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Title: Evaluation of over the counter medication knowledge and literacy in middle school and high school students

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Abstract:

Purpose – Over the counter (OTC) medications are commonly utilized by the public, including adolescents, to self-treat many conditions. Unfortunately, these products can be dangerous if not used safely and appropriately. Adolescents between 13 and 19 years old composed 7.32 percent of the human exposure cases reported to U.S. poison control centers in 2014. Among these cases, there were 53 fatalities involving pharmaceuticals. This is an age range where medication use becomes more independent and the education they receive throughout the school curriculum is unknown. This study was designed to evaluate OTC medication knowledge and literacy among middle and high school students.

Methods – We conducted a cross-sectional study that included a two-part survey completed by middle school (MS) and high school (HS) students in a local school district; MS included grades 7 and 8 and HS included grades 9-12. This study was approved by the institutional review board and consent was indicated by voluntary completion of the survey. Students were presented with the option to complete the survey by their teacher during their physical education class. The survey included demographic questions (age, gender, race, ethnicity, grade, etc.) as well as questions about their medication use for chronic illness and where they receive medication information. To assess OTC medication knowledge and literacy, the survey included two subsections: knowledge and interpretation. The knowledge subsection included questions on brand vs. generic (6 questions), side effects (4 questions), indication (3 questions) and combination use of OTC medications (2 questions) and the interpretation subsection (4 questions) included a reference sheet with two drug information labels. The knowledge section of the survey was distributed and completed separately so that the reference sheet with drug information labels did not influence answers. Data were analyzed using simple descriptive statistics, as well as chi-square and student t-test for comparative statistics.

Results – A total of 309 students completed the survey. Students were predominantly male (61.4 percent), white (81.2 percent), and non-Hispanic (84.3 percent). The mean age was 14 years (sd 1.8, range 11-18); 46.2 percent were in MS and 53.8 percent in HS. Students reported getting medication information from their doctor (73.1 percent), parents (56.6 percent), pharmacist (41.4 percent) and school (21.4 percent). The average percentage of correct medication knowledge responses by students was 17.6 (side effects 7.6, brand vs. generic 18.8, and indication 26.4) and interpretation responses was 54.7. 63.2 percent of students did not know it is unsafe to take naproxen and ibuprofen at the same time; 65.2 percent did not know it is unsafe to take two products containing acetaminophen at the same time. When asked specifically if active and brand drug names are different, 60.3 percent of students were not aware (MS 73.6 percent vs. HS 48.8 percent, p-value less than 0.001). Most students (68.5 percent) agreed they always talk to an adult before taking any medication (MS 78.6 percent vs. HS 60.5 percent, p-value less than 0.001). Overall, HS students answered more knowledge and interpretation questions correctly compared to MS students (all p-values less than 0.05).

Conclusions – Our study describes the knowledge and literacy levels regarding OTC medications in a large cross-section of middle and high school students. Overall, students were better at the interpretation of drug labels compared to knowledge-based concepts. It is likely that this population needs additional education and counseling regarding the safe and appropriate management of OTC medications. The information learned from this study is an important foundation for future educational programs aimed at proper use of OTC medications in middle and high school students.