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Public Perception of Pesticide Exposure in Vermont

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Introduction

A pesticide is any substance intended for preventing, destroying, repelling, or mitigating any pest.¹ The public generally believes that insects, diseases, and other pests need to be controlled but is also becoming concerned about the impact of pesticides on their health and the local ecosystem. Pesticide exposure occurs with public and private use. Studies indicate consumers have diverse levels of awareness, knowledge, and attitudes regarding pesticide use and health risks.² The goal of this project is to identify levels of awareness, knowledge, and attitudes toward pesticide usage in Vermont to help State agencies focus public awareness and education.

Methods

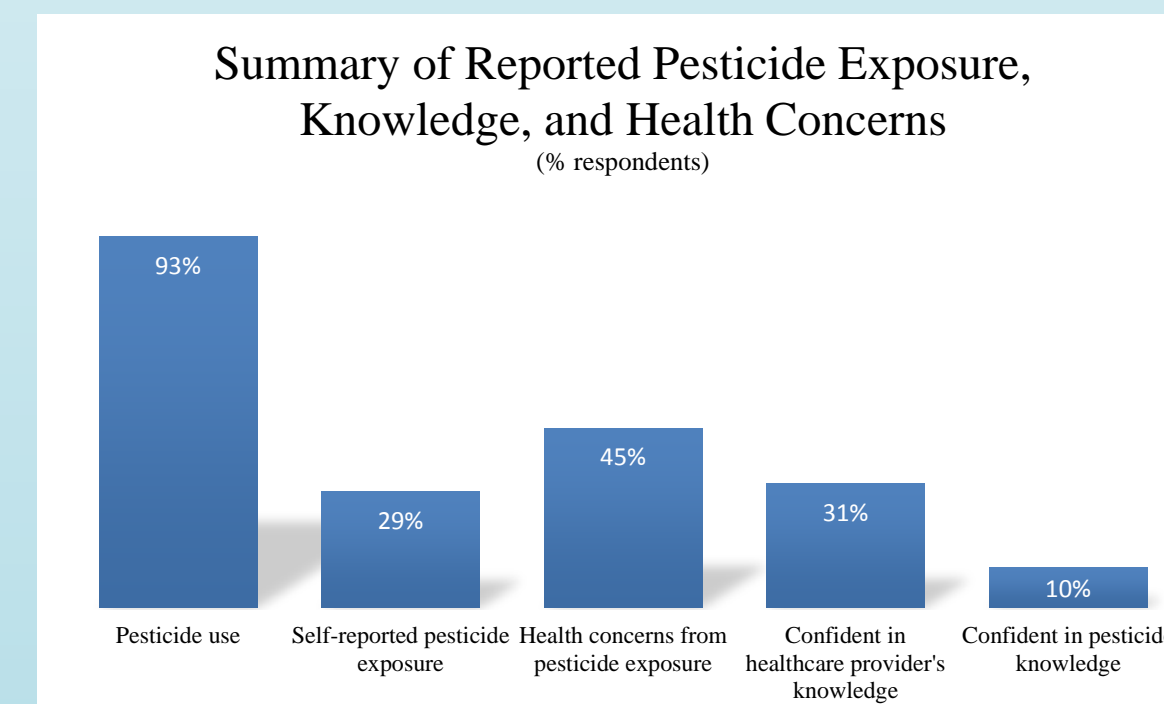
