

La santé des adolescents aux Seychelles: L'impact d'une société en transition

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The Republic of the Seychelles



- 80'000 inhabitants
- 90% black African decent
- 90% live on the main island (Mahé)
- 75% of workers are employed in services
- GDP per capita rose from US\$ 600 in 1976 to US\$ 8492 in 2004

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La santé des enfants et des adolescents aux Seychelles Partie 1: alcool, tabac et cannabis

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Background

- high prevalence of
 - smoking and
 - drinking
- but only in men
- 51% of men and 6% of women reported drinking at least once per week (1994)
- 31% of men and 4% of women reported smoking daily (2004)

Sources: *Afr J Drug Alcohol Stud* 2000, 1:3-20. *Arterioscler Thromb* 1991, 11:1730-1736. *Alcohol Alcohol* 1999, 34:773-785.

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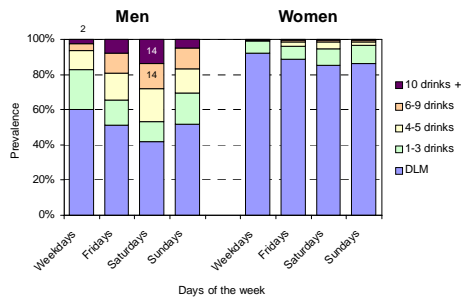
Background

- Use of heroin or cocaine are very rare (very few police cases or hospital admissions)
- Use and possession of cannabis and other drugs is prohibited and liable to severe penalties.
- Alcohol drinking is common at the occasion of social events and there has been a long standing social tolerance, at least among men

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Background



- Proportion drinking largely too much 'RF of CVD' (≥ 6 drinks per day) reaches 30% on Saturdays
- Proportion drinking moderately 'Preventive factor' is small, at 10-20% of men and ~10% of women

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Background

- Prohibition of sale of alcohol and cigarettes to children younger than 18 years
- Both alcohol and cigarettes are heavily taxed and expensive
- Advertising for cigarettes is banned while advertising for alcohol beverages is limited
- Use of tobacco or alcohol is prohibited in all schools and severely sanctioned
- High-profile awareness campaigns related to smoking, illegal drugs and responsible drinking were conducted

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Background

- The Global Youth Tobacco Survey (GYTS): international school-based survey of tobacco in adolescents aged 13-15 years
- The survey took place at the same time in all selected 52 classes
- English questionnaire: GYTS (56 q) plus additional questions (15 q), anonymous, self-administered

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Background

- Smoking in the past month: "During the past 30 days, on how many days did you smoke cigarettes?"
- Ever smoking: "Have you ever tried cigarette smoking, even one or two puffs?"
- Drinking in the past month: "During the past 30 days, on how many days did you drink alcohol?"
- Ever drunkenness: "Have you ever had so much alcohol that you were drunk?"
- Ever cannabis: "Did you ever take a joint, marijuana, or hashish in your life?"
- Cannabis in the past year: "During the past 12 months, how many times did you take a joint, marijuana, or hashish?"

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Background

- Four secondary grades (S1-S4), students (11-17 y)
- 12 schools (10 public, 2 private)
- Total enrollment 6'161
- 1'453 eligible students
- 1'321 participants ("present students", 90.9%)
 - 121 were not present at school ("absent students")
 - 105 the 121 were traced and filled in the questionnaire

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Background

- Absent students:**
- Teacher were asked on the names of students absent on that day ("absent students")
 - Absent students were located within the next four weeks by approaching them at school (or at home)
 - Absent students were informed about the survey and invited to complete the questionnaire at school (or at home)
 - Absent students dropped their questionnaire into a box that included other questionnaires to ensure confidentiality.

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Comparison of Smoking, Drinking, and Marijuana Use Between Students Present or Absent on the Day of a school-Based Survey

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- 2) Ministry of Health and Social Services, Victoria, Republic of Seychelles
- 3) Office on Smoking and Health, National Centre for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, USA

J Sch Health. 2006 Apr;76(4):133-7.

