

Adolescent Therapeutics: Health Literacy and Use of OTC Products

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Outline

- Goal of presentation
 - BPCA2002 and BPCA2007 at NIH
 - Use of OTC medications by adolescents
 - Assessment of sources of information and health literacy
 - Research gaps – we need to hear from you!

Evolution of BPCA

- BPCA 2002
 - Catalog off-patent drugs
 - Identify those used in children
 - Characterize dosing, efficacy, safety
 - Expert consultation for prioritization
 - Collaborate with FDA, ICs prepare WR
 - Implement studies
- BPCA 2007
 - Identify needs in pediatric therapeutics with ICs, FDA and experts
 - Develop proposed pediatric study requests (PPSR)
 - Send PPSR to FDA
 - FDA prepares WR
 - WR sent to Industry
 - If WR declined by industry referred to NIH
 - Implement studies

Using OTCs

- Using OTCs provides individuals with confidence about regulating their health
- Self-medication with OTC drugs usually begins during early adolescence and increases with age
 - Begins at 11 – most by 16
 - Younger ages for those with chronic diseases
 - Asthmatics at ~9
- Adolescents and young adults may not self-medicate correctly or effectively

Adolescent Medication Use

- Studies in Australia, Brazil, Denmark, England, US suggest
 - More frequent use of analgesics among adolescent females
 - Analgesic use generally increases with age in adolescents
 - Medication use for nervousness and sleeping more frequent among females
 - Differences noted by ethnicity, sex, age, SES and other factors
- Evaluated self reported medication use in past month
 - Survey 28 countries (123,227 participants) among 11, 13, and 15 yo
 - headache, stomachache, nervousness and difficulty sleeping
 - WHO Survey instrument – Health Behavior in School Aged Children (HBSC – conducted in 97-98)
- Medication
 - Anything perceived by respondent as therapeutic whether prescription, OTC, family remedy

Medication use in past month

(medication = therapeutic whether Rx, Family remedy, OTC)

Symptom	Boys (USA)	Girls (USA)
Headache	21.1 – 49.9% (48.9%)	28.3 – 65.9% (65.9%)
Stomachache	5.1 – 26.9% (20.5%)	10.3 – 43.0% (34.6%)
Difficulty sleeping	1.5 – 18.7% (8.4%)	1.4 – 11.9% (10.4%)
Nervousness	1.1 – 20.4% (5.3%)	0.7 – 14.8% (5.7%)

Table 3. Prevalence of Students who Used Medicine During the Past Month, by Gender and Age^a

Symptom	Boys (n = 60 291)				Girls (n = 62 936)			
	11 y	13 y	15 y	p Value	11 y	13 y	15 y	p Value
Headache	33.6	36.2	37.4	0.001	39.6	46.8	53.4	0.001
Stomachache	18.1	14.4	12.0	0.001	21.8	26.6	34.1	0.001
Difficulties in getting to sleep	9.0	5.6	4.8	0.001	7.5	5.4	5.9	0.001
Nervousness	9.2	5.8	5.0	0.001	8.1	5.9	6.8	0.001

^aPercentage of total population.
p Values from Cochran's test for linear trend.

Agreement Between Parents and Childrens Reports of Medication Use

- Validity of childrens reports of medication use not evaluated
 - Validity has been demonstrated for reports of food intake, smoking, physical activity and alcohol use
- Evaluate parents – childrens reports of medication use – 11 and 13 yo
- Used data from WHO-HBSC Validation study 2005 in Denmark
- Medication in WHO-HBSC
 - Anything perceived by respondent as therapeutic whether prescription, OTC, family remedy

Table 2. Prevalence of Medicine Use for Each of the 5 Complaints^a

Complaint	11-Year-Olds (%)		13-Year-Olds (%)		Total (%)
	Boys	Girls	Boys	Girls	
Headache					
child-reported	41.3	35.6	37.2	50.9	41.5
parent-reported	37.5	28.9	41.5	39.3	36.7
Stomachache					
child-reported	15.2	8.9	8.8	21.1	13.7
parent-reported	3.8	7.9	2.2	16.5	8.2
Difficulties in getting to sleep					
child-reported	17.5	10.1	6.6	9.4	10.6
parent-reported	1.3	0	1.1	2.8	1.3
Nervousness					
child-reported	14.8	6.1	4.4	4.7	7.2
parent-reported	1.2	0	1.1	1.9	1.1
Asthma					
child-reported	11.3	7.1	14.1	11.2	10.9
parent-reported	3.8	9.1	12.0	7.5	8.2

^aMatched data; n = 393.

