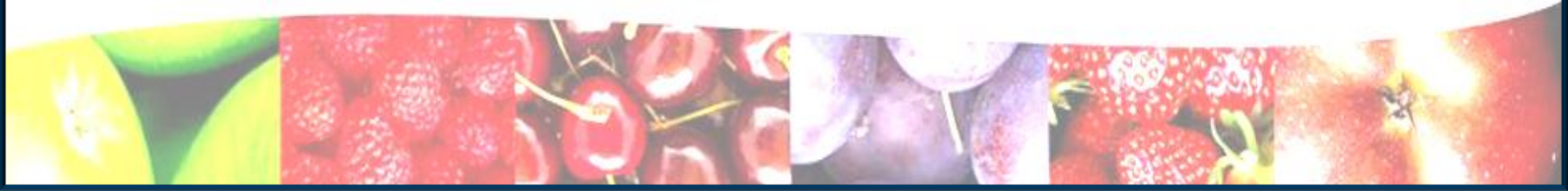


Znaczenie warzyw i owoców w prewencji chorób przewlekłych

Dr hab. Lucyna Kozłowska
Katedra Dietetyki
SGGW w Warszawie

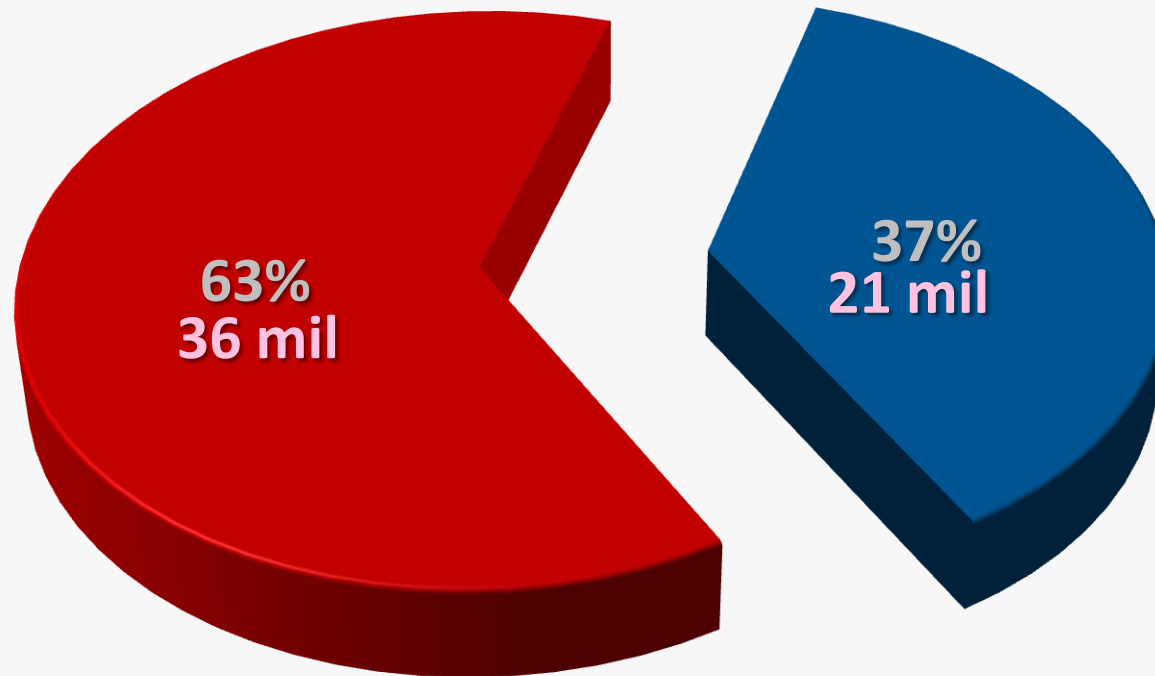


- 1. Skala problemu - przyczyny zgonów**
- 2. Spożycie warzyw, owoców i soków**
- 3. Spożycie warzyw i owoców a ryzyko rozwoju chorób**
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warzyw i owoców**



Przyczyny zgonów na świecie (2008 r.)

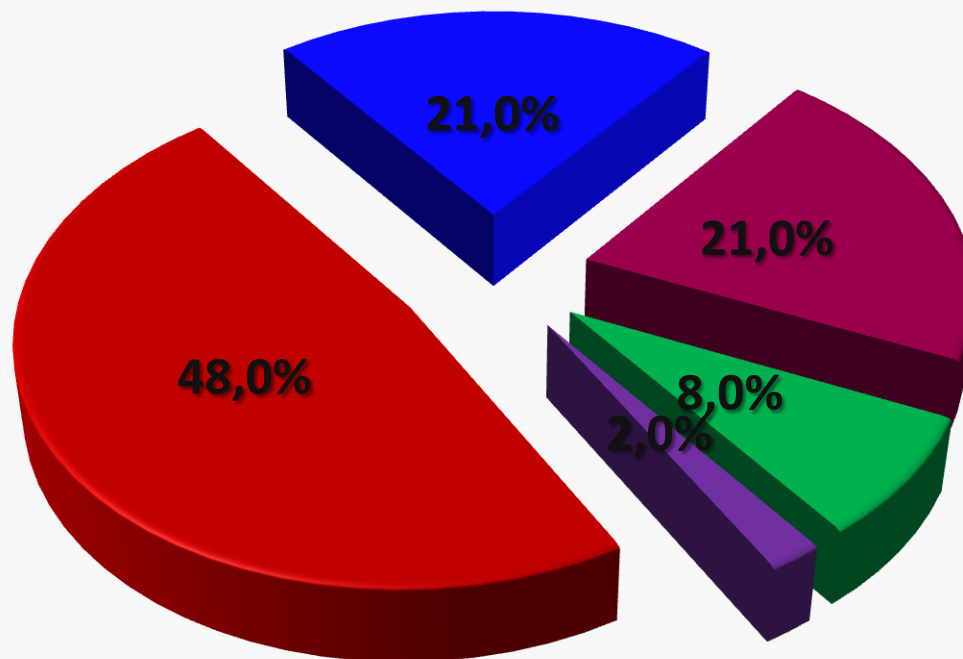
Całkowita liczba zgonów - 57 milionów



■ Choroby niezakaźne (NCD)

■ Pozostałe zgony

NCD – główne przyczyny zgonów ogółem



■ Choroby serca i układu krążenia

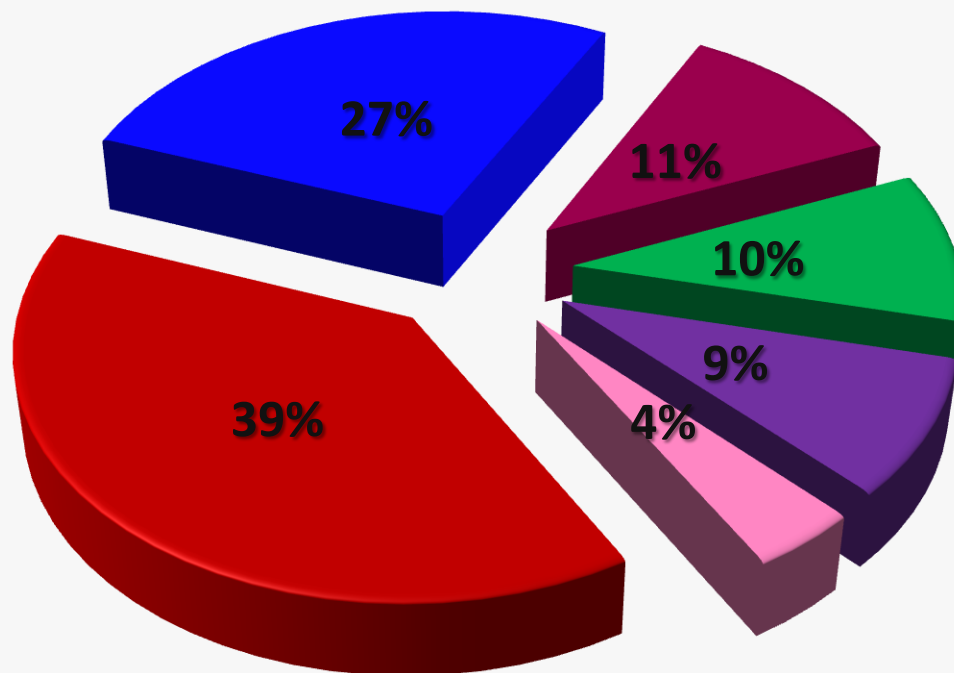
■ Pozostałe schorzenia

■ Cukrzyca

■ Nowotwory

■ Choroby przewlekłe układu oddechowego

NCD – główne przyczyny zgonów u osób poniżej 70 roku życia



■ Choroby serca i układu krążenia

■ Pozostałe schorzenia

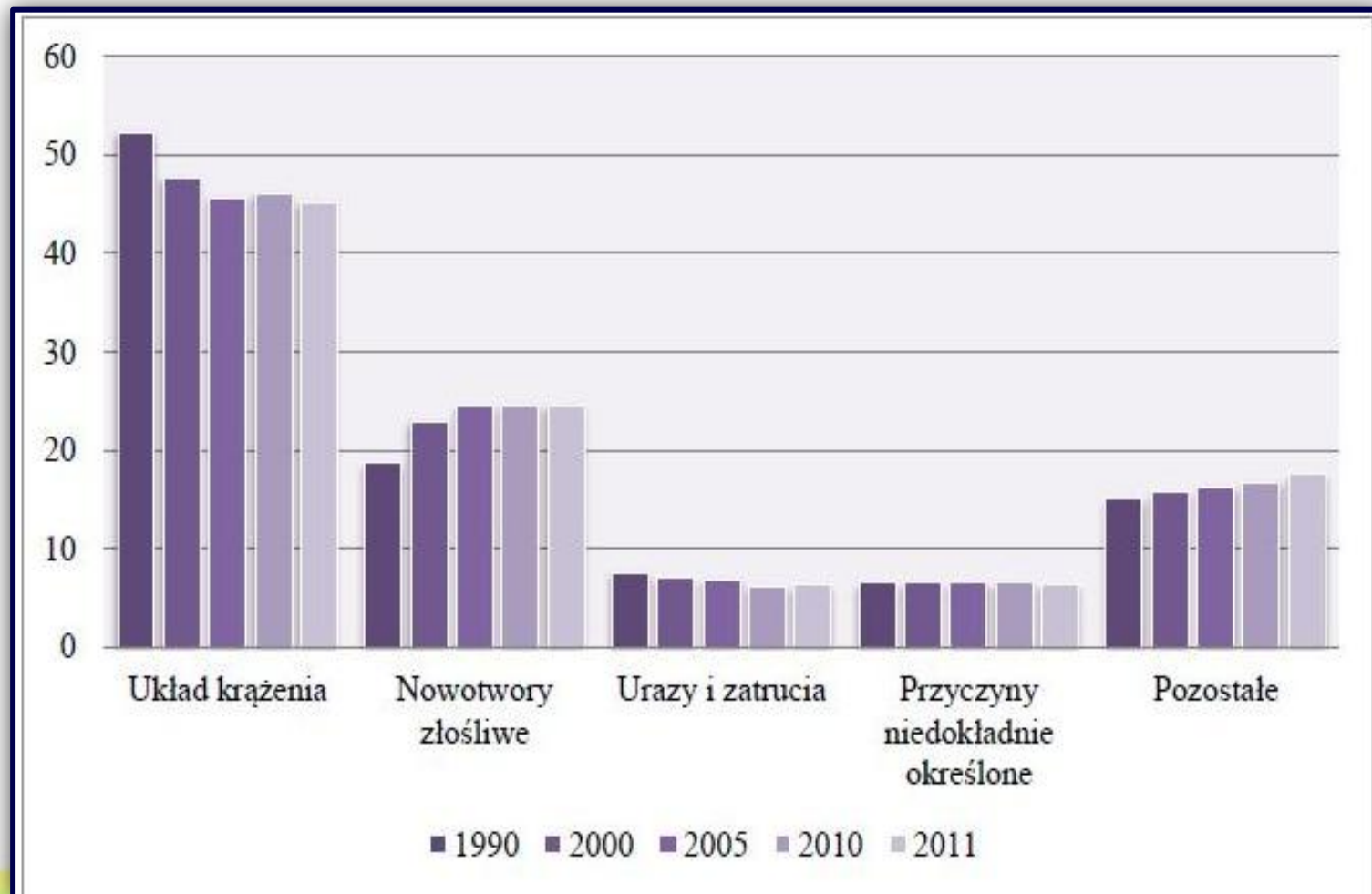
■ Choroby przewlekłe układu pokarmowego

■ Nowotwory

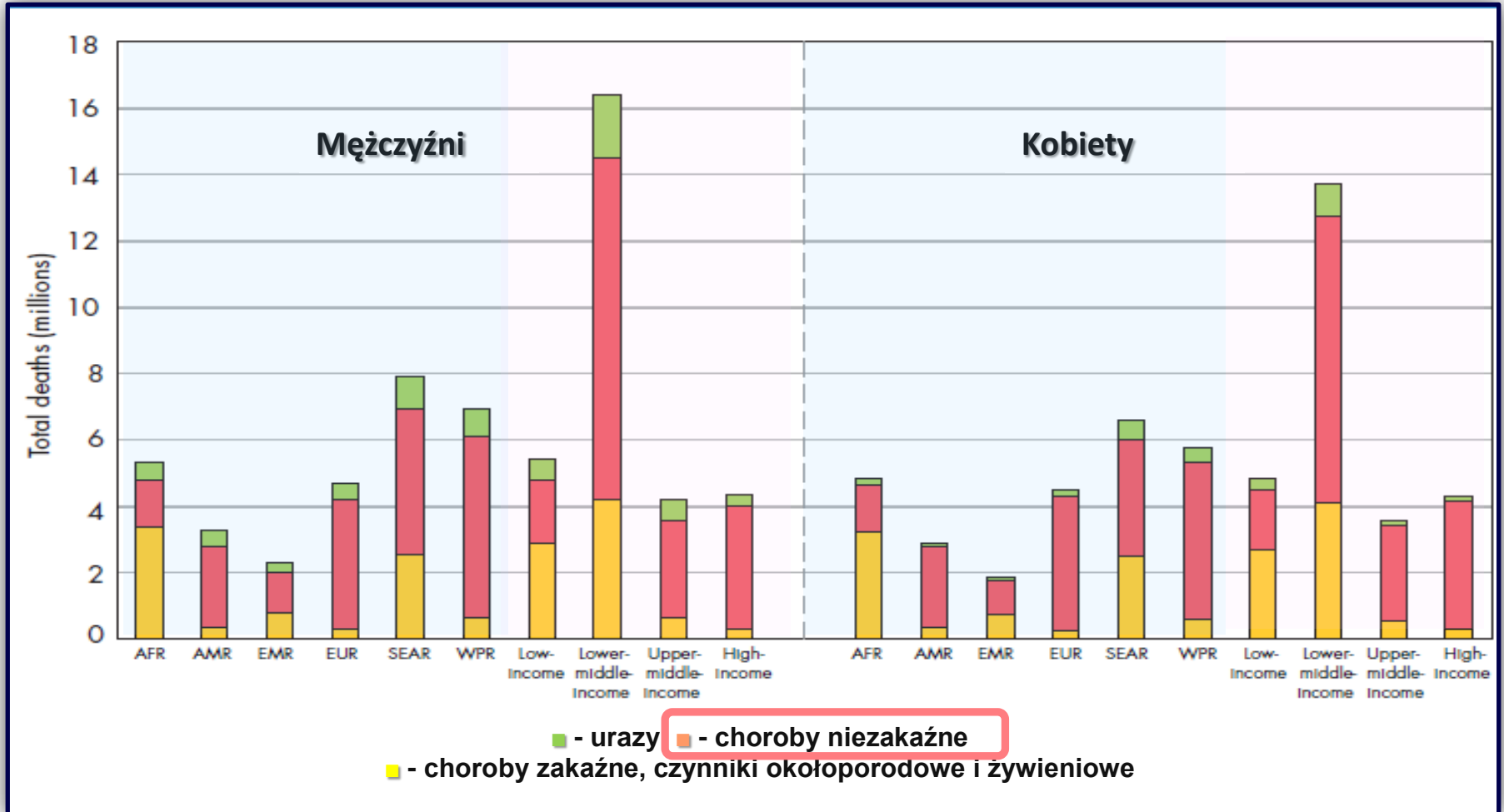
■ Choroby przewlekłe układu oddechowego

■ Cukrzyca

Przyczyny zgonów w Polsce (1990 – 2011)

