



CALIFORNIA STATE SCIENCE FAIR 2009 PROJECT SUMMARY

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| Name(s) Michael J. Vredenburg | Project Number S0316 |
| Project Title An Epidemiological Study to Explore the Relationships Among Health Literacy Elements and Their Effects on Comprehension | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals This study is follow-up research from my 2007 science fair study. A primary aim of the current study is to test the extent to which the design of pharmacy medication information (PMI) sheets affects the comprehension of health information by populations who may be at risk of making critical errors: Seniors (65+), new and inexperienced medication users (ages 16-21), and English learners.</p> <p>Methods/Materials 169 participants (58 male and 111 female) were tested with ages ranging from 16 to 95. There were 41 seniors (65 +) and 40 inexperienced participants (ages 16-21). The English-learners group had 32 non-native English speakers with a variety of first-languages. An experimental information sheet was created for this study by reformatting existing sheets to reflect results from my prior science fair research. A comprehension test was also created for this study. Two existing information sheets (one used by CVS and one by the Food and Drug Administration [FDA]) were compared to the experimental sheet using a repeated-measures ANOVA.</p> <p>Results Results show that participants made many critical errors that could potentially result in serious injury or death. The results also indicate that even though participants could view the PMI sheets while responding to questions, their accuracy varied considerably as a function of their population group and format of the PMI used. Results also indicate that the young, inexperienced users and seniors performed significantly better when tested using the reformatted, experimental pharmacy sheet than when using the CVS and FDA sheets. Overall English learners performed significantly lower on the test than the other participants.</p> <p>Conclusions/Discussion Overall, these findings demonstrate that the current content and format of medication information sheets should be revised to make the important health-related information contained in these documents more understandable and usable to all population groups. Since seniors use significantly more medications, and the more drugs taken the greater risk of misunderstanding instructions, it is critical that these sheets are redesigned in a format with characteristics similar to the experimental PMI in order to be usable by this population group. This study provides evidence that medication information sheets would be much more useful and likely to help prevent adverse health events if they were written for and tested on a wide range of users.</p> | |
| Summary Statement This study systematically tests how different formats of pharmacy information sheets, containing the same facts, can affect at-risk population groups' ability to comprehend critical health-related information. | |
| Help Received Pharmacist Philip Anderson (UCSD) provided pharmaceutical expertise. Michael Kalsher (RPI) helped with statistics and let me collect data in his classes. Family Dr. Randy Cohen provided medical expertise. A senior housing facility allowed me to use their recreation room to collect data. | |