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Education in Over the Counter Medications, for High School Freshman

Joint Project by Ian Crane and Gurpinder Gill

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Danbury, Connecticut

Project Mentor: Tricia Harrity and Daniel Pearson (AHEC Representatives)

Problem: Over the Counter Medications, Risks and Benefits

Over the counter medications offer numerous benefits, allowing short term treatment of symptoms, and reducing unnecessary Doctor's visits for things like viral illness:

- Research shows that 81 percent of adults in the United States use OTC medicines as a first response to minor ailments.
- In a survey of U.S. primary care physicians, 75 percent would recommend an OTC product prior to prescribing a medicine to relieve their patients' symptoms for ailments such as allergies, pain, cough and cold, and acid reflux/upset stomach.

Yet these medications also have potential for *misuse*....

Medication Misuse: "Incorrect use of a medication by patients, who may use a drug for a purpose other than that for which it was prescribed, take too little of too much of a drug, take it too often, or take it too long." --as defined by Substance Abuse and Mental Health Services Administration (SAMHSA).

Current Challenges of OTC use and misuse:

- OTC medications such as acetaminophen require strict adherence to dosing, as severe toxicity (ie: fulminant liver failure) can occur with supratherapeutic dosing.
- Use of OTC can unnecessarily delay seeking medical care.
- Repeated use of over the counter analgesics and decongestants lead to rebound headaches and congestion, potentially exacerbating the original problem.
- Certain OTC medications such as Dextromethorphan, found in Robitussin are capable of producing psychotropic effects: hallucinations, dissociation, euphoria etc.
- Youth populations in particular may lack the autonomy and judgment to appropriately use over the counter medications.

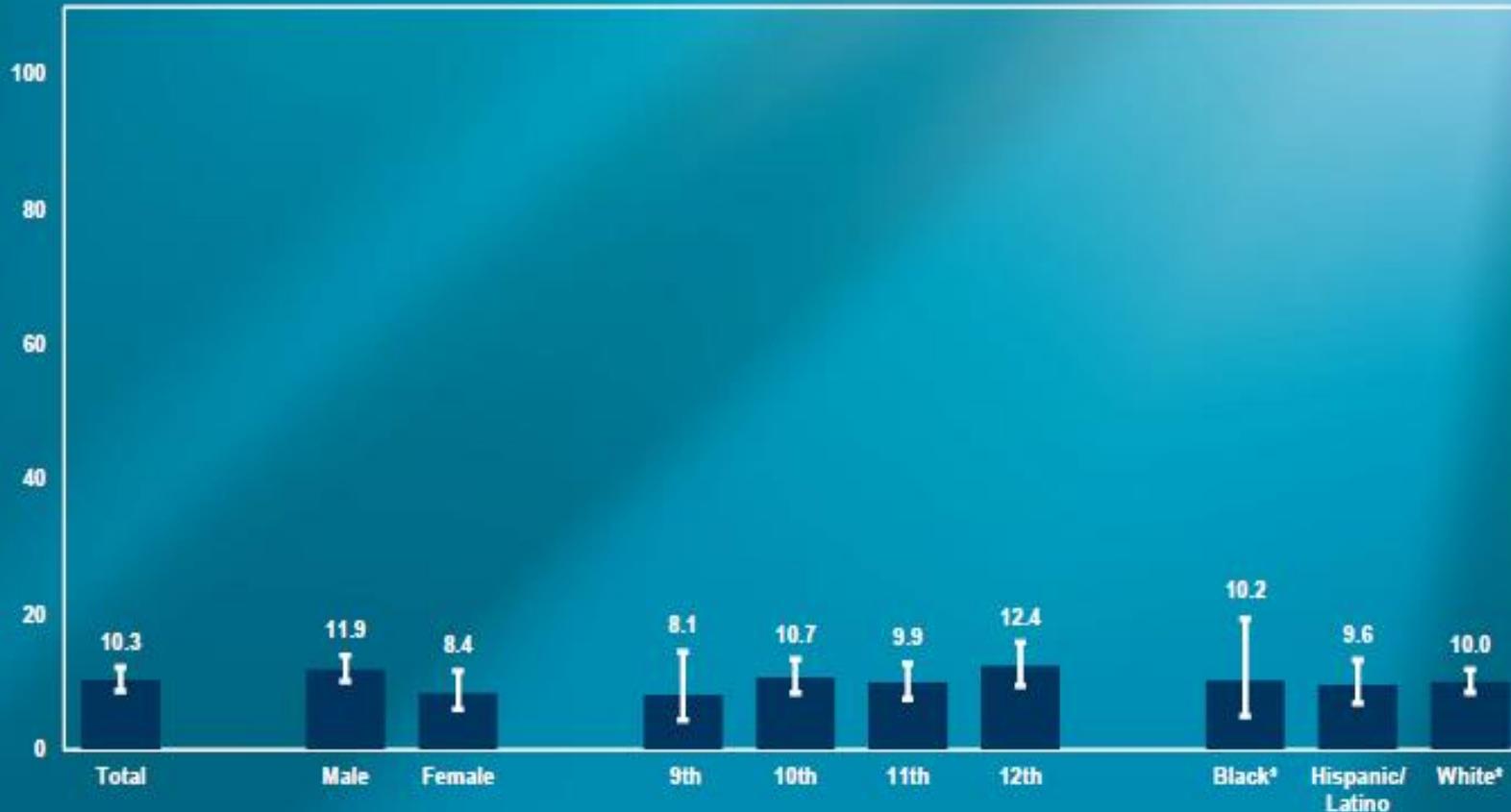
Public Health Cost: Misinformation & Misuse of Over the Counter Medications