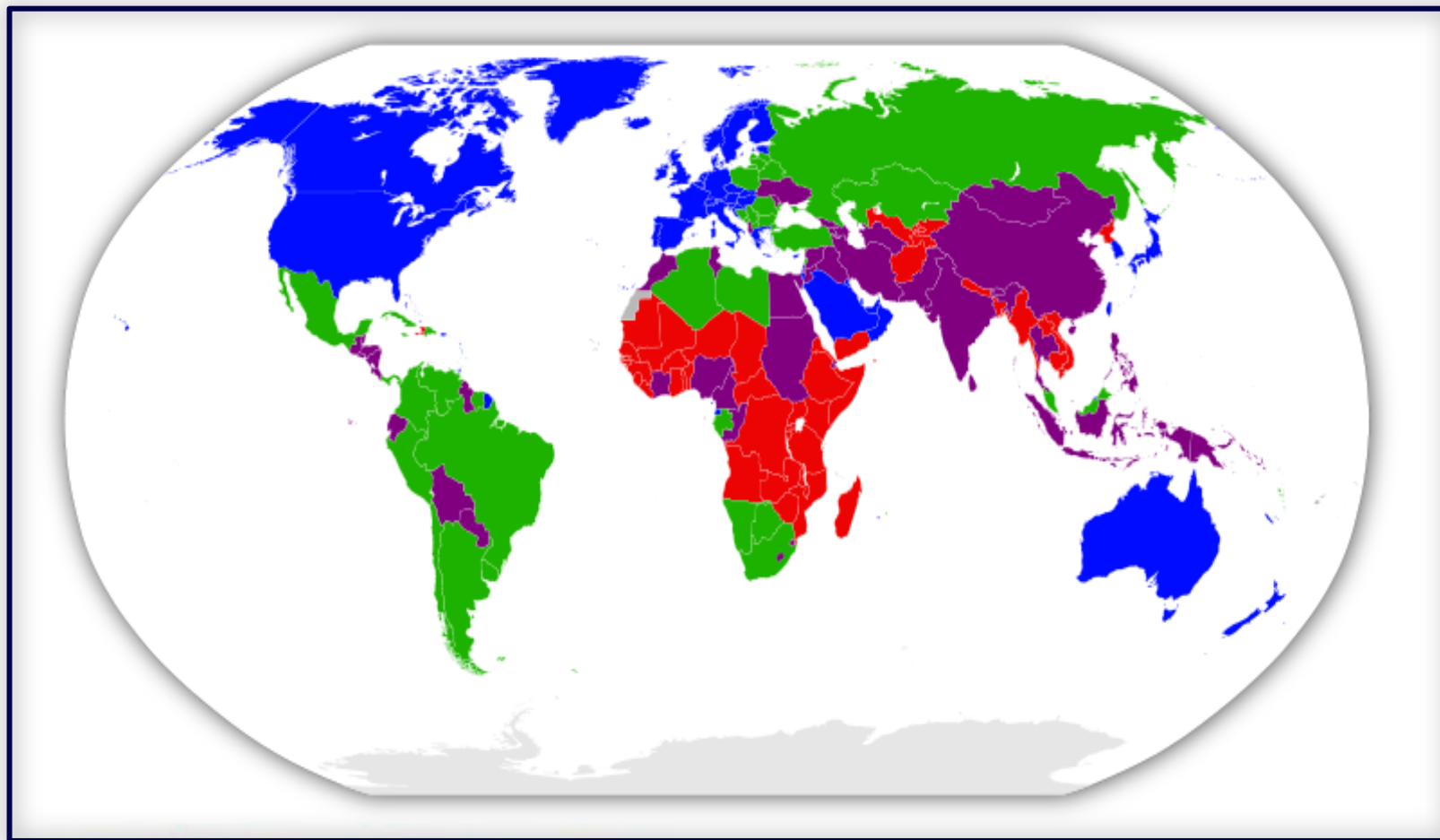


Liczba zgonów w zależności od płci, regionu świata, dochodów



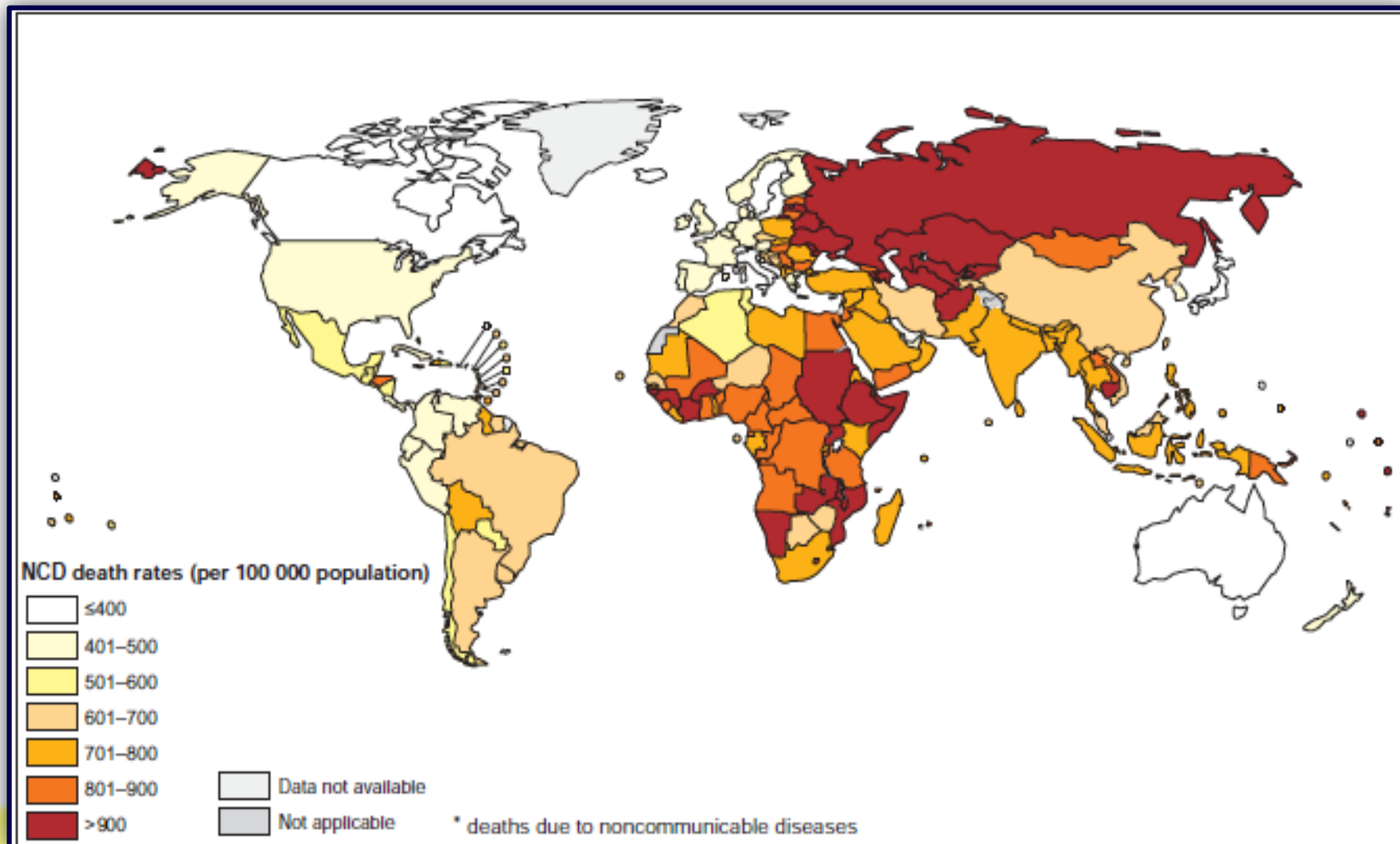
AFR - Afryka; AMR - Ameryka; EMR - wschodni region basenu M. Śródziemnego;
EUR - Europa; SEAR - Azja Południowo-Wschodnia; WPR - Zachodni Region Pacyfiku

Kraje o wysokich, średnich i niskich dochodach World Bank 2008



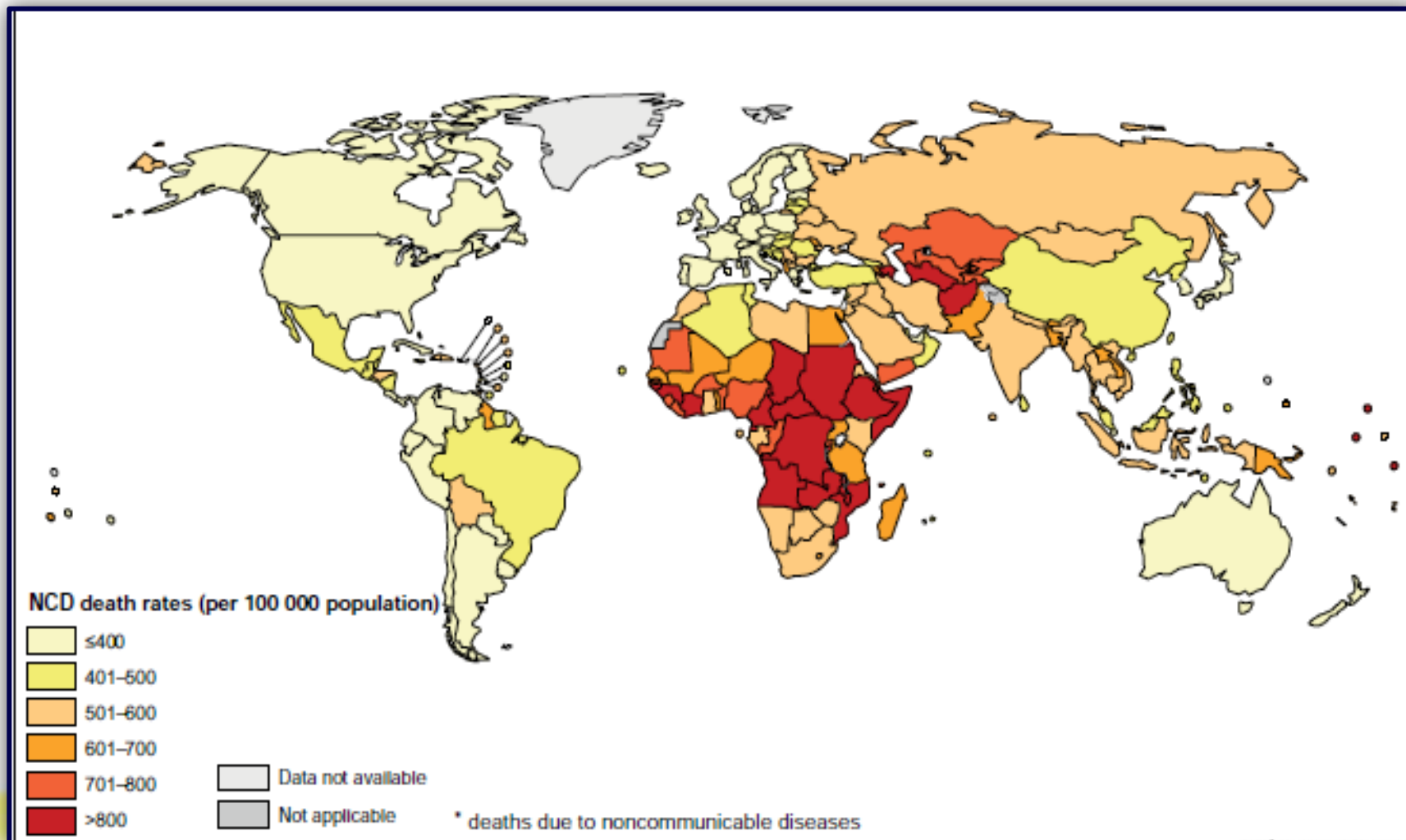
■ - wysokie; ■ - średnio-wysokie; ■ - średnio-niskie; ■ - niskie

Liczba zgonów na skutek chorób niezakaźnych mężczyźni, 2008 r.



