물성	
식품명	생물가	식품명	생물가
달걀	96	표고버섯	81
우유	88	대두	77
고등어	84	보리	74
대구	83	쌀	73
오징어	83	감자	67
쇠고기	79	땅콩	57
닭고기	79	옥수수	54
돼지고기	75	밀가루	53
새우	75	얼두	53
멸치	74	팥	46
치즈	73	참깨	36

Recommendation for meal distribution in protein intake



Layman DK. Nutrition & Metabolism 2009;1186:1743-

fruits and vegetables

- Lung cancer : 5 servings per day of fruits and vegetables
 - One food diet
- Breast cancer mortality (Holmes MD, 1999)
 - Cohort, N=1982, 18yr, NHS, 가
 - Vegetable intake : ≥ 4.2 serving/d vs. ≤ 2.1 servings/d
 - Decreasing mortality, without metastasis

목차

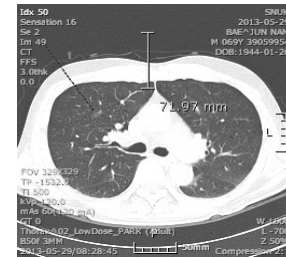
- Basic nutrition principle
- 암환자를 위한 식사패턴
- 암환자를 위한 vitamin/mineral supplements
- 암환자 영양치료의 실제

Cancer mortality according to no vitamin use (referent); multivitamin use; vitamin A, C, or E use; or use of multivitamins and vitamin A, C, or E, by presence of cancer at enrollment, Cancer Prevention Study II, 1982–1989

	No vitamin (referent) (% of deaths)	Multivitamin				Vitamin A, C, or E				Multivitamin and vitamin A, C, or E			
	No. of deaths	Age- adjusted RR	Multivariate RR	95% CI	No. of deaths	Age- adjusted RR	Multivariate RR	95% CI	No. of deaths	Age- adjusted RR	Multivariate RR	95% CI	
All cancers													
Men													
No history of cancer	6,727	1,860	1.05	1.09**	1,032	1.451	0.94*	1.01	0.95, 1.07	1,568	0.87**	0.99	0.94, 1.05
History of cancer	1,904	777	1.25**	1.24**	1,14, 1.35	501	0.96	1.03	0.93, 1.13	651	1.06	1.18**	1.08, 1.29
Women													
No history of cancer	4,692	1,641	1.01	1.04	0.98, 1.10	1,204	0.92**	0.96	0.90, 1.02	1,511	0.90**	0.97*	0.91, 1.03
History of cancer	2,456	978	1.01	1.03	0.96, 1.11	693	0.92	0.98	0.90, 1.06	1,100	0.99	1.08*	1.00, 1.16

Am J Epidemiol 2000;152:149-62.