Results from the following studies demonstrate the numerous health costs incurred by OTC medication misuse:

- More than 3 million youth in the US (age 12-25) are thought to have used OTC cough and cold medications non-medically in 2006.
- OTC cough and cold remedies were misused by 4% of 8th graders, 5% of 10th graders, and 6% of 12th graders in 2007, in the United States.
- From 1999 to 2004, US poison control centers reported a 7-fold increase nationwide in the abuse of dextromethorphan, the active ingredient in cough and cold medicine. Most of these cases were among 15- and 16-year-olds.
- A Swedish study published in 2012 show increased prevalence of Medication Overuse Headaches(MOH) in populations with lower level of education, and limited contact with healthcare professionals.
- From 1998 to 2003 acetaminophen overdose was the leading cause of acute liver failure in the united states.
 - According to the FDA, acetaminophen overdose accounted for 56,000 emergency room visits, 26,000, hospitalizations and 458 deaths between 1990-1998.
- **Roughly 10% of Danbury High School students abused OTC medications in 2013.**

Connecticut High School Survey

Percentage of students who have taken over-the-counter drugs to get high one or more times during their life



Results from the Youth Behavior Component of the Connecticut School Health Survey, produced by the Connecticut Department of Public Health.

Community perspective

- Interview with [Name Withheld], 9th grade teacher at Henry Abbot Technical Highschool:
 - Is of the opinion that children at the 9th grade level are early in the development health-behavior related autonomy.
 - Does not feel that most students practice self-directed pro-health behaviors such as healthy eating and exercise; and that if they do, extrinsic influences are more responsible for this behavior.
 - Has seen 9th graders bring OTC analgesics to school and use them for reported symptom relief.
 - Denies any direct interaction with students about personal health concerns.
 - Has heard anecdotal reports of children abusing OTC medications at this high school.
 - Feels that children do get exposure to significant preventive health topics while in school, but that there is room for further emphasis.
 - Feels as though much benefit can be gained from education regarding OTC medications.
- Interview with [Name Withheld], Pharm D, Brookfield CVS:
 - Describes epidemiologic role of pharmacies in monitoring purchasing trends of all pharmaceuticals to assess for possibility of abuse.
 - Is of the opinion that Pseudoephedrine is the most commonly abused OTC medication—which has lead to requirement for individual registration of every purchase.
 - Describes that instruction on possibility of OTC interactions is given to an individual any time a prescribed medication is filled.
 - Reports youth to rarely if ever consult her, and that the population most frequently in contact with her are the elderly.
 - Feels as though acetaminophen toxicity is the most concerning risk associated with OTC misuse, often occurring via mixing of two products –“OTC med cocktails “--by individuals that do not realize they are taking two products containing acetaminophen.