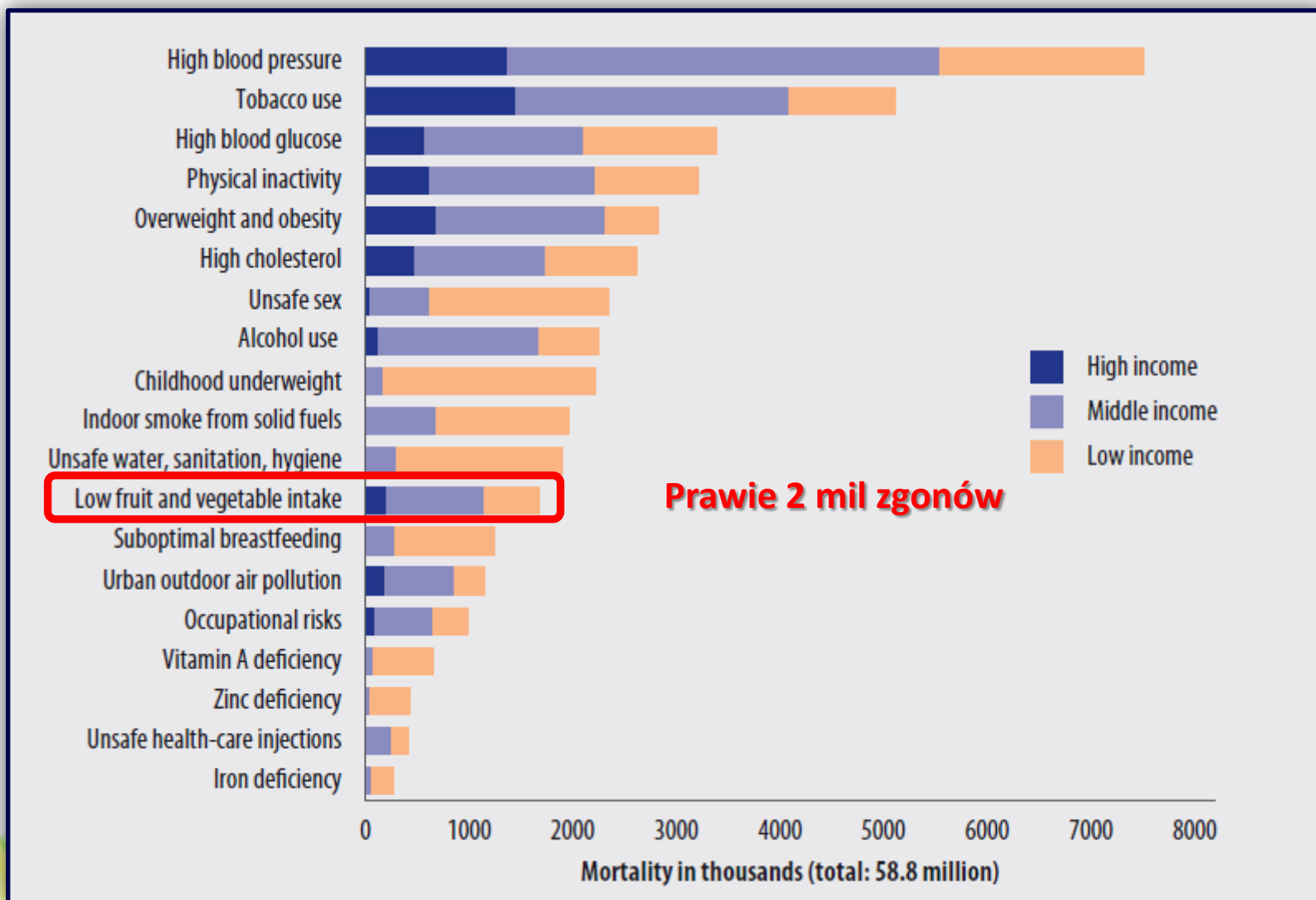
Standaryzowane wg wieku

Liczba zgonów na skutek chorób niezakaźnych kobiety, 2008 r.



Standaryzowane wg wieku

Zgony na świecie spowodowane 19 głównymi czynnikami ryzyka



Ranking wybranych czynników ryzyka

10 wiodących czynników ryzyka zgonu, 2004

Kraje o średnim dochodzie (US \$ 826 – 10 065)

Czynniki ryzyka	Zgony (mil)	Odsetek zgonów ogółem (%)
1. Nadciśnienie tętnicze	4,2	17,2
2. Palenie tytoniu	2,6	10,8
3. Nadwaga i otyłość	1,6	6,7
4. Niska aktywność fizyczna	1,6	6,6
5. Alkohol	1,6	6,4
6. Wysokie stężenie glukozy we krwi	1,5	6,3
7. Wysokie stężenie cholesterolu we krwi	1,3	5,2
8. Niskie spożycie owoców i warzyw	0,9	3,9
9. Dym w pomieszczeniach pochodzący z paliw stałych	0,7	2,8
10. Zanieczyszczenia powietrza w miastach	0,7	2,8

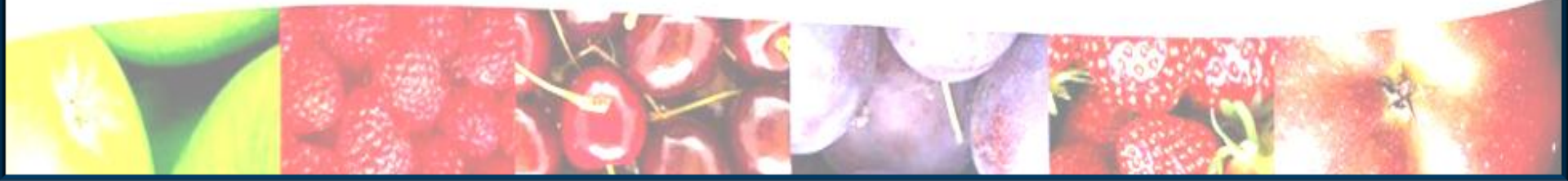
Ranking wybranych czynników ryzyka

10 wiodących czynników ryzyka zgonu, 2004

Kraje o wysokim dochodzie (US \$ 10 066 lub więcej)

Czynniki ryzyka	Zgony (mil)	Odsetek zgonów ogółem (%)
1. Palenie tytoniu	1,5	17,9
2. Nadciśnienie tętnicze	1,4	16,8
3. Nadwaga i otyłość	0,7	6,7
4. Niska aktywność fizyczna	0,6	7,0
5. Wysokie stężenie glukozy we krwi	0,6	7,0
6. Wysokie stężenie cholesterolu we krwi	0,5	5,8
7. Niskie spożycie owoców i warzyw	0,2	2,5
8. Zanieczyszczenia powietrza w miastach	0,2	2,5
9. Alkohol	0,1	1,6
10. Czynniki zawodowe	0,1	1,7

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warzyw i owoców**

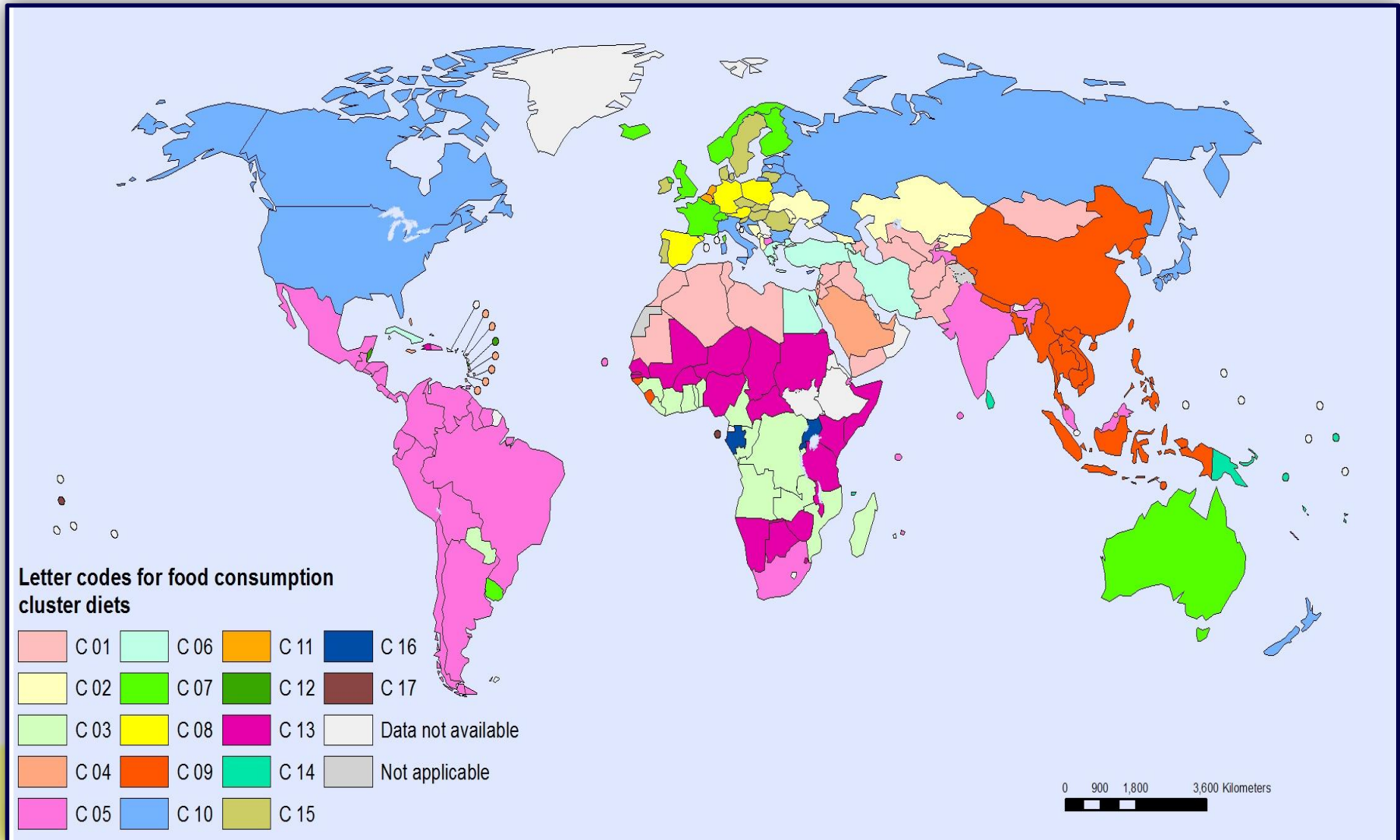


Zalecenia WHO w prewencji dietozależnych chorób przewlekłych

Dietary factor	Goal (% of total energy, unless otherwise stated)
Total fat	15-30%
Saturated fatty acids	<10%
Polyunsaturated fatty acids (PUFAs)	6-10%
n-6 Polyunsaturated fatty acids (PUFAs)	5-8%
n-3 Polyunsaturated fatty acids (PUFAs)	1-2%
Trans fatty acids	<1%
Monounsaturated fatty acids (MUFAs)	By difference ^a
Total carbohydrate	55-75% ^b
Free sugars ^c	<10%
Protein	10-15% ^d
Cholesterol	<300 mg per day
Sodium chloride (sodium) ^e	<5 g per day (<2 g per day)
Fruits and vegetables	≥ 400 g per day *
Total dietary fibre	>25 g per day of total dietary fibre

* - bez bulw (ziemniaki, maniok)

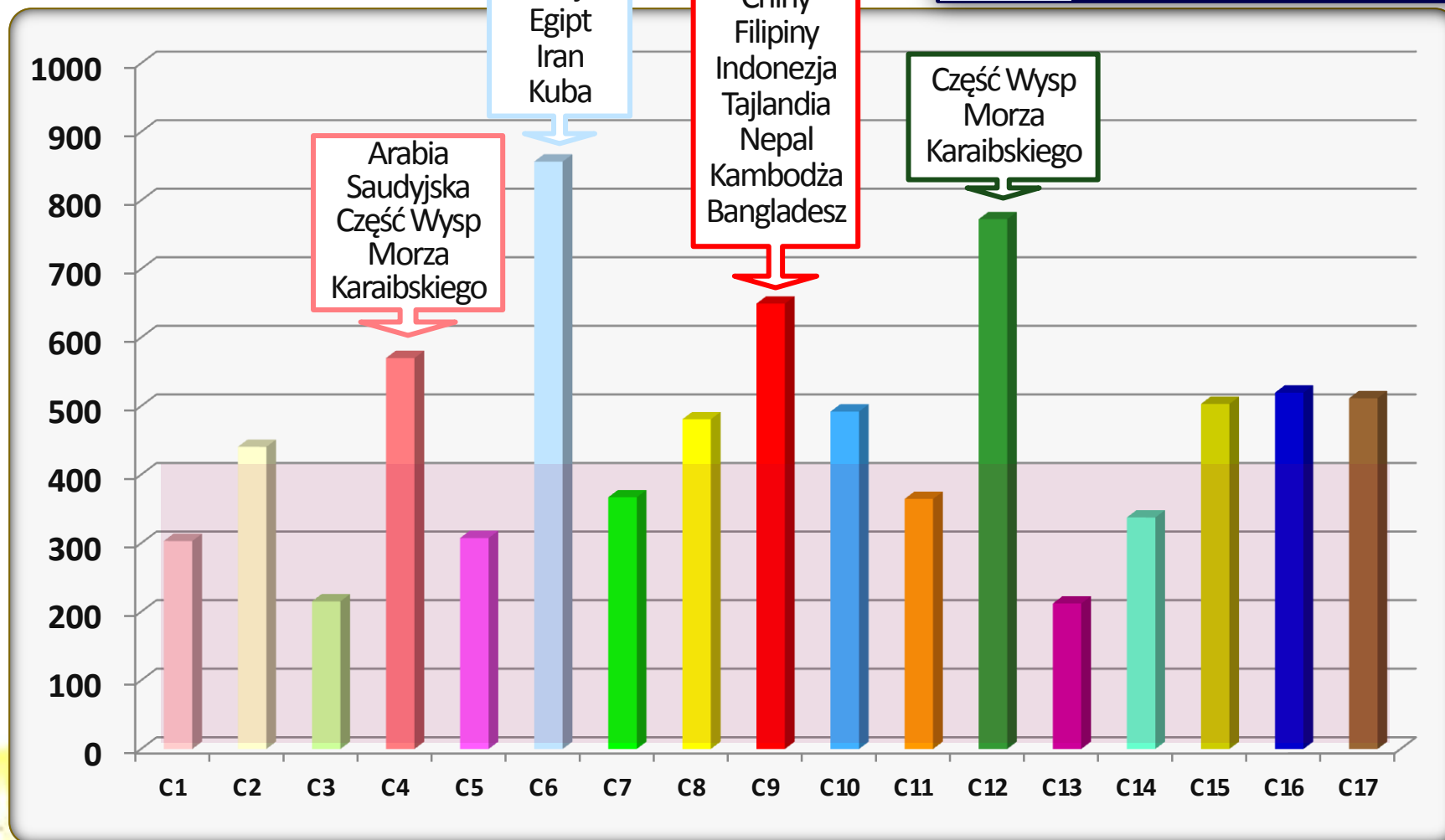
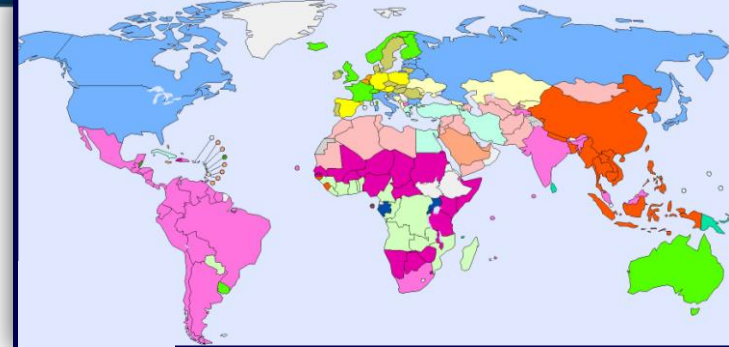
Global Environment Monitoring System (GEMS)/Food Cluster Diets