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Aim

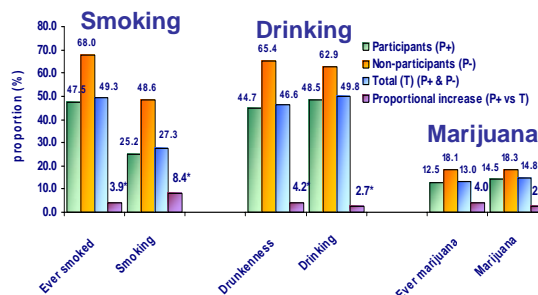
- Non-response can potentially introduce a bias in the results
- Bias due to non-response has mainly been assessed in adults
- Prevalence of risk behaviors is generally higher in non-participants than participants
- Findings have are not consistent
- Compare the prevalence of smoking, drinking, and marijuana use among students present and absent at school on the day of the survey
- Examine if and how the survey estimates are altered upon inclusion of data from absent students

Sources: Am J Epidemiol. 1989; 130(6):1088-1100. J Clin Epidemiol. 1996; 49(12):1441-1446. Am J Epidemiol. 1987; 125(2):329-339.

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Distribution of risk behaviors by participation status and impact on estimates



P<0.001

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Odds ratios (OR) with 95% CI for risk behaviors by participation status, sex and age: Smoking

	Smoking in past month			Ever smoking		
	OR	CI	P	OR	CI	P
Present students	1			1		
Absent students	2.55	1.69-3.86	0.001	2.06	1.33-3.21	0.001
Girls	1			1		
Boys	1.54	1.19-1.99	0.001	1.67	1.34-2.09	0.001
Age 11-13	1			1		
Age 14	1.25	0.90-1.72	ns	1.62	1.24-2.12	0.001
Age 15-16	1.91	1.42-2.56	0.001	2.68	2.05-3.51	0.001

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Odds ratios (OR) with 95% CI for risk behaviors by participation status, sex and age: Drinking

	Drinking in past month			Ever drunkenness		
	OR	CI	P	OR	CI	P
Present students	1			1		
Absent students	1.71	1.12-2.59	0.012	2.19	1.44-3.36	0.001
Girls	1			1		
Boys	1.09	0.88-1.36	ns	1.22	0.98-1.53	0.066
Age 11-13	1			1		
Age 14	1.12	0.86-1.46	ns	1.33	1.02-1.74	0.034
Age 15-16	2.01	1.55-2.60	0.001	2.05	1.58-2.65	0.001

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Odds ratios (OR) with 95% CI for risk behaviors by participation status, sex and age: Marijuana

	Marijuana in past year		
	OR	CI	P
Present students	1		
Absent students	1.33	0.77-2.27	ns
Girls	1		
Boys	2.49	1.76-3.52	0
Age 11-13	1		
Age 14	0.85	0.55-1.33	ns
Age 15-16	1.82	1.26-2.63	0.001

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Conclusions

- Prevalence of smoking, drinking, and marijuana use was higher in students absent than present on the day of a school-based survey
- Despite a participation rate of above 90%, the prevalence of these behaviors increased upon inclusion of data from absent students
- Prevalence of risk behaviors in school-based surveys can be underestimated despite high participation in surveys

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Clustering of Smoking, Alcohol Drinking and Cannabis Use in Adolescents in a Rapidly Developing Country on estimates in the base population

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BMC Public Health, in press

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Background

- Smoking, drinking and use of illegal substances in adolescents increased risk of chronic diseases at an older age
- These risk behaviors are also associated with more immediate health hazards such as
 - depression,
 - interpersonal violence,
 - motor vehicle crashes and drowning,
 - risky sexual behaviors, and
 - suicidal behavior
- Behaviors initiated during adolescence tend to track into adulthood
- In western countries: shown that these behaviors tended to cluster in adolescence and perhaps even at an earlier age
- Also of importance, these behaviors increase the likelihood to adopt other risk behaviors at a later age, such as multiple substance use, violence and delinquency

Sources: *J Subst Abuse* 2001, 13:265-282. *Drug Alcohol Depend* 1993, 33:129-137. *J Adolesc Health* 2001, 28:465-473. *Arch Pediatr Adolesc Med* 1999, 153:286-291

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Prevalence (percent with their 95% CI) of students reporting risk behaviors, by sex and age