Agreement Between Child and Parent

Symptom	Percent Agreement
Headache	64.6
Stomachache	85.3
Difficulty sleeping	88.3
Nervousness	91.8
Asthma	91.3

Comparison Across Time

(percent use in last month)

	2002 (11 and 13 yo)	2005 (11 and 13 yo)
Headache	40.4	41.5
Stomachache	15.0	13.7
Difficulty Sleeping	4.2	10.6
Nervousness	3.7	7.2

Andersen 2006, 2007

Comparison Rx vs OTC

Dutch Adolescents 15 – 17 yo

Use in past 14d

	Girls	Boys
Rx	20.2%	10.9%
OTC	44.8%	23.6%

Table 2. OTC Drug Use According to Gender and School Year

Use of Analgesics	1st Year				4th Year			
	Boys		Girls		Boys		Girls	
	N	%	N	%	N	%	N	%
Never	209	31.3	112	19.6	208	30.4	61	11.0
Few times a year	323	48.4	300	52.5	329	48.1	250	45.0
About once a month	111	16.6	138	24.2	115	16.8	204	36.8
About every week	19	2.8	19	3.3	22	3.2	37	6.7
About every day	6	0.9	2	0.4	10	1.5	3	0.5
TOTAL	668	100.0	571	100.0	684	100.0	555	100.0

OTC = over-the-counter.

- Analgesic use among adolescents in Belgium
- Ages 13.2, 16.4 y, acetaminophen, aspirin, ibuprofen, naproxen
- TV viewing, not internet or video games, positively associated with analgesic use

Dysmenorrhea in Adolescence

- Prevalence of primary dysmenorrhea in adolescence – 60%-79%
 - Increases with age 12 y(48%) – 18 y(79%)
- Most common treatments NSAIDs
 - Effectiveness in dysmenorrhea reported to be >60%
- Medication use reported between 38% - 80%
 - 61% of adolescents report using medications