70/M 폐암
39059954 배 O 남



Inflammation and lung cancer

Table 3. HRs and 95% CI for site-specific cancer mortality by hs-CRP category

	All				Exclusion of those who died within 2 years after check-up				
	N	Number of deaths/ 1,000 person-years	Age-adjusted ^a HR (95% CI)	P _{total}	N	Number of deaths/ 1,000 person-years	Age-adjusted ^a HR (95% CI)	P _{total}	
Site-specific cancer									
Stomach cancer									
hs-CRP < 1 mg/L	23,620	44,028,318.57 (0.192)	1	1	23,539	37,028,226.67 (0.16)	1	1	
1 mg/L < hs-CRP < 3 mg/L	5,849	6,951,281.30 (0.117)	0.63 (0.27-1.49)	0.61 (0.26-1.44)	5,830	5,951,260.23 (0.08)	0.64 (0.25-1.65)	0.60 (0.23-1.54)	
hs-CRP ≥ 3 mg/L	4,987	10,936,684.42 (0.272)	1.44 (0.72-2.88)	0.583	4,943	7,066,038.92 (0.19)	1.23 (0.54-2.77)	0.819	1.12 (0.49-2.54)
Colorectal cancer									
hs-CRP < 1 mg/L	23,620	34,028,318.57 (0.148)	1	1	23,539	37,028,226.67 (0.13)	1	1	
1 mg/L < hs-CRP < 3 mg/L	5,849	4,932,281.30 (0.079)	0.59 (0.21-1.68)	0.55 (0.19-1.58)	5,830	4,951,260.23 (0.07)	0.67 (0.23-1.92)	0.61 (0.21-1.73)	
hs-CRP ≥ 3 mg/L	4,987	10,936,684.42 (0.254)	2.56 (1.35-4.88)	0.001	4,943	10,936,684.42 (0.24)	1.99 (0.94-4.20)	0.168	1.47 (0.68-3.14)
Liver cancer									
hs-CRP < 1 mg/L	23,620	34,028,318.57 (0.258)	1	1	23,539	37,028,226.67 (0.23)	1	1	
1 mg/L < hs-CRP < 3 mg/L	5,849	2,951,281.30 (0.448)	1.80 (1.18-3.13)	1.85 (1.13-3.02)	5,830	2,951,260.23 (0.42)	2.05 (1.24-3.39)	1.96 (1.18-3.24)	
hs-CRP ≥ 3 mg/L	4,987	10,936,684.42 (0.758)	3.92 (2.14-6.85)	<0.001	4,943	21,936,638.92 (0.57)	2.62 (1.58-4.39)	<0.001	2.52 (1.58-4.39)
Prostate cancer									
hs-CRP < 1 mg/L	23,620	60,228,318.57 (0.322)	1	1	23,539	60,228,226.67 (0.32)	1	1	
1 mg/L < hs-CRP < 3 mg/L	5,849	1,951,281.30 (0.322)	1.23 (0.70-2.13)	1.19 (0.68-2.08)	5,830	1,951,260.23 (0.32)	1.15 (0.64-2.07)	1	1.10 (0.61-1.98)
hs-CRP ≥ 3 mg/L	4,987	10,936,684.42 (0.463)	1.76 (1.03-3.02)	0.040	4,943	11,936,638.92 (0.33)	1.21 (0.63-2.31)	0.488	1.07 (0.55-2.08)
Cervical cancer									
hs-CRP < 1 mg/L	11,647	2,115,301.44 (0.017)	1	1	11,622	2,115,789.55 (0.01)	1	1	
1 mg/L < hs-CRP < 3 mg/L	2,716	6,927,373.78	NA	NA	2,708	6,927,363.21	NA	NA	NA
hs-CRP ≥ 3 mg/L	1,702	6,927,352.78 (0.371)	10.64 (2.12-53.29)	0.004	1,689	6,921,534.65 (0.29)	9.66 (1.74-47.22)	0.010	11.30 (2.06-60.87)
Other cancer									
hs-CRP < 1 mg/L	11,673	3,112,488.13 (0.026)	1	1	11,617	3,112,457.11 (0.02)	1	1	
1 mg/L < hs-CRP < 3 mg/L	3,133	10,937,354	NA	NA	3,122	10,937,354	NA	NA	NA
hs-CRP ≥ 3 mg/L	2,985	2,115,332.15 (0.100)	4.68 (0.78-28.14)	0.175	2,954	2,115,319.47	NA	NA	NA

Abbreviation: NA, non-applicable.
^aAdjusted for age.
^bAdjusted for age, diabetes (yes or no), hypertension (yes or no), regular drinker (yes or no), smoker (never, former, current), BMI, regular exerciser (yes or no), monthly income, total cholesterol, and HDL-cholesterol.
^cCalculated only for men.
^dCalculated only for women.

Cancer Epidemiol Biomarkers Prev; 21(11) November 2012

Inflammation and lung cancer

Table 4. Cox-regression analysis of hs-CRP on all-cause and cancer mortality according to smoking and obesity status