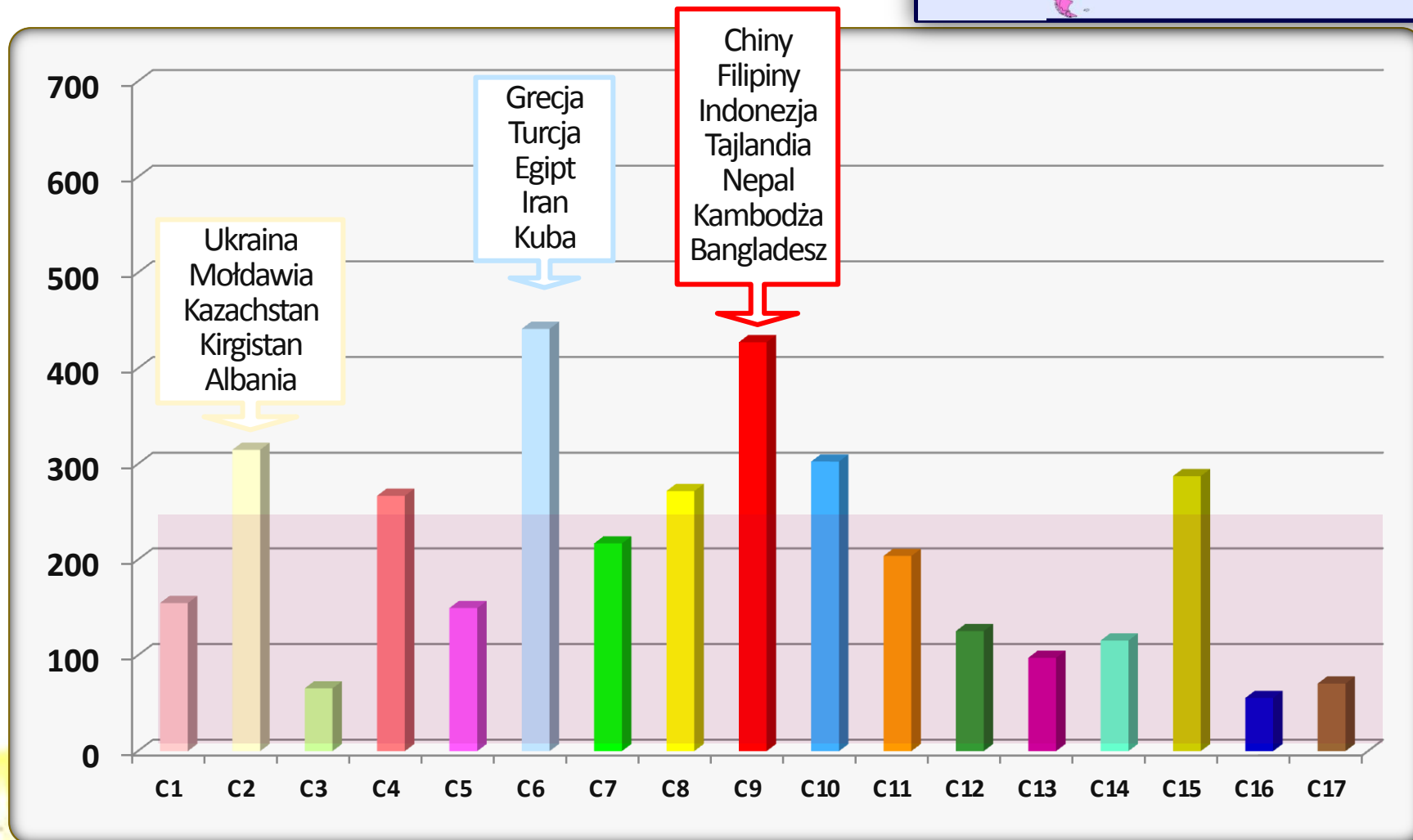
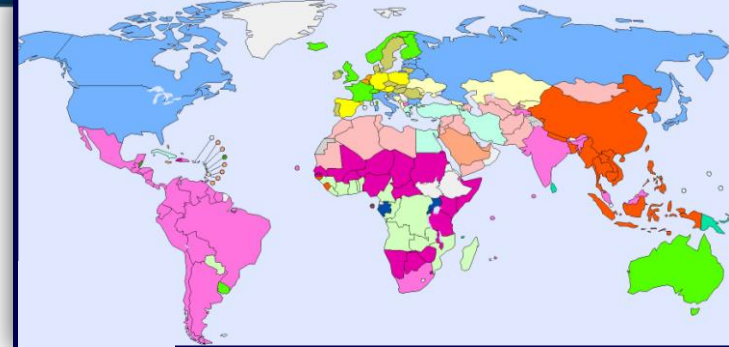
Global Environment Monitoring System (GEMS)/Food Cluster Diets

Cluster	Country	Cluster	Country	Cluster	Country	Cluster	Country	Cluster	Country
G01	Afghanistan	G03	Paraguay	G05	Mexico	G09	Democratic People's Republic of Korea	G13	Kenya
	Algeria		Togo		New Caledonia		Guinea Bissau		Malawi
	Azerbaijan		Zambia		Nicaragua		Indonesia		Mali
	Iraq	G04	Antigua and Barbuda		Panama		Lao People's Democratic Republic		Namibia
	Jordan		Bahamas		Peru		Myanmar		Niger
	Libya		Barbados		Seychelles		Nepal		Nigeria
	Mauritania		Brunei Darussalam		South Africa		Philippines		Senegal
	Mongolia		French Polynesia		Suriname		Sierra Leone		Somalia
	Morocco		Grenada		Tajikistan		Thailand		Sudan
	Occupied Palestinian Territory		Israel		The former Yugoslav Republic of Macedonia		Timor Leste		Swaziland
	Pakistan		Jamaica	Trinidad and Tobago	Viet Nam	United Republic of Tanzania			
	Syrian Arab Republic		Kuwait	Venezuela, Bolivarian Republic of		Zimbabwe			
	Tunisia		Netherlands Antilles						
	Turkmenistan		Saint Kitts and Nevis	G06	Armenia	G10	Belarus	G14	Comoros
	Uzbekistan		Saint Lucia		Cuba		Bulgaria		Fiji Islands
	Yemen		Saint Vincent and the Grenadines		Egypt		Canada		Kiribati
			Saudi Arabia		Greece		Croatia		Papua New Guinea
	United Arab Emirates	Iran, Islamic Republic of	Cyprus		Solomon Islands				
G02	Albania	G05	Argentina	Lebanon	Estonia		G15	Czech Republic	
	Bosnia and Herzegovina		Bolivia, Plurinational State of	Turkey	Italy			Denmark	
	Georgia		Brazil	Australia	Japan			Hungary	
	Kazakhstan		Cape Verde	Bermuda	Latvia			Ireland	
	Kyrgyzstan		Chile	Finland	Malta			Lithuania	
	Montenegro		Colombia	France	New Zealand	Portugal			
	Republic of Moldova		Costa Rica	Iceland	Republic of Korea	Romania			
Ukraine	Guatemala		Luxembourg	Russian Federation	Serbia and Montenegro				
G03	Angola		Dominican Republic	Norway	United States of America	Slovakia			
	Benin		Ecuador	Switzerland		Slovenia			
	Burundi		El Salvador	United Kingdom	G11	Sweden			
	Cameroon		Guyana	Uruguay	Belgium	Gabon			
	Congo		Honduras		Netherlands	Rwanda			
	Côte d'Ivoire		India	G08	Belize	Dominica	Uganda		
	Democratic Republic of the Congo		Malaysia		G13	Dominica			
	Ghana		Maldives			Botswana			
	Guinea		Mauritius	Burkina Faso					
	Liberia			Central African Republic					
	Madagascar		G09	Poland	Chad				
	Mozambique			Spain	Ethiopia PDR				
				Bangladesh	Gambia				
				Cambodia	Haiti				
			China						

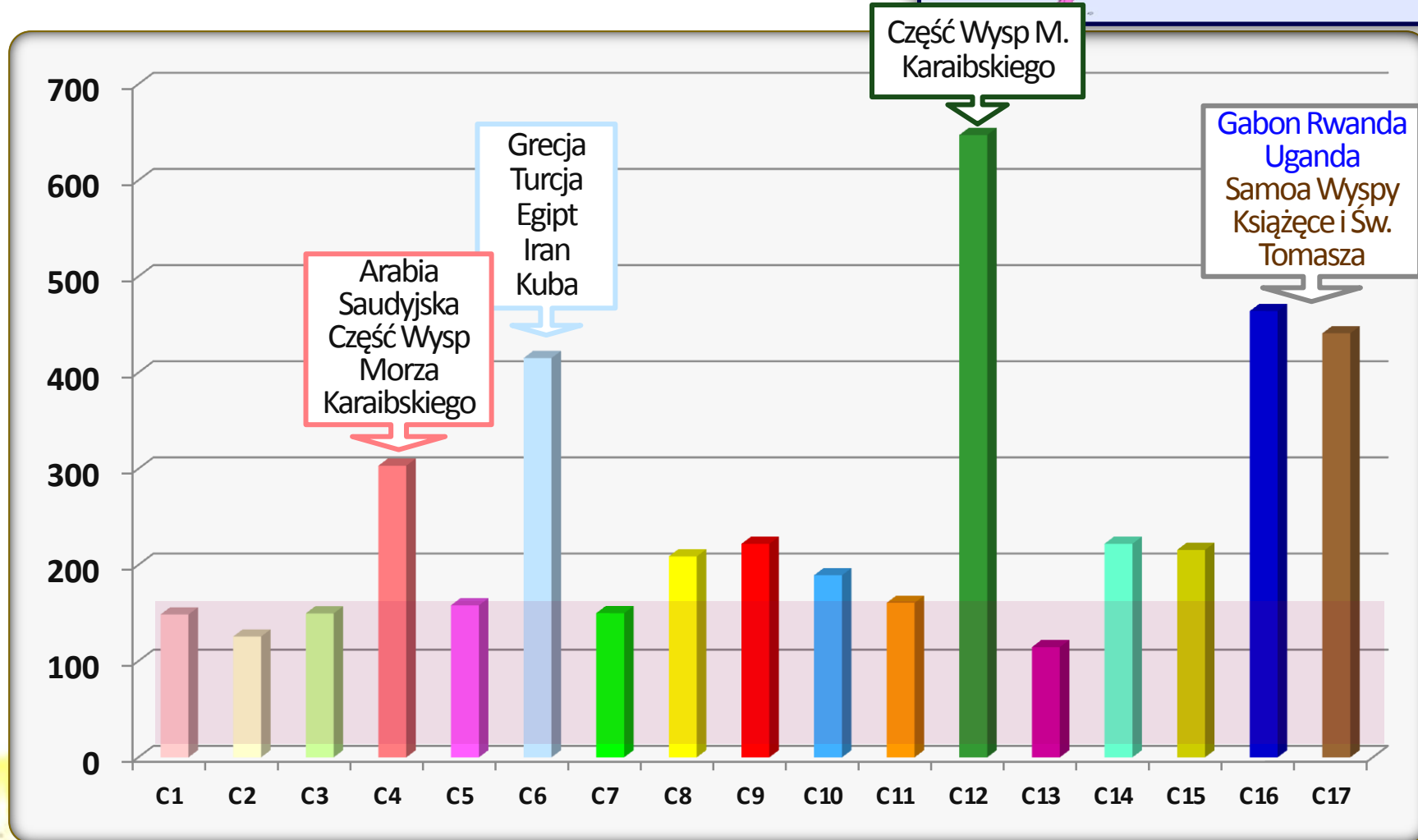
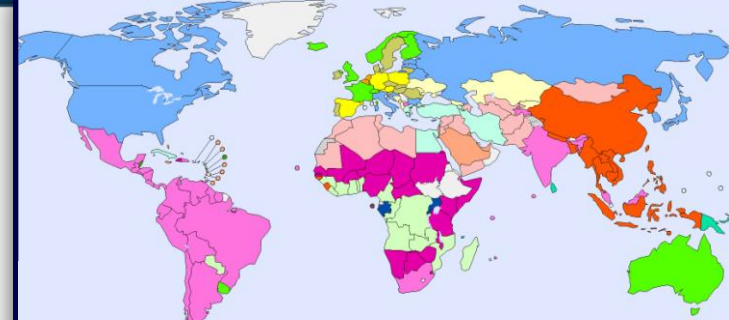
Spożycie warzyw i owoców (g/dobę)



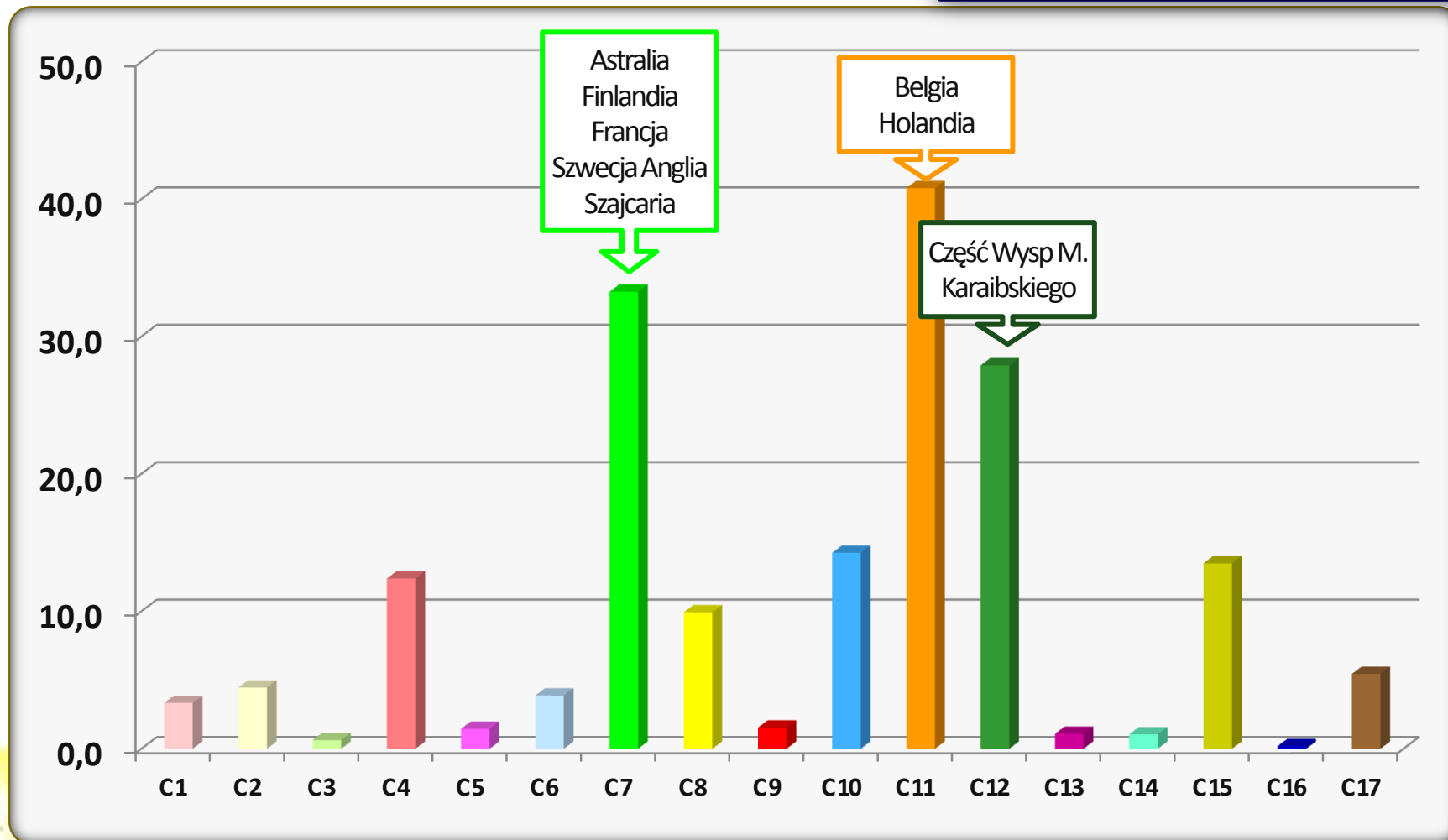
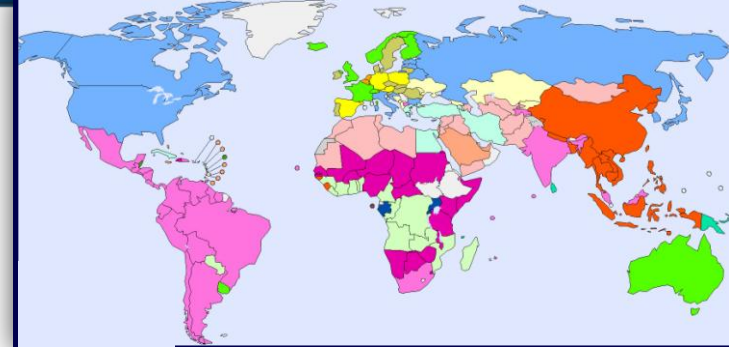
Spożycie warzyw (g/dobę)