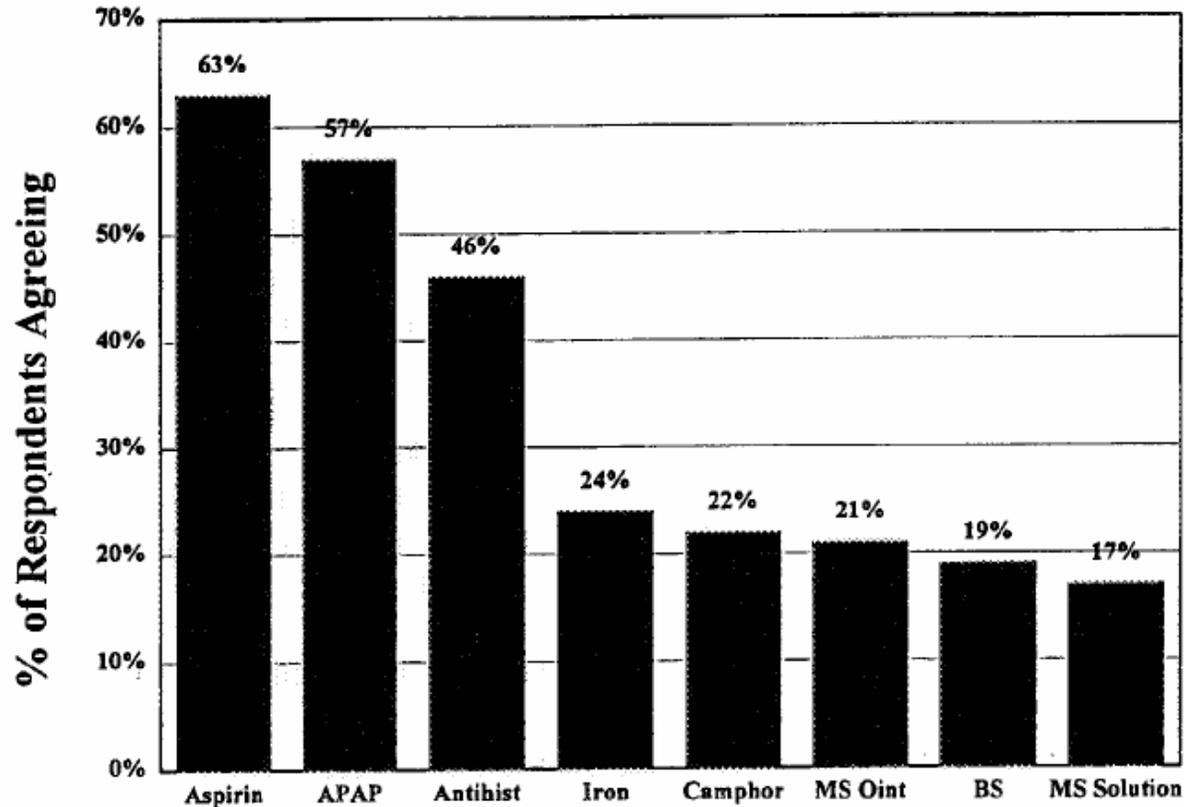
Analgesic use for Dysmenorrhea

- Dysmenorrhea in at least one of last three cycles
 - 93% reported dysmenorrhea
 - Mild 50%, Moderate 43%, Severe 5%
 - Lasting > 1day 85%
 - 70% used analgesic
- Medications used (Canada)
 - 66% combination of ASA, ibuprofen, acetaminophen
 - Combination or alone
 - ASA 55%, ibuprofen 42%, acetaminophen 95%
 - Codeine (8 mg) combination (behind the counter) 20%
 - Ibuprofen also behind the counter in some provinces

Analgesic use for Dysmenorrhea

- 30% with dysmenorrhea did not use analgesic
 - 1/3 of those had moderate to severe dysmenorrhea
- Among those using analgesics
 - Only 1/3 consumed the recommended dose
 - 56% consumed less frequently than recommended
 - 6% consumed dose/frequency > recommended

Adolescents Knowledge of OTC Toxicity



■ **FIGURE 1.** Bar graph of percentage of adolescents correctly predicting those over-the-counter (OTC) medications believed potentially lethal in overdose. APAP = acetaminophen; Antihist = antihistamine; MS Oint = methylsalicylate ointment (presented as Ben Gay); BS = bismuth subsalicylate (presented as Pepto-Bismol); MS Solution = methyl salicylate (presented as oil of wintergreen).

Many adolescents appear unaware of the toxicity of OTCs

Health Literacy

- Defined in HP2010
 - *The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions*
- Elements of Health Literacy from National Health Education Standards include
 - Critical thinking and problem solving
 - Responsibility and productivity
 - Self-directedness
 - Effective communication

Reading about OTCs

- Assessed factors related to label reading among adolescents
 - 876 HS and College students
- Participants purchasing analgesics were more likely to read label
- Information sought included; symptoms treated, ingredients, dosing, side effects

Reading about OTCs

- Medications purchased
 - cold and flu medications (53%)
 - ibuprofen (49.9%)
 - aspirin (49.2%)
 - cough medications (44.8%)
 - vitamins (36.5%).
- 46% reported spending their own money to buy OTC medications
- 84% had purchased 2 or more OTC medications independently in the last three months.
- 75% reported that they read labels and package inserts.
- Reasons for reading labels
 - learning about how to take the medication (31.5%)
 - side effects (18.8%)
 - symptoms affected or treated by the medication (14.4%)
 - medication ingredients (10.7%).

Adolescents and Internet

- Adolescents acknowledged users of internet – access and use increase with age and SES
- Quality and relevance of health information on internet major concern
- 2003 ~ 2/3 of adult population used web, ~2/3 of those sought health information
- 2003 adolescents less likely to use web for health information – of those searching for health information ~4% were adolescents

Sources of health information

Source	Which do you learn most about health	Where would you go to find information
Internet	8.5%	12.0%
School	40.2%	21.0%
Parents	12.4%	30.5%
Health Professional	29.4%	29.2%

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A substantial proportion of adolescents in this study inappropriately used OTC medication for dysmenorrhea. This is probably true for most OTC medications. So what are we going to do about it?

Catherine D. DeAngelis
comment on study by
Campbell 1997