	Age	11-13 years		14 years		15-17 years		Total	
		n	% 95% CI	n	% 95% CI	n	% 95% CI	n	% 95% CI
Boys	n	257		160		203		620	
Ever smoking		46	38 to 54	53	45 to 61	67	60 to 73	54	50 to 59
Smoking in the past month		27	20 to 35	24	18 to 31	38	30 to 45	30	26 to 34
Drinking in the past month		45	38 to 59	40	35 to 46	63	56 to 69	49	45 to 54
Ever drunkenness		40	33 to 47	44	35 to 53	58	50 to 66	47	42 to 61
Ever cannabis		15	10 to 22	15	11 to 21	29	23 to 37	20	17 to 22
Cannabis in the past year		15	10 to 19	12	8 to 18	26	20 to 33	17	15 to 20
Girls	n	274		193		187		654	
Ever smoking		30	24 to 36	44	36 to 52	56	50 to 62	41	38 to 45
Smoking in the past month		15	10 to 22	23	18 to 29	28	22 to 35	21	18 to 25
Drinking in the past month		41	34 to 48	47	39 to 55	58	49 to 65	48	43 to 52
Ever drunkenness		35	29 to 42	44	37 to 51	52	45 to 60	43	39 to 47
Ever cannabis		6	4 to 9	6	3 to 12	16	12 to 21	9	7 to 11
Cannabis in the past year		6	4 to 10	5	2 to 11	12	9 to 18	8	6 to 10

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Prevalence (percent with 95% CI) of students reporting combinations of smoking in the past month (S), drinking in the past month (D) and cannabis use in the past year (C) by sex and age. Y: Yes, N: No

	Age	S	D	C	n	11-13 years		14 years		15-17 years	
						%	95% CI	%	95% CI	%	95% CI
Boys	N	N	N	226	41	34-49	44	36-52	24	18-30	
	Y	N	N	31	5	3-9	5	2-10	5	3-10	
	N	Y	N	135	20	15-27	18	13-24	27	20-35	
	N	N	Y	14	2	1-4	4	2-9	2	1-6	
	Y	Y	N	58	9	6-13	10	7-15	9	6-14	
	N	Y	Y	12	2	1-4	1	0-5	3	1-7	
	Y	N	Y	11	1	0-3	1	0-5	4	2-7	
	Y	Y	Y	54	7	4-11	5	2-11	14	10-20	
Girls	N	N	N	286	50	43-57	43	36-50	35	27-43	
	Y	N	N	20	3	1-7	3	1-7	4	2-8	
	N	Y	N	180	25	20-32	28	21-35	31	25-38	
	N	N	Y	19	4	2-8	4	2-7	1	0-4	
	Y	Y	N	72	7	4-13	14	10-20	13	9-18	
	N	Y	Y	5	1	0-3	1	0-4	1	0-4	
	Y	N	Y	4	<1	0-3	1	0-4	1	0-4	
	Y	Y	Y	28	3	1-6	3	1-8	8	5-13	

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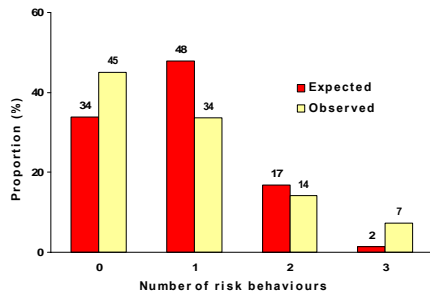
Joint prevalence of risk behaviors by sex

	n	Smokers			Drinkers			Cannabis users		
		Yes (%)	No (%)	Ratio	Yes (%)	No (%)	Ratio	Yes (%)	No (%)	Ratio
Smoking in the past month										
Boys	164	100	-	-	43	16	2.7	76	20	3.8
Girls	130	100	-	-	35	8	4.7	75	17	4.5
Total	294	100	-	-	39	11	3.4	75	18	4.1
Drinking in the past month										
Boys	304	71	39	1.8	100	-	-	76	44	1.7
Girls	309	81	39	2.1	100	-	-	77	45	1.7
Total	613	76	38	2.0	100	-	-	77	44	1.7
Cannabis in the past year										
Boys	105	42	6	7.6	26	8	3.2	100	-	-
Girls	49	26	2	11.4	12	3	3.7	100	-	-
Total	154	35	4	9.3	20	6	3.5	100	-	-

Prevalence of risk behaviors by "Yes" vs. "No" status differed significantly (p<0.05) in all instances. Smokers: smoking in the past month; Drinkers: drinking in the past month; Cannabis users: Cannabis use in the past year.