Spożycie owoców (g/dobę)



Spożycie soków owocowych i warzywnych (g/dobę)



Global Variability in Fruit and Vegetable Consumption

Justin N. Hall, BScH, BPHE, Spencer Moore, PhD, MPH, Sam B. Harper, PhD, MPH,
John W. Lynch, PhD, MED, MPH

52 państwa

196 373 osoby dorosłe

Niskie spożycie warzyw i owoców:

● Mężczyźni:

Od 36,6% (Ghana) do 99,2% (Pakistan)

● Kobiety:

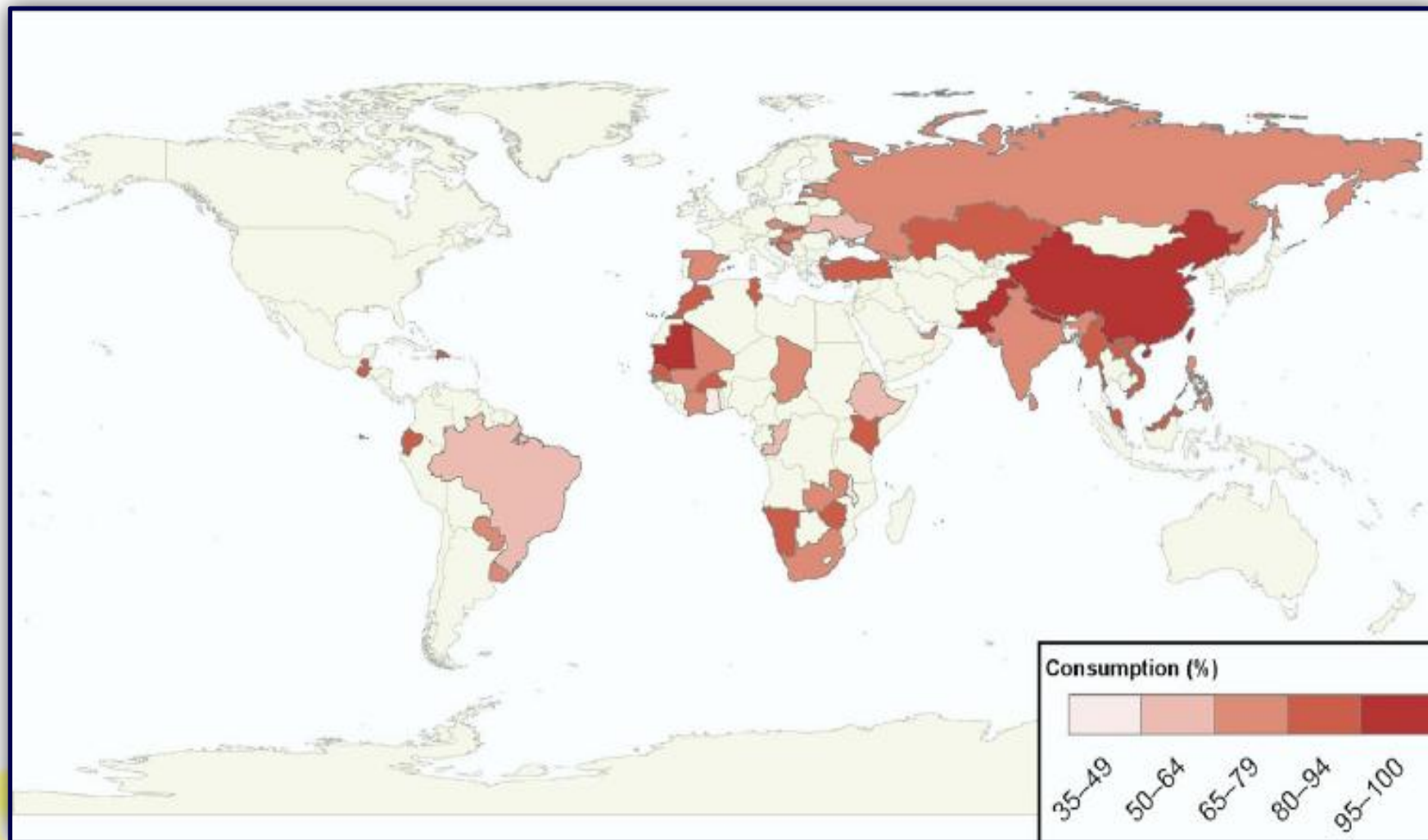
Od 38,0% (Ghana) do 99,3% (Pakistan)

● Średnio 77,6% mężczyzn i 78,4% kobiet z 52 krajów spożywa mniej niż 5 porcji warzyw i owoców (400 g)

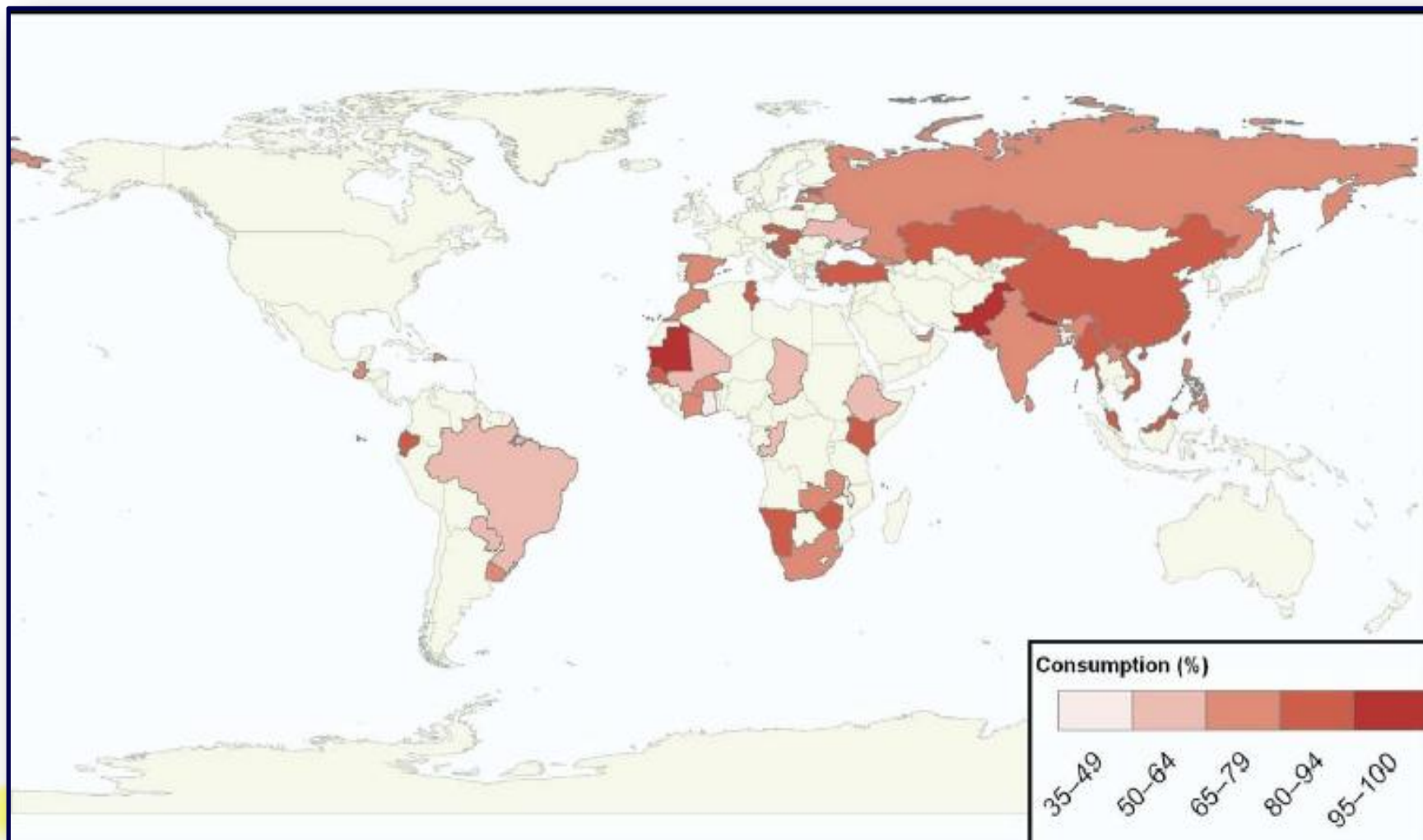
Table 1. Prevalence of low fruit and vegetable consumption, World Health Survey, 2002–2003

Country	% low consumption (95% CI)	
	Men	Women
Bangladesh	48.4 (45.8, 51.0)	45.6 (43.2, 48.0)
Bosnia and Herzegovina	84.4 (79.8, 89.0)	78.0 (72.4, 83.6)
Brazil	57.3 (52.4, 62.3)	59.3 (55.4, 63.2)
Burkina Faso	77.0 (74.5, 79.5)	82.1 (80.1, 84.0)
Chad	60.5 (57.6, 63.5)	65.3 (62.5, 68.0)
China	94.6 (93.1, 96.0)	96.8 (96.0, 97.5)
Comoros	66.7 (62.9, 70.5)	71.6 (68.3, 74.9)
Congo	61.9 (55.6, 68.2)	62.3 (56.5, 68.1)
Côte d'Ivoire	71.3 (68.4, 74.1)	70.4 (67.2, 73.6)
Croatia	90.0 (86.3, 93.7)	90.6 (86.6, 94.6)
Czech Republic	86.8 (80.9, 92.7)	76.0 (69.4, 82.6)
Dominican Republic	70.5 (67.2, 73.7)	80.0 (77.3, 82.8)
Ecuador	86.6 (83.9, 89.2)	88.1 (85.8, 90.5)
Estonia	85.1 (81.3, 88.9)	77.3 (73.3, 81.2)
Ethiopia	57.7 (54.0, 61.5)	64.1 (60.3, 67.9)
Georgia	77.4 (73.9, 80.9)	76.2 (73.3, 79.0)
Ghana	36.6 (33.8, 39.4)	38.0 (35.4, 40.5)
Guatemala	78.3 (76.3, 80.3)	81.0 (79.5, 82.6)
Hungary	84.0 (80.6, 87.3)	76.1 (72.0, 80.2)
India	74.4 (72.3, 76.4)	74.0 (71.9, 76.0)
Kazakhstan	92.3 (90.1, 94.5)	88.5 (85.2, 91.7)
Kenya	85.7 (82.8, 88.6)	87.9 (85.9, 89.9)
Laos	79.0 (77.0, 81.0)	81.8 (80.1, 83.4)
Latvia	73.0 (66.4, 79.5)	72.0 (66.6, 77.4)
Malawi	37.8 (34.8, 40.8)	42.2 (39.5, 44.8)
Malaysia	85.0 (83.3, 86.7)	85.5 (83.7, 87.2)
Mali	59.5 (55.9, 63.2)	68.3 (64.7, 72.0)
Mauritania	97.0 (95.8, 98.2)	98.5 (97.9, 99.2)
Mauritius	89.4 (87.8, 91.0)	89.6 (88.1, 91.1)
Morocco	79.4 (76.1, 82.6)	85.7 (83.4, 88.0)
Myanmar	82.7 (81.0, 84.4)	84.6 (83.2, 86.0)
Namibia	87.0 (84.6, 89.4)	88.3 (86.6, 90.0)
Nepal	98.1 (97.5, 98.7)	99.0 (98.7, 99.4)
Pakistan	99.2 (98.7, 99.7)	99.3 (98.8, 99.9)
Paraguay	61.9 (59.5, 64.3)	71.1 (69.0, 73.2)
Philippines	75.3 (73.2, 77.0)	76.7 (75.2, 78.3)
Russian Federation	79.5 (73.9, 85.1)	78.7 (75.1, 82.2)
Senegal	81.2 (78.0, 84.5)	83.1 (79.6, 86.6)
Slovakia	92.0 (87.8, 96.1)	83.1 (78.8, 87.4)
Slovenia	83.4 (78.8, 88.1)	70.8 (65.0, 76.6)
South Africa	72.2 (69.1, 75.3)	66.7 (63.0, 70.3)
Spain	78.0 (75.3, 80.8)	75.1 (72.8, 77.5)
Sri Lanka	68.0 (65.0, 71.0)	67.1 (64.3, 70.0)
Swaziland	63.8 (57.3, 70.3)	63.1 (59.0, 67.1)
Tunisia	95.0 (93.8, 96.1)	93.8 (92.6, 94.9)
Turkey	80.7 (79.1, 82.2)	81.3 (79.9, 82.8)
Ukraine	55.5 (51.2, 59.8)	50.3 (46.1, 54.6)
United Arab Emirates	77.8 (73.4, 82.1)	74.5 (69.0, 80.0)
Uruguay	75.9 (73.2, 78.5)	70.1 (66.7, 73.6)
Vietnam	86.7 (84.7, 88.8)	81.8 (79.6, 84.1)
Zambia	78.6 (76.0, 81.2)	77.5 (75.2, 79.7)
Zimbabwe	87.4 (85.3, 89.6)	85.5 (83.6, 87.3)

Odsetek kobiet spożywających warzywa i owoce w ilości poniżej 400 g/d (2002-2003)