Smoking status		All-cause mortality				Cancer mortality			
		No. of deaths/1,000 person-year	Multivariate-adjusted ^a HR (95% CI)	P _{total}	P for interaction	No. of deaths/1,000 person-year	Multivariate-adjusted ^a HR (95% CI)	P _{total}	P for interaction
Nonsmoker	hs-CRP < 1 mg/L	264(126,092.92 (0.26))	1			117(126,092.92 (0.30))	1		
	1 mg/L < hs-CRP < 3 mg/L	52(26,932.86 (1.30))	0.88 (0.65, 1.19)			25(26,932.86 (1.30))	1.02 (0.68, 1.58)		
	hs-CRP ≥ 3 mg/L	58(17,236.71 (0.34))	1.31 (0.88, 1.76)	0.179		27(17,236.71 (0.34))	1.56 (1.02, 2.39)	0.089	
Former smoker	hs-CRP < 1 mg/L	154(9,709.40 (0.97))	1			72(9,709.40 (0.96))	1		
	1 mg/L < hs-CRP < 3 mg/L	42(9,033.76 (4.64))	1.07 (0.76, 1.52)			20(9,033.76 (4.64))	1.10 (0.67, 1.82)		
	hs-CRP ≥ 3 mg/L	57(7,092.83 (8.02))	1.52 (1.11, 2.07)	0.012		39(7,092.83 (8.02))	2.33 (1.56, 3.47)	<0.001	
Current smoker	hs-CRP < 1 mg/L	264(43,507.56 (4.16))	1			134(43,507.56 (4.16))	1		
	1 mg/L < hs-CRP < 3 mg/L	69(15,275.44 (4.45))	1.10 (0.84, 1.44)			32(15,275.44 (4.45))	1.03 (0.76, 1.32)		
	hs-CRP ≥ 3 mg/L	95(12,238.66 (7.76))	1.66 (1.30, 2.11)	<0.001	0.418	40(12,238.66 (7.76))	1.40 (0.97, 2.01)	0.089	0.574
Obesity status	hs-CRP < 1 mg/L	440(155,816.07 (0.86))	1			215(155,816.07 (0.83))	1		
	1 mg/L < hs-CRP < 3 mg/L	102(51,466.16 (3.24))	1.10 (0.88, 1.36)			46(51,466.16 (3.24))	1.04 (0.75, 1.44)		
	hs-CRP ≥ 3 mg/L	136(201,115.50 (6.76))	1.82 (1.49, 2.21)	<0.001		71(201,115.50 (6.76))	2.06 (1.57, 2.71)	<0.001	
BMI ^b < 25 kg/m ²	hs-CRP < 1 mg/L	236(7,558.49 (3.75))	1			130(7,558.49 (3.75))	1		
	1 mg/L < hs-CRP < 3 mg/L	60(19,815.14 (3.02))	0.94 (0.76, 1.25)			31(19,815.14 (3.02))	1.10 (0.73, 1.65)		
	hs-CRP ≥ 3 mg/L	74(16,688.91 (4.46))	1.22 (0.92, 1.59)	0.215	0.007	35(16,688.91 (4.46))	1.35 (0.91, 1.99)	0.133	0.133

^aAdjusted for age, diabetes (yes or no), hypertension (yes or no), regular drinker (yes or no), smoker (never, former, current), BMI, regular exerciser (yes or no), monthly income, total cholesterol, and HDL-cholesterol.
^bCalculated using the following formula: weight (kg)/height (m)².

Cancer Epidemiol Biomarkers Prev; 21(11) November 2012

Inflammation and lung cancer

Table 5. Cox-regression analysis of inflammation-based prognostic scores on all-cause and cancer mortality

		All-cause mortality				Cancer mortality			
	N	No. of death/1,000 person-year	Multivariate-adjusted ^a HR (95% CI)	P value		No. of death/1,000 person-year	Multivariate-adjusted ^a HR (95% CI)	P value	
Men									
NLR ^b	0	15,975	301(150,926.05 (1.99))	1		137(150,926.05 (0.90))	1		
	1	90	4,901.77 (4.98)	2.81 (1.04, 7.54)	0.040	1,901.77 (1.24)	1.48 (0.20, 10.62)	0.694	
PLR ^c	0	12,448	244(119,177.56 (2.04))	1		105(119,177.56 (0.88))	1		
	1	3,528	58(31,241.99 (1.85))	1.08 (0.81, 1.44)		32(31,241.99 (1.85))	1.26 (0.84, 1.88)		
	2	91	2,908.27 (2.47)	1.44 (0.35, 5.89)	0.495	1,908.27 (1.23)	1.53 (0.21, 11.00)	0.227	
PNR ^d	0	15,886	285(150,159.92 (1.89))	1		129(150,159.92 (0.85))	1		
	1	179	201(567.90 (12.75))	6.85 (4.34, 10.79)	<0.001	91(567.90 (5.74))	6.88 (3.49, 13.56)	<0.001	
Women									
NLR ^b	0	17,401	742(163,731.55 (4.53))	1		364(163,731.55 (2.22))	1		
	1	90	7,825.82 (8.47)	1.47 (0.69, 3.10)	0.312	4,825.82 (4.84)	1.91 (0.71, 5.15)	0.196	
PLR ^c	0	15,820	673(149,588.48 (4.49))	1		323(149,588.48 (2.21))	1		
	1	1,621	73(14,506.36 (5.05))	0.96 (0.75, 1.23)		34(14,506.36 (2.34))	0.95 (0.67, 1.37)		
	2	50	3,462.63 (8.48)	0.89 (0.28, 2.83)	0.748	2,462.63 (4.32)	1.23 (0.30, 4.96)	0.925	
PNR ^d	0	17,365	714(163,492 (4.36))	1		349(163,492 (2.13))	1		
	1	126	351(1,065.47 (32.84))	3.50 (2.48, 4.96)	<0.001	191(1,065.47 (17.83))	3.96 (2.47, 6.36)	<0.001	