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Prevalence of expected and observed combinations of risk behaviors (smoking, drinking and cannabis use)



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Prevalence of risk behaviors in adolescents in Seychelles and in selected countries: smoking

	Age (y)	Proportion (%)		
		Boys	Girls	Total
Ever smoking				
Seychelles	11-17	54	41	48
South Africa (a)	13-15	-	-	44
England ^c	11-15	37	41	39
USA ^a	14-18	59	58	58
Switzerland ^a	15	64	64	64
At least 1 cigarette in the past month				
Seychelles	11-17	30	21	25
South Africa (a)	13-15	-	-	18
USA	11-15	30	35	28
England ^d	14-18	11	17	14
Switzerland	15	22	21	21

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Prevalence of risk behaviors in adolescents in Seychelles and in selected countries: drinking

	Age (y)	Proportion (%)		
		Boys	Girls	Total
At least 1 drink in the past month				
Seychelles	11-17	49	48	48
South Africa (b)	13-15	50	32	-
USA	11-15	44	46	45
England	14-18	37	39	38
Switzerland	15	77	74	75
Ever drunkenness				
Seychelles	11-17	47	43	45
USA ²	13-15	29	28	28
England ³	11-15	42	50	46
Switzerland	14-18	64	53	58

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Prevalence of risk behaviors in adolescents in Seychelles and in selected countries: cannabis

	Age (y)	Proportion (%)		
		Boys	Girls	Total
Ever used cannabis				
Seychelles	11-17	20	9	14
South Africa (b)	13-15	32	13	-
USA	11-15	43	38	40
Switzerland	14-18	44	36	40
Cannabis use in the past year				
Seychelles	11-17	17	8	12
South Africa (b)	13-15	22	9	-
USA	11-15	25	19	22
England	14-18	12	10	11
Switzerland	15	35	28	31

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- *Seychelles: n=1,321, 2002. £England: n=9,572, 2004, reference [1]; \$USA: n=15,214, 2003, reference [2]. &Switzerland: n= 2,613, 2004, reference [3]. South Africa (a): n=2,579, 2002, reference [4]; South Africa (b): Cape Town, n =2,732, 1997-2001, reference [5].

1. Regular occasional smoking.
2. At least 5 drinks in a row.
3. Among students who drank in the past week.

1. National Centre for Social Research/National Foundation for Educational Research. Smoking, drinking and drug use among young people in England in 2004. 2004.
2. Grunbaum JA, Kann L, Kinchen S, Ross J, Hawkins J, Lowry R, Harris WA, McManus T, Chyen D, Collins J: Youth risk behavior surveillance—United States, 2003. *MMWR Surveill Summ* 2004, 53:1-96.
3. Hibell B, Andersson B, Bjarnason T, Ahlström S, Balakireva O, Kokkevi A, Morgan M. The ESPAD Report 2003. Alcohol and Other Drug Use Among Students in 35 European Countries. The Swedish Council for Information on Alcohol and Other Drugs (CAN) and the Pompidou Group at the Council of Europe. Stockholm, Sweden, 2004.
4. Tobacco use among youth: a cross country comparison. *Tob Control* 2002, 11:252-270.
5. Parry CD, Myers B, Morojele NK, Flisher AJ, Bhana A, Donson H, Pluddemann A: Trends in adolescent alcohol and other drug use: findings from three sentinel sites in South Africa (1997-2001). *J Adolesc* 2004, 27:429-440.

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Conclusion

- Smoking, drinking and cannabis use are common among adolescents of a rapidly developing country
- These risk behaviors are adopted at an early age and tend to cluster
- Our findings stress the need to initiate prevention interventions at an early age and using integrated approaches

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