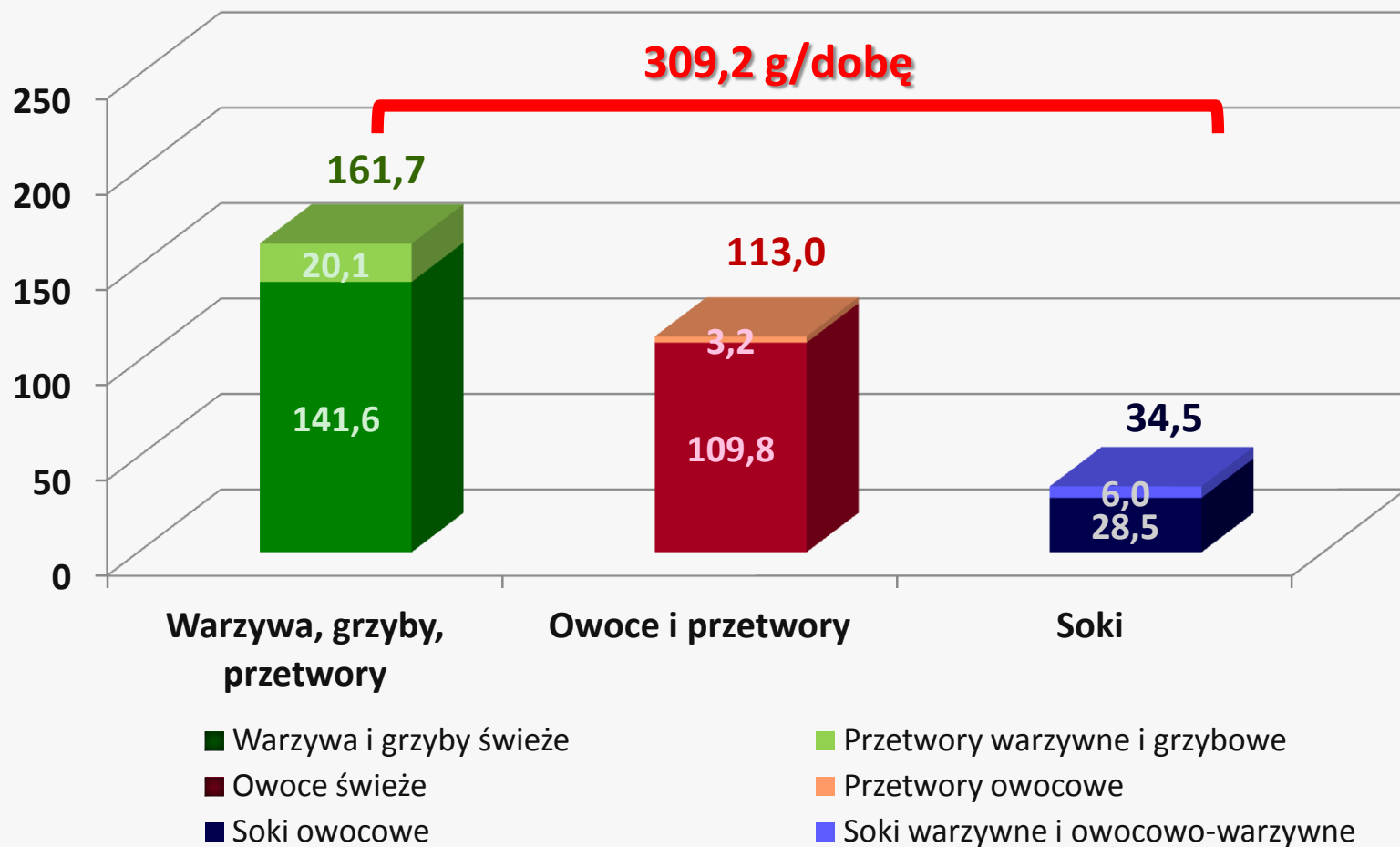


Odsetek mężczyzn spożywających warzywa i owoce w ilości poniżej 400 g/d (2002-2003)



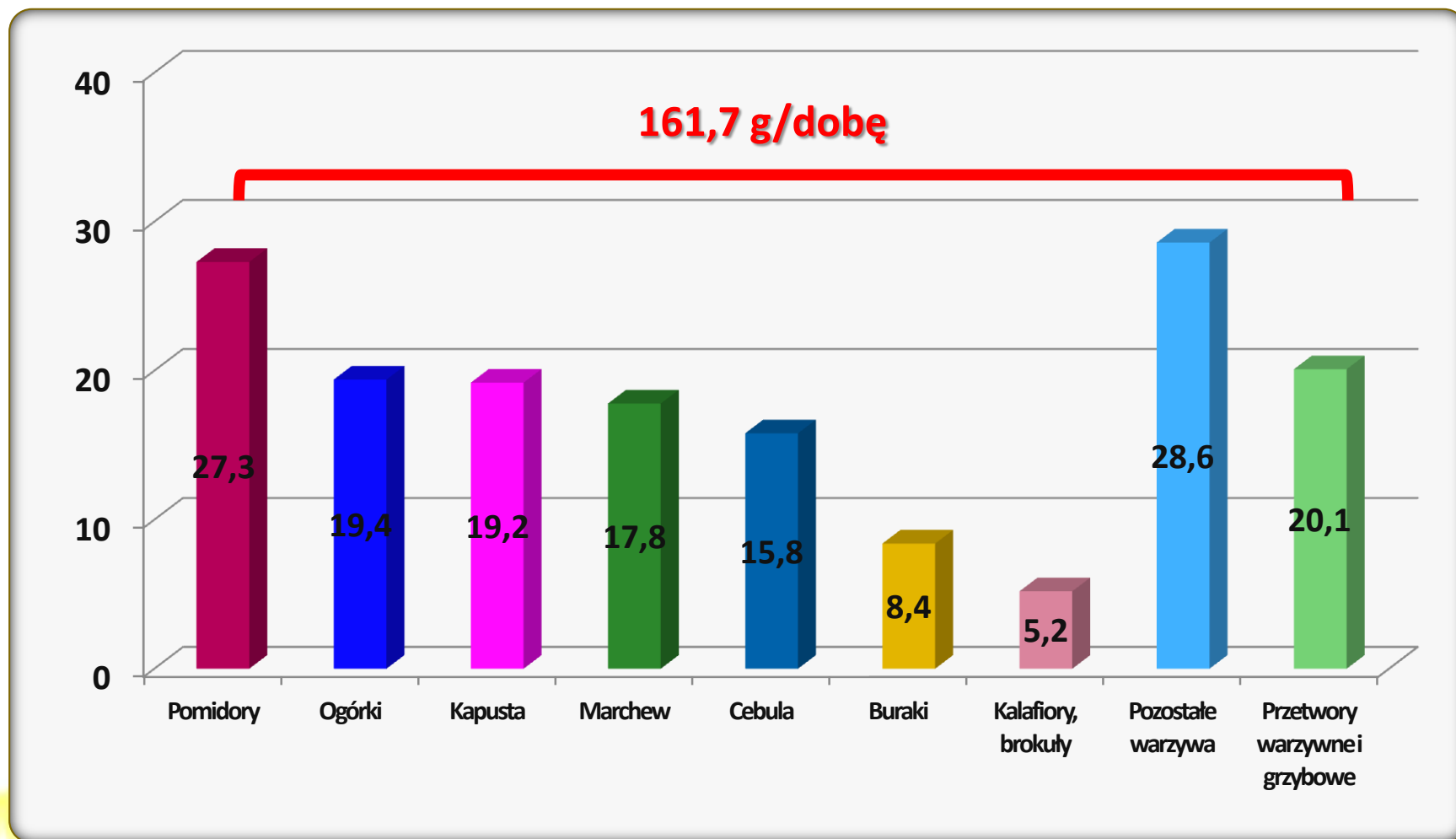
Spożycie warzyw i owoców - Polska

średnia za lata 2007-2011 (g/dobę)



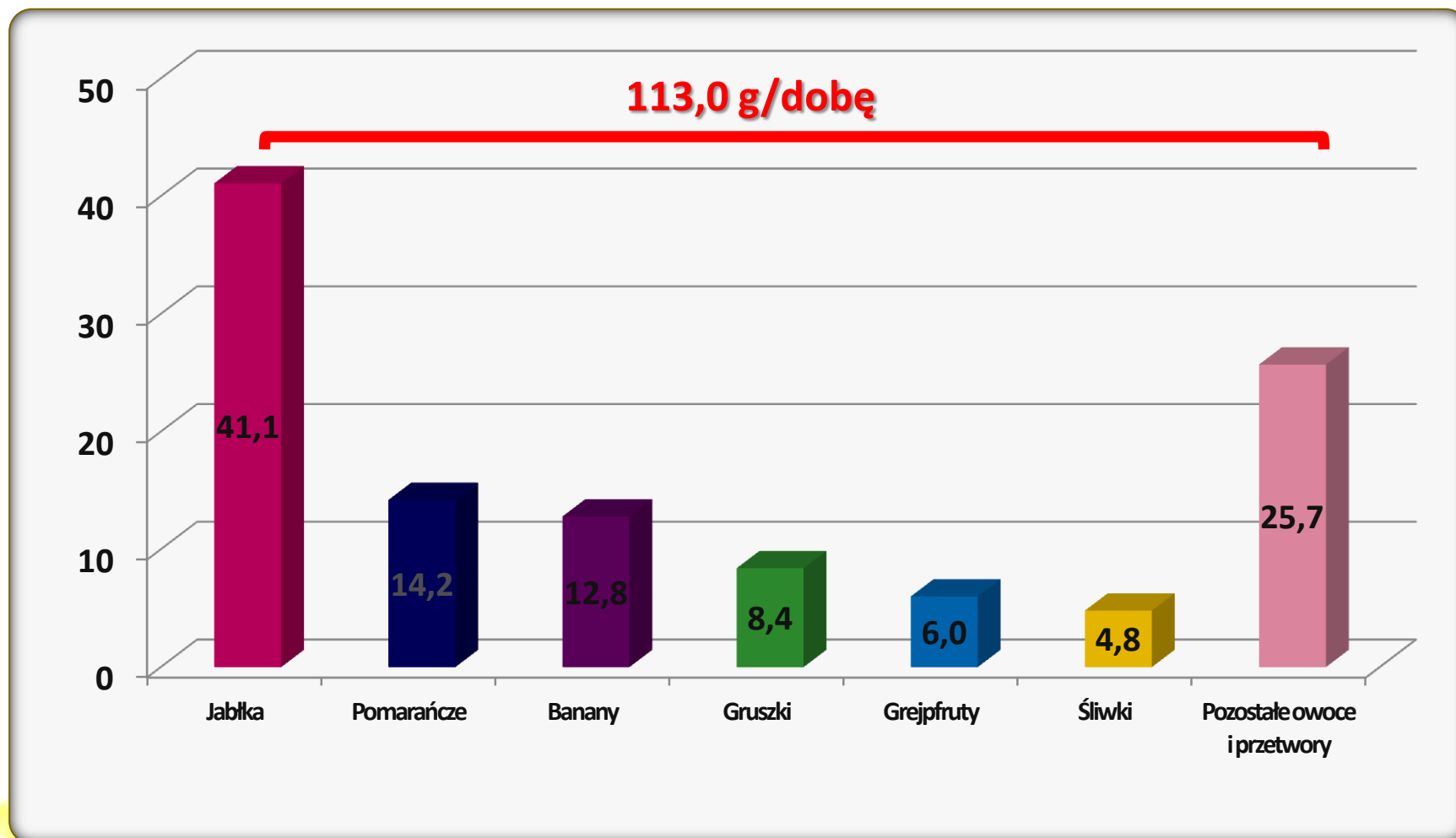
Asortyment spożywanych warzyw - Polska

średnia za lata 2007-2011 (g/dobę)

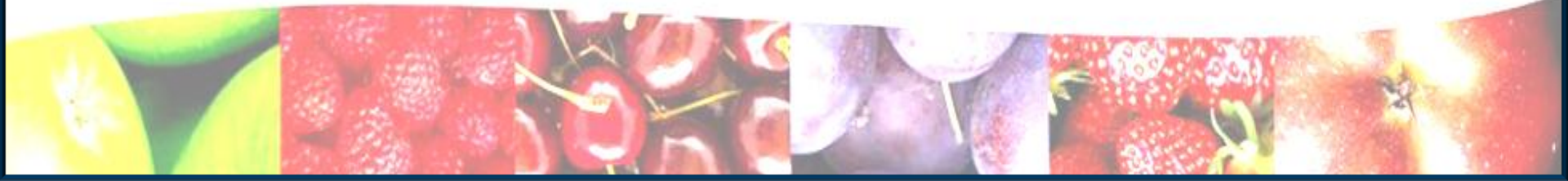


Asortyment spożywanych owoców - Polska

średnia za lata 2007-2011 (g/dobę)



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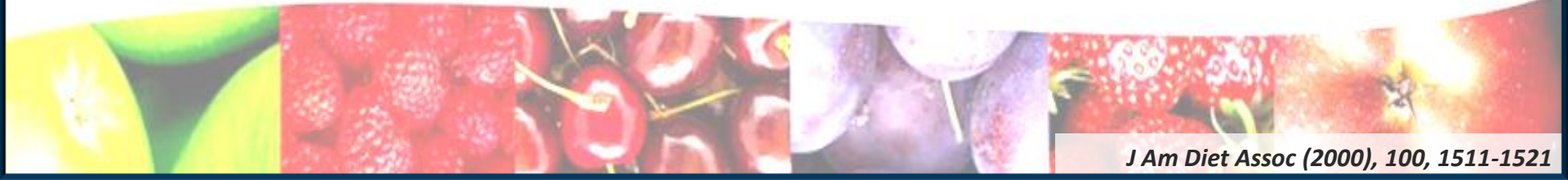


REVIEW

Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: Selected literature

MARY ANN S. VAN DUYN, PhD, MPH, RD; ELIZABETH PIVONKA, PhD, RD

Warzywa i owoce to produkty o bardzo zróżnicowanej zawartości różnych składników pokarmowych