^aAdjusted for age, diabetes (yes or no), hypertension (yes or no), regular drinker (yes or no), smoker (never, former, current), BMI, regular exerciser (yes or no), monthly income, total cholesterol, and HDL-cholesterol.
^bCalculated as neutrophil count/lymphocyte count, scored as 1 (<5) or 1 (>5).
^cCalculated as platelet count/lymphocyte count, scored as 0 (<150), 1 (150-300), or 2 (>300).
^dCalculated as 'Albumin (g/L) + 5' total lymphocyte count 10⁹/L, scored as 0 (<45) or 1 (>45).

Cancer Epidemiol Biomarkers Prev; 21(11) November 2012

• BMR or REE of specific organ
환자 ID: 4524902
이름: 정윤중(남/77세)

Organ	(%)
Liver	27%
Brain	19%
Heart	7%
Kidney	10%
Muscle	18%
Others	19

Baseline Characteristics

	Overall	MCV quartile				P
		53.1-89.5	89.6-92.2	92.3-94.8	94.9-125.9	
Number of subjects	38954	9359	9725	9455	9905	
Sex(female)	19276(50.1)	5983(63.9)	5111(52.5)	4513(47.7)	3669(37.0)	<0.001
Age(years)	53.2(8.3)	51.8(7.6)	52.9(8.1)	53.4(8.3)	54.6(8.7)	<0.001
Body mass index(kg/m ²)	24.1(2.9)	24.4(2.9)	24.2(2.9)	24.1(2.8)	23.8(2.9)	<0.001
Hypertension(yes)	15644(40.1)	4030(43.1)	4019(41.3)	3722(39.4)	3873(39.1)	<0.001
Diabetes mellitus(yes)	4100(10.7)	1159(12.4)	1005(10.4)	915(9.7)	1021(10.3)	<0.001
Anemia(yes)	2194(5.7)	1165(12.5)	350(3.6)	329(3.5)	350(3.5)	<0.001
HBV carrier(yes)	1793(4.7)	372(4.0)	381(3.9)	456(4.8)	584(5.9)	<0.001
Cholesterol						
Total cholesterol (mg/dL)	204.8(36.8)	205.9(38.5)	206.5(36.6)	205.1(36.1)	201.7(35.7)	<0.001
Triglyceride (mg/dL)	119.6(42.5-336.6)	122.3(42.4-353)	121.4(43.4-339.4)	117.9(42.7-326.1)	116.8(41.6-328.2)	<0.001
HDL-cholesterol (mg/dL)	52.8(13.5)	51.2(12.9)	52.1(13)	53.3(13.5)	54.5(14.2)	<0.001
GFR(ml/min/1.73m ²)	84.7(13.8)	87.2(13.9)	85.2(13.5)	83.9(13.6)	82.5(13.7)	<0.001
Regular drinking(yes)	15678(44.2)	2725(31.2)	3536(39.2)	4033(46.1)	5384(60.0)	<0.001
Regular exercise(yes)	13703(38.3)	3028(34.2)	3429(37.7)	3544(40.3)	3714(41.1)	<0.001
Smoking						
current	8283(23.3)	1048(12.0)	1744(19.3)	2146(24.6)	2345(27.1)	<0.001
former	7098(20.0)	1533(17.6)	1783(19.6)	1867(21.4)	1915(21.3)	
none	20104(56.7)	6143(70.4)	5500(60.9)	4712(54.0)	3749(41.6)	
Monthly income						
400이하	13456(37.8)	3613(41.3)	3482(38.5)	3140(35.8)	3221(35.6)	<0.001
400-599	11463(32.2)	2817(32.2)	2966(32.8)	2861(32.6)	2819(31.1)	
600이상	10715(30.1)	2327(26.6)	2598(28.7)	2771(31.6)	3019(33.3)	