Intervention/Methodology

- We delivered a 10 minute presentation on OTC medications to a class of ~20 high school Freshman at Henry Abbot Technical High School, in Danbury ,CT. Students were in this class because of interest in a future career in healthcare. Our presentation covered the following:
 - Instruction in safe use of OTC medications,
 - Read labels, consult pharmacist, familiarity with active ingredients
 - Common adverse effects
 - GI bleeds, medication interactions, liver failure, sedation
 - Basic classes of OTC medications, risks and benefits
 - Analgesics, decongestants, anti-tussives, anti-acids
- We distributed a summary sheet to each student to take home, detailing key points from the presentation.
- In addition we distributed a brief 7 question survey, comparing subjective OTC knowledge before and after our presentation.

Survey Format

Students were instructed to rank a series of statements on a scale 1 through 5, with 1 signifying complete disagreement, and 5 complete agreement with the statement. Students ranked the following statements, with the last 2 questions (a repeat of the first 2), filled in after the presentation:

- 1) I feel knowledgeable about over the counter medications.
 - 2) I feel comfortable purchasing/deciding between various over the counter medications.
 - 3) I use over the counter medication often for health related issues.
 - 4) I have experienced a serious side-effect of OTC medications in the past.
 - 5) Over the counter medication has prevented me from needing to see a doctor at some point
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- 6) I feel knowledgeable about over the counter medications.
 - 7) I feel comfortable purchasing/deciding between various over the counter medications.

Survey Results

- Number of Respondents: 13
- Average subjective (5 point scale) rating of:
 - OTC Med Knowledge (before): 3.5
 - OTC Med Knowledge (after): 4.5
 - Comfort purchasing/deciding between OTCs (before): 3.7
 - Comfort purchasing/deciding between OTCs (after): 4.3
 - Frequency of OTC use: 4.1
 - Having experienced a OTC side effect: 2.1
 - Prevented need for health care visit: 3.0

The above data demonstrates little to no experience with medication side-effects, but relative comfort purchasing and using OTC medications; as well as an improvement in OTC knowledge following our presentation.

Student Responses During Presentation

- Students were able to describe common OTC meds as well as reasons for analgesic and decongestant use.
- Students were unaware of basic differences between acetaminophen and ibuprofen.
- Students were unaware of toxicity associated with acetaminophen or ibuprofen.
- Students did not express knowledge of generic names of medications.
- Students expressed understanding that medications were not intended to replace physician encounters.
- Overall students appeared engaged and asked further questions, regarding careers in health care.

Effectiveness and Limitations

- Students reported a 1 point increase in their subjective knowledge score, following our presentation (3.5 vs. 4.5); and a 0.6 point increase in comfort purchasing between/deciding between medications (3.6 vs. 4.3) . This shows evidence to support brief presentations as effective means for increasing OTC-related knowledge in this population.
- Data was limited and not generalizable because of the small population (n=13), narrow age group (13-14 yrs) and prior interest in healthcare.
- The survey was topical and preliminary, and did not go into depth on specific medication side-effects, or assess patterns of over the counter medication abuse.
- Students did however expressed engagement during our presentation, suggesting that in this small group we did make a positive impact.

Recommendations for Future Interventions

- The presentation could be made more in depth, with more interactive material, and an emphasis on hypothetical scenarios for students to navigate.
 - Walk students through reading various medication labels.
 - Get students to report back after reading label information about associated risks.
- A greater portion of the presentation might address OTC abuse.
 - IE: pseudoephedrine, dextromethorphan.
- Students might visit a pharmacy along with a health professional for guidance and discussion of OTC meds and confusing branding at local drug.
- Arrange a future talk with a pharmacist.
- The population surveyed could be expanded to several high school classes from various schools, of various grade levels, and include non-health oriented classrooms.
- The survey could be greatly expanded with more specific questions regarding medication side-effects, abuse behavior, experience with specific medications.
- Students could be further surveyed about their experience with family members using medication, as research shows this to be a major factor in influencing behavior.

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