Fitozwiązki

Funkcja

Występowanie

Owoce

Warzywa

Sulfides (allium)		
Diallyl sulfide	Stimulates anticancer enzymes, detoxifies carcinogens; antibacterial activity may inhibit conversion of nitrate to nitrate, thereby reducing formation of nitrosamines which are thought to be carcinogenic	x
Allyl methyl trisulfide	Stimulates anticancer enzymes, detoxifies carcinogens; antibacterial activity may inhibit conversion of nitrate to nitrate, thereby reducing formation of nitrosamines which are thought to be carcinogenic	x
Dithiolthiones	Increases activity of enzymes involved in detoxification of carcinogens and other foreign compounds	x
Carotenoids		
α-Carotene	Antioxidant; precursor to vitamin A inhibits cell proliferation	x
Beta carotene	Antioxidant; precursor to vitamin A; helps in differentiation of normal epithelial cells; inhibits cell proliferation	x x
Lutein	Antioxidant; protects against cataracts, macular degeneration	x
Lycopene	Antioxidant	x
Flavonoids		
Quercetin	Antioxidant; may reduce cell proliferation; extends action of vitamin C; inhibits blood clot formation; antiinflammatory action	x x
Kaempferol	Antioxidant; may reduce cell proliferation; extends action of vitamin C; inhibits blood clot formation; antiinflammatory action	x x
Tangeretin	Antioxidant; may reduce cell proliferation; extends action of vitamin C; inhibits blood clot formation; antiinflammatory action	x
Nobiletin	Antioxidant; may reduce cell proliferation; extends action of vitamin C; inhibits blood clot formation; antiinflammatory action	x
Rutin	Antioxidant; may reduce cell proliferation; extends action of vitamin C; inhibits blood clot formation; antiinflammatory action	x
Glucosinolates/Indoles		
Glucobrassicin	Forms indoles	x
Indoles	Protects against estrogen-promoted cancers, induces protective enzymes	x
Phytoestrogens		
Genistein	Antioxidant; inhibits growth of cancer cells; lowers blood cholesterol level and platelet aggregation	x
Biochanin A	Antioxidant; inhibits growth of cancer cells; lowers blood cholesterol level and platelet aggregation	x
Lignans	Antioxidant; may block or suppress cancerous changes	x x
Isothiocyanates		
Sulphorophane	Exceptionally potent inducer of detoxification enzyme	x
D-Limonene	Increases activity of glutathione transferase, a detoxification enzyme	x
Phytosterols	Protects against hormone-dependent cancers, slows colon cancer and growth	x
Protease inhibitors	Anticancer agent; suppresses enzyme action of cancer cells	x

Fitozwiązki

Funkcja

Występowanie

Owoce

Warzywa

Saponins	Anticancer activity; possibly by preventing tumor cell division; binds bile acids and cholesterol to help reduce cholesterol level		x
Phenols			
Chlorogenic acid	Prevents cancer-causing nitrosamines	x	x
Ellagic acid	Antioxidant; protects DNA from damage by carcinogens	x	
Caffeic acid	Prevents formation of carcinogens and blocks reaction of carcinogens with cells	x	
Coumarin	Increases activity of glutathione transferase, a detoxification enzyme	x	x
Catechin	Antioxidant	x	
Capsaicin	Antioxidant; prevents carcinogens from binding to DNA		x
Resveritrol	Antioxidant; protects against heart disease	x	
Anthocyanins	Antioxidant	x	x
Tannins	Prevents carcinogens from binding to target sites	x	x
Terpenes	Produces enzymes that deactivate carcinogens; prevents carcinogens from reacting with target sites; possibly prevents hormones that promote tumor growth	x	x
Dietary fiber	Binds to and dilutes carcinogenic substances; speeds carcinogens through digestive tract; helps control diabetes and high serum cholesterol level; may prevent diverticulosis	x	x
Vitamins/minerals			
Vitamin C	Antioxidant; reduces nitrite, thereby reducing formation of nitrosamines	x	x
Vitamin E	Antioxidant that protects polyunsaturated fatty acids in cell membranes from oxidation; assists with antioxidant capacity of selenium	x	x
Folic acid	Inadequate intake may lead to chromosomal damage at sites relevant to specific cancers; may also lead to reduced methylation of DNA, which may permit a loss of normal controls on the expression of genes	x	x
Potassium	May help prevent or control hypertension and reduce the subsequent risk of stroke and heart disease	x	x
Selenium	A cofactor for glutathione peroxidase, an enzyme that protects against oxidative tissue damage	x	x



British Journal of Nutrition (2012), **107**, 1119–1127

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doi:10.1017/S0007114511004235

Vitamin C and fibre consumption from fruits and vegetables improves oxidative stress markers in healthy young adults

Helen Hermana M. Hermsdorff¹, Kiriaque B. F. Barbosa², Ana Carolina P. Volp³, Blanca Puchau¹, Josefina Bressan⁴, M. Ángeles Zulet¹ and J. Alfredo Martínez^{1*}

Brazylia i Hiszpania

**246 zdrowych osób (88 mężczyzn i 158 kobiet), wiek 22 ± 3 lata
BMI $21,9 \pm 2,8$) kg/m²**

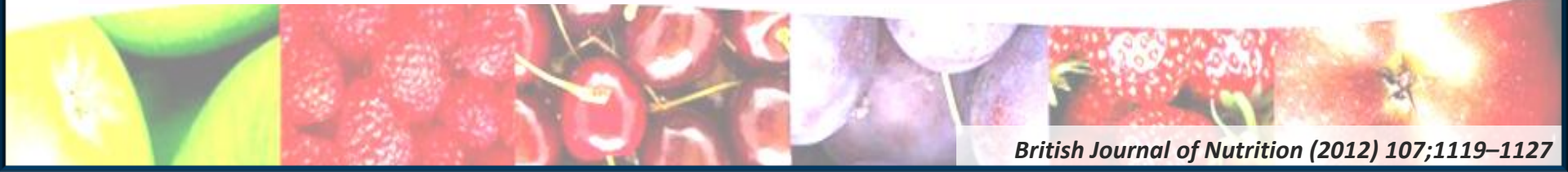


Table 4. Oxidative stress markers with respect to tertiles (T)* of energy-adjusted fruit and vegetable consumption†

(Mean values with their standard errors)

	TAC (mmol Trolox)		GPx activity (nmol/min per ml)		Ox-LDL (U/l)	
	Mean	SE	Mean	SE	Mean	SE
Energy-adjusted fruit intake						
T1 (<84 g/d)	1.09	0.08	595	29	62.2	3.1
T2 (84–311 g/d)	1.32	0.08	630	28	35.6	3.1
T3 (≥311 g/d)	1.43	0.10	653	22	38.3	3.3
P for trend	0.018		0.285		0.015	
Energy-adjusted vegetable intake						
T1 (<126 g/d)	1.06	0.08	595	29	62.0	3.1
T2 (126–394 g/d)	1.43	0.08	604	29	47.7	3.4
T3 (≥394 g/d)	1.50	0.10	671	21	29.9	2.6
P for trend	0.015		0.069		<0.001	
Energy-adjusted fruit and vegetable intake						
T1 (<210 g/d)	1.08	0.07	531	29	61.7	3.2
T2 (210–705 g/d)	1.30	0.08	633	27	42.2	3.1
T3 (≥705 g/d)	1.62	0.10	644	23	32.8	3.4
P for trend	0.019		0.017		<0.001	

TAC, total antioxidant capacity; GPx, glutathione peroxidase; ox-LDL, oxidised LDL.

* T1, n 82; T2, n 82; T3, n 82; GPx activity: T1, n 61; T2, n 62; T3, n 61.

† P for trend from the linear regression model, adjusted for study centre (Federal University of Viçosa, Viçosa, Brazil/University of Navarra, Pamplona, Spain), sex (male/female), age (years), BMI (kg/m²), daily energy intake (MJ/d), smoking habit (never/smoker/former), metabolic equivalent index (h/week) and vitamin supplement use (yes/no). Non-normally distributed variables were log-transformed before regression analyses.

Table 5. Oxidative stress markers with respect to tertiles (T)* of energy-adjusted dietary fibre and vitamin C from fruit and vegetable intake

(Mean values with their standard errors)

	TAC (mmol Trolox)		GPx activity (nmol/min per ml)		ox-LDL (U/l)	
	Mean	SE	Mean	SE	Mean	SE
Energy-adjusted fibre from fruit and vegetable intake						
T1 (<6 g/d)	1.03	0.08	521	26	61.3	3.4
T2 (6–14 g/d)	1.38	0.10	633	34	40.6	3.4
T3 (≥14 g/d)	1.58	0.08	671	22	29.8	2.6
P for trend†	0.009		0.099		0.001	
Energy-adjusted vitamin C from fruit and vegetable intake						
T1 (<60 mg/d)	1.05	0.08	537	28	61.7	3.0
T2 (60–150 mg/d)	1.34	0.8	631	26	44.5	3.3
T3 (≥150 mg/d)	1.58	0.10	670	25	36.0	3.4
P for trend†	0.001		0.001		0.001	

TAC, total antioxidant capacity; GPx, glutathione peroxidase; ox-LDL, oxidised LDL.

* T1, n 82; T2, n 82; T3, n 82; GPx activity: T1, n 61; T2, n 62; T3, n 61.

† P for trend from the linear regression model, adjusted for study centre (Federal University of Viçosa, Viçosa, Brazil/University of Navarra, Pamplona, Spain), sex (male/female), age (years), BMI (kg/m²), daily energy intake (MJ/d), smoking habit (never/smoker/former), metabolic equivalent index (h/week) and vitamin supplement use (yes/no). Non-normally distributed variables were log-transformed before regression analyses.

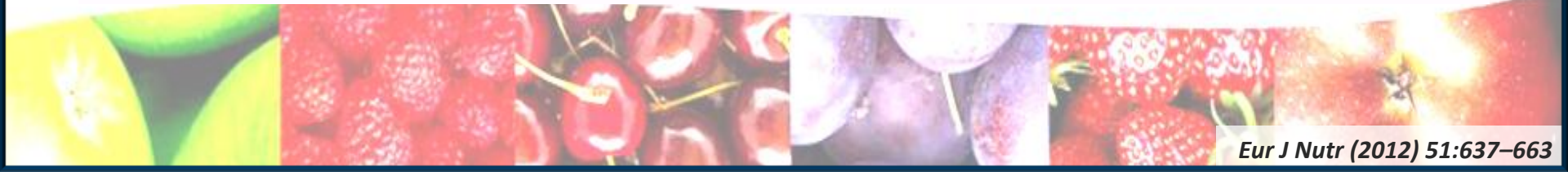
Eur J Nutr (2012) 51:637–663
DOI 10.1007/s00394-012-0380-y

REVIEW

Critical review: vegetables and fruit in the prevention of chronic diseases

Heiner Boeing · Angela Bechthold · Achim Bub · Sabine Ellinger ·
Dirk Haller · Anja Kroke · Eva Leschik-Bonnet · Manfred J. Müller ·
Helmut Oberritter · Matthias Schulze · Peter Stehle · Bernhard Watzl

Kompleksowa analiza badań i metaanaliz dostępnych w bazie danych NCBI PubMed do grudnia 2010 r.



Nazwa schorzenia	Siła dowodów naukowych			
	Przekonywujące	Prawdopodobne	Możliwe	Niewystarczające
Otyłość		o ^a	↓ ^b	
Cukrzyca typu 2		o		
Nadciśnienie tętnicze	↓			
Choroba wieńcowa	↓			
Udar	↓			
Nowotwory		↓		
Przewlekłe nieswoiste zapalenia jelit				~
Reumatoidalne zapalenie stawów			↓	
Przewlekła obturacyjna choroba płuc			↓	
Astma			↓	
Osteoporoza			↓	
Choroby oczu				
Zwyrodnienie plamki żółtej			↓	
Zaćma			↓	
Retinopatia cukrzycowa				~
Demencja			↓	

↓ - zmniejszenie ryzyka poprzez zwiększenie spożycia warzyw i owoców;

o – bez wpływu; ~ - niewystarczająca ilość danych; a – ubytek masy ciała; b – zwiększenie masy ciała



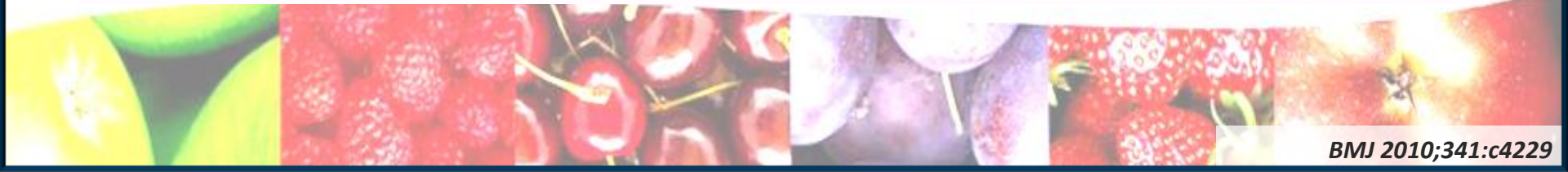
BMJ

RESEARCH

Fruit and vegetable intake and incidence of type 2 diabetes mellitus: systematic review and meta-analysis

Patrice Carter, research nutritionist,¹ Laura J Gray, research associate in medical statistics,² Jacqui Troughton, senior research associate,³ Kamlesh Khunti, professor of primary care diabetes and vascular medicine,² Melanie J Davies, professor of diabetes medicine¹

Kompleksowa analiza badań i metaanaliz dostępnych w bazach danych Medline, Embase, CINAHL, British Nursing Index (BNI), Cochrane do 2009 r.



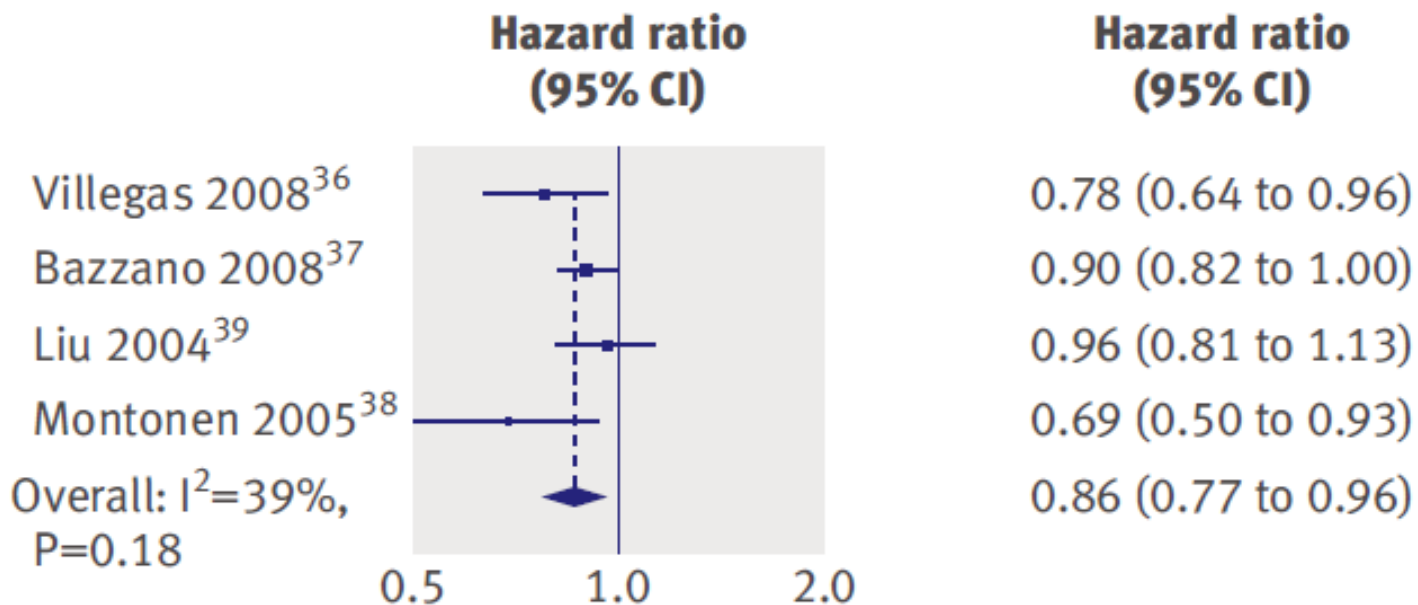


Fig 5 | Hazard ratios for incidence in diabetes type 2 for highest versus lowest intake of green leafy vegetables. Weights are from random effects analysis

Większe spożycie zielonych warzywach liściastych 1,35 porcji na dzień było związane z 14% redukcją ryzyka cukrzycy typu 2 ($p = 0,01$), (współczynnik ryzyka 0,86, 95% przedział ufności 0,77 do 0,97)



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Am J Med. Author manuscript; available in PMC 2008 March 10.

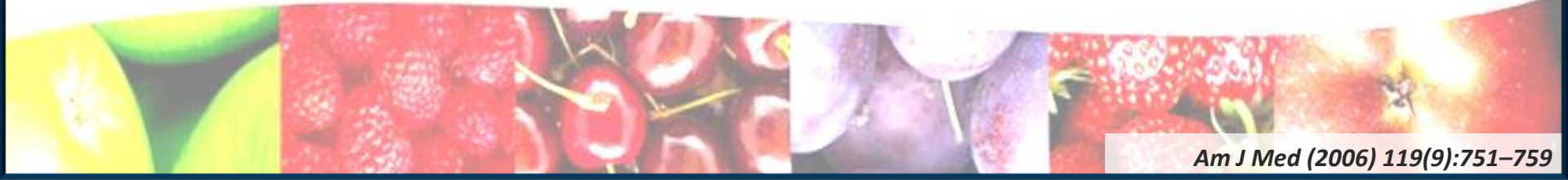
Published in final edited form as:

Am J Med. 2006 September ; 119(9): 751–759.

Fruit and Vegetable Juices and Alzheimer's Disease: The *Kame* Project

Qi Dai, MDPHD^a, Amy R. Borenstein, PhD^b, Yougui Wu, PhD^b, James C. Jackson, PsyD^{c,d,e}, and Eric B. Larson, MD, MPH^f

**1836 Japończyków mieszkających w 1991 r w Waszyngtonie,
badanie prospektywne 1992-2001**



Hazard Ratios for Incident Probable Alzheimer's Disease by Frequency of Intake of Tea, Sake, and Fruit and Vegetable Juices Among 1589 Subjects 65 Years and Older (the *Kame* Project 1992–2001)

	Intake frequency			P for Trend
	Less Often Than Weekly HR	1–2 Times per Week HR (95% CI)	3 Times or More per Week HR (95% CI)	
Fruit and vegetable juice				
Cases/unaffected	30/517	11/246	22/763	
Model 1 [*]	1.00	0.89 (0.44–1.79)	0.49 (0.28–0.86)	.01
Model 2 [†]	1.00	0.74 (0.28–1.94)	0.28 (0.13–0.63)	< .01
Model 3 [‡]	1.00	0.84 (0.31–2.29)	0.24 (0.09–0.61)	< .01
Tea drinking				
Cases/unaffected	9/306	8/165	46/1056	
Model 1 [*]	1.00	2.00 (0.76–5.24)	1.29 (0.63–2.64)	.69
Model 2 [†]	1.00	1.24 (0.37–4.22)	1.61 (0.64–4.05)	.29
Model 3 [‡]	1.00	1.49 (0.43–5.16)	1.70 (0.67–4.33)	.27
Wine (sake) drinking[§]				
Cases/unaffected	60/1412	0/45	2/54	
Model 1 [*]	1.00	0.49 (0.11–2.10)		
Model 2 [†]	1.00	0.10 (0.00–2.28)		
Model 3 [‡]	1.00	0.09 (0.01–1.43)		

HR = hazard ratio; CI = confidence interval.

* Adjusted for years of education in model 1.

† Additionally adjusted for gender, regular physical activity, body mass index, baseline CASI score, olfaction diagnostic group, total energy intake, intake of saturated, monounsaturated, and polyunsaturated fatty acids, ApoE genotype, smoking status, alcohol drinking, supplementation of vitamin C, vitamin E, and multivitamin, and tea drinking, and fruit and vegetable juice drinking in model 2.

‡ Further adjusted for dietary intake of vitamin C, vitamin E, and β -carotene in model 3.

§ Only two categories were used because the number of cases was too small in one category and alcohol drinking was not adjusted in the model.

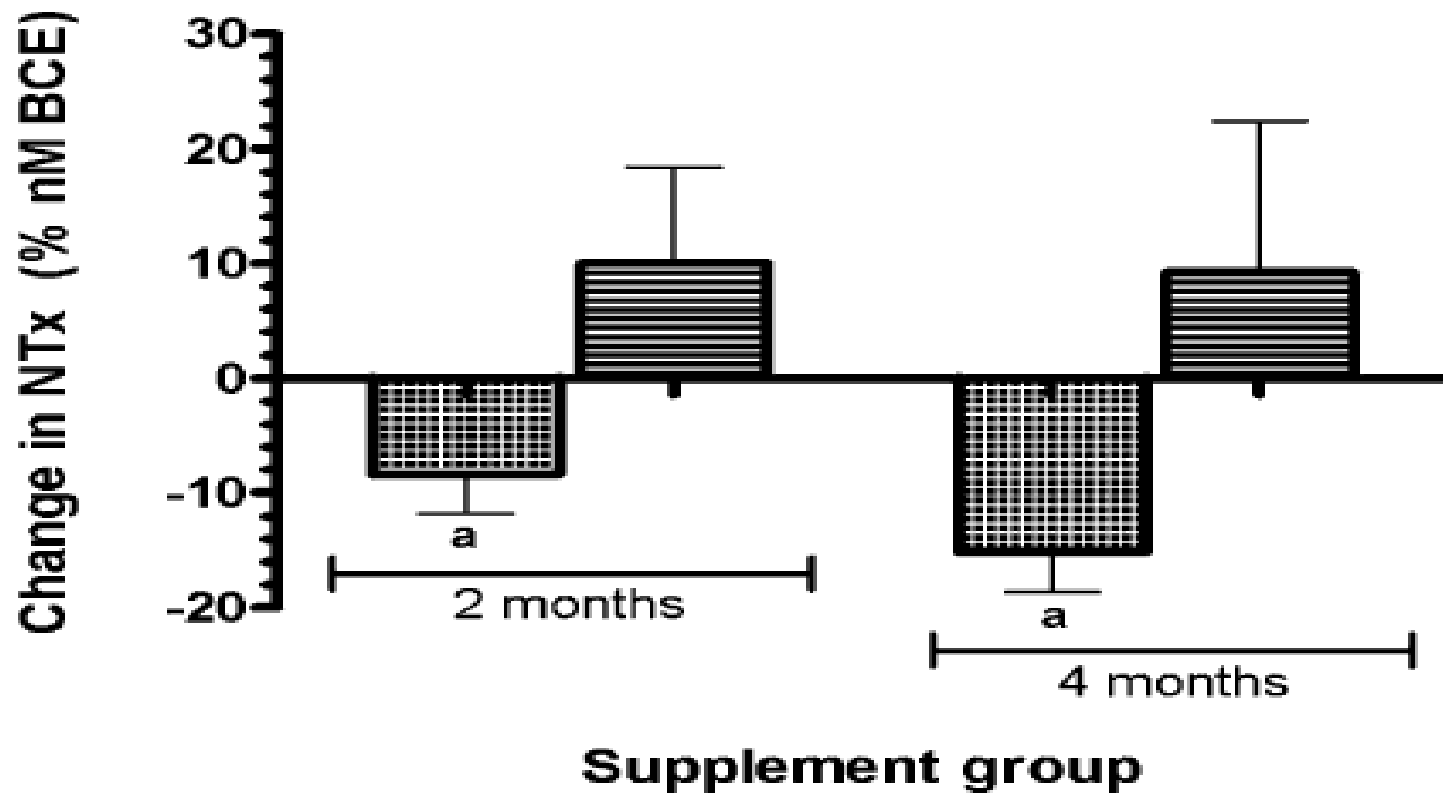
Supplementation with the antioxidant lycopene significantly decreases oxidative stress parameters and the bone resorption marker N-telopeptide of type I collagen in postmenopausal women

E. S. Mackinnon • A. V. Rao • R. G. Josse • L. G. Rao

60 kobiet (50 – 60 lat) Kanada

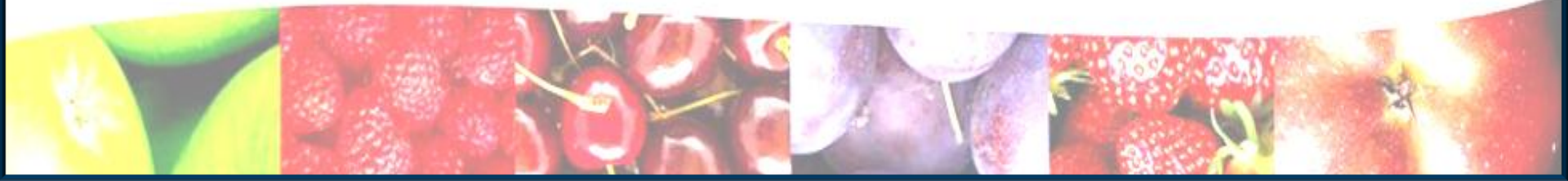
- **Grupy „LYCOPENE – supplementation”**
spożywały 2 razy dziennie sok pomidorowy (likopen 30 mg/d), sok pomidorowy bogaty w likopen (likopen 70 mg/d), likopen z pomidorów w kapsułkach (likopen 30 mg/d)
- **Grupa placebo – kapsułki bez likopenu i unikanie produktów bogatych w likopen**

LYCOPENE-supplemented
Placebo-supplemented



NTx - N-telopeptyd marker resorpcji kości (surowica krwi)

- 1. Skala problemu - przyczyny zgonów**
- 2. Spożycie warzyw, owoców i soków**
- 3. Spożycie warzyw i owoców a ryzyko rozwoju chorób**
- 4. Programy promujące zwiększenie spożycia
warzyw i owoców**



Top 10

[PDF](#)

Top 10 actions implemented

	Topic	Number of actions
1	Micronutrient supplementation	456
2	Health-related	424
3	Other non-health-related	379
4	Promotion of healthy nutrition, diet and lifestyle	303
5	Food fortification	294
6	Undernutrition	193
7	Breastfeeding	102
8	Complementary feeding	91
9	Nutrition and HIV	63
10	Overweight/obesity and healthy diets	48
11	Food security and agriculture-related	21

Policies in Poland

[Nutrition country profile \(NLIIS\)](#) | [Country statistics \(GHO\)](#) | [WHO country page](#)

<u>Policy</u>	<u>Start date</u>	<u>End date</u>
National Health Programme 2007-2015. Annex to the Resolution of the Council of Ministers No. 90/2007 of May 15th, 2007.	2007	2015
National prevention programme of overweight, obesity and noncommunicable diseases through diet, and physical activity improvement	2007	2011
National Programme for the Prevention of Overweight, Obesity and Non-Communicable Diseases through Diet and Improved Physical Activity	2007	2016

Nazwa państwa	Nazwa programu	Podejmowane działania	Adres strony internetowej
Argentina	<i>5 al día</i>	Event sponsorship, seminars, partnership with horticulture sector	www.5aldia.com.ar
Australia (Western Australia)	Go for 2 and 5	Mass media campaign including television advertisements and kids in kitchen television series, cookbooks, consumer literature. School canteen accreditation (STARCAP), school fruit and vegetable week, under-five daycare scheme, low-income project (food cents)	www.gofor2and5.com.au
Canada	5 to 10 a day	Three-year media campaign including television, radio stations, and print media. Information materials distributed to health offices, schools, grocery retail stores and dieticians	www.5to10aday.com
Denmark	<i>6 om dagen</i> , School fruit programme	Media campaign and educational material, worksite interventions, subscription school fruit scheme	www.6omdagen.dk www.frugtkvarter.dk
France	<i>10 par jour</i>	Newsletters, media campaigns, recipes	www.10parjour.net
Hungary	3 a day	Started in 1997 as a partnership funded both by agriculture and health. Target groups: children, young people and housewives. Activities include supermarket promotions, cooking shows, taste-testing at school, advertising and public relations materials.	www.kertnet.hu/Hungaria_nHorticulture/gb/129s.htm
Germany	<i>5 am tag</i>	Campaigns, published literature	www.5amtag.de
Japan	<i>Vegefru-7</i>	Started in 2002 as a partnership between government (agriculture, education) and the Japan Produce Alliance for Better Health (producers, retailers, industry). Dietary education tool distributed to classrooms, supermarket tours, harvesting tours, communications strategy and materials	www.vf7.jp
Mexico	<i>5 x día</i>	Formation of <i>Fundacion Campo Y Salud Organisation</i> , communications strategy	www.cincopordia.com.mx
Netherlands	2+2	Interactive website for children, recipes, communication strategy	www.vgf.info
New Zealand	5 a day	National media campaign, 5+ a day week, 5+ a day school programme, various projects	www.5aday.co.nz

Nazwa państwa	Nazwa programu	Podjęmowane działania	Adres strony internetowej
Norway	<i>5 om dagen</i> , school fruit programme	Subscription school fruit scheme	www.frukt.no/ www.skolefrukt.no
Poland	5 a day	National campaign co-organized between cancer centres and private sector (producers, processors, retailers). "5 a day" promotion activities in kindergarten, primary and secondary schools	
Spain	<i>5 al día</i>	Information campaign, activities for children, symposia, events with agricultural sector	www.5aldia.com
Sweden	<i>5 om dan</i>	Series of activities involving health, nutrition, education and commercial sectors	www.fruktogront.se
Switzerland	<i>5 am tag/ par jour/ al giorno</i>	Consumer information, media campaign, food giveaway sessions in public places	www.swisscancer.ch/fr/content/violett/nationprogramm/5amtag_aktivitaeten.php
United Kingdom of Great Britain and Northern Ireland	5 a day	Communications programme including media campaigns and written information, school fruit scheme, local "5 a day" community projects and local project workers, work with retail sector applying "5 a day" logo to foodstuffs	www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/FiveADay/fs/en
Uruguay	<i>5 por día</i>	Series of activities involving health, nutrition, education and commercial sectors	www.mercadomodelo.net/programa.php
United States of America	5 a day (Produce for Better Health Foundation)	Public/ private partnership, communications strategy, "5 a day" week, endorsement of "5 a day" logo.	www.5aday.com
	5 to 9 a day for better health (National Cancer Institute)		www.5aday.gov/

**Program „5 porcji warzyw owoców lub soku III”
organizowany przez
Stowarzyszenie Krajowa Unia Producentów Soków
sfinansowany ze środków
Funduszu Promocji Owoców i Warzyw**