Specific cancer mortality except within 2-year deaths

Exclusion of those who died within 2 years after check-up	rs	Age & sex adjusted HR	Ptrend	Multivariate adjusted HR	Ptrend
Lung cancer					
1st quartile	23/83906	1.43(0.78-2.61)	0.119	1.44(0.77-2.7)	0.445
2nd quartile	20/82252	1.00(ref)		1.00(ref)	
3rd quartile	29/73898	1.42(0.8-2.52)		1.46(0.81-2.6)	
4th quartile	42/68301	1.87(1.09-3.2)		1.54(0.87-2.72)	
Liver cancer					
1st quartile	10/83906	0.76(0.34-1.7)	<0.001	0.66(0.29-1.5)	<0.001
2nd quartile	15/82252	1.00(ref)		1.00(ref)	
3rd quartile	17/73898	1.20(0.6-2.4)		0.94(0.46-1.93)	
4th quartile	56/68301	3.83(2.15-6.82)		2.85(1.56-5.21)	
Stomach cancer					
1st quartile	12/83906	1.18(0.53-2.64)	0.267	1.35(0.54-3.37)	0.5
2nd quartile	12/82252	1.00(ref)		1.00(ref)	
3rd quartile	16/73898	1.37(0.65-2.9)		1.5(0.65-3.48)	
4th quartile	20/68301	1.61(0.78-3.33)		1.55(0.68-3.55)	
Colorectal cancer					
1st quartile	11/83906	0.85(0.39-1.85)	0.742	0.79(0.34-1.82)	0.481
2nd quartile	15/82252	1.00(ref)		1.00(ref)	
3rd quartile	11/73898	0.76(0.35-1.66)		0.86(0.38-1.97)	
4th quartile	16/68301	1.06(0.52-2.16)		1.16(0.52-2.59)	

Basic nutrition principle

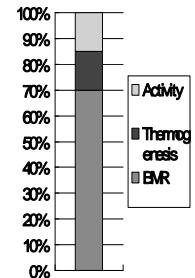
□

□ vitamin/mineral supplements

□

1. Appropriate calory intake

□ Energy expenditure= energy intake



에너지 및 단백질 권장량

(한국인의 영양권장량 7차 개정)

	연령	체중 (kg)	신장 (cm)	에너지 (kcal)	단백질 (gm)	활동량
남자	50-64	68	168	2300	70	심한활동 +500
	65-74	64	167	2000	65	가벼운활동 -300
	75+	60	166	1800	60	
여자	50-64	57	157	1900	55	심한활동 +200
	65-74	54	154	1700	55	가벼운활동 -300
	75+	52	152	1600	55	

Case 1. F/54 Leukemia CR

CC> 조금씩 체중이 늘고, 온 몸에 힘이 없다.

식사후 자꾸 잔다.

가끔 식은 땀이 나고, 두통이 생긴다.

PMHx> leukemia CR로 F/U 중

Bwt/Ht> 60 62kg kg/ 158cm during 6mos

Diet: regular, healthy diet

Exercise: regular

Smoking/Drinking: none

(AJC, 2009;103:1598-)

Gastric emptying time (GET)

위에서 소장으로의 이행시간: 액체 1-2시간, 고체 2-3시간
탄수화물<단백질<지방<섬유질 음식의 순
액체, 작은 입자, low calorie meal 이 더 빨리 이동

Acute alcohol intake : delayed GET

Chronic alcohol intake : faster GET

식물군	총 고형 단위수	아침	점심	저녁
곡류군	8	2  70g x 2교량=140g 잡곡밥 2/3공기 (140g)	3  70g x 3교량=210g 조밥 1공기 (210g)	3  70g x 3교량=210g 흑미밥 1공기 (210g)
어육류군	5	1  연두부 1교량 (150g)	2  스테이크볶음 (쇠고기 1교량, 40g) 오징어초무침 (오징어 1교량, 50g)	2  돈육고추장찌개 (돼지고기 1교량, 40g) 동태전 (동태살 1교량, 50g)
채소군	7	2  콩나물국 1교량 (70g) 마역줄기볶음 0.5교량 (35g) 나박김치 0.5교량 (35g)	3  돌매생이버섯탕/스테이크 볶음/ 오징어초무침에 호박단 채소 1교량 연근조림 1교량 (40g) 청경채나물 1교량 (70g)	2  근대당장국 (근대 1교량, 70g) 마늘줄볶음 (마늘줄 1교량, 40g)
지방군	4	1  식용유 1작은스푼 (5g) 마늘줄기볶음	1.5  들깨가루 0.5교량 (4g) 식용유/참기름 1작은스푼 (5g) 연근조림/허약채나물 조리국	1.5  식용유 1.5작은스푼 (7.5g) 마늘줄볶음/동태전 조리국
우유군	2	식사시간 사이 간식으로 드세요 우유 1교량 (1컵, 200cc) 두유 1교량 (1컵, 200cc)		
과일군	2	식사시간 사이 간식으로 드세요 사과 1교량 (1/3개, 80g) 딸기 1교량 (150g)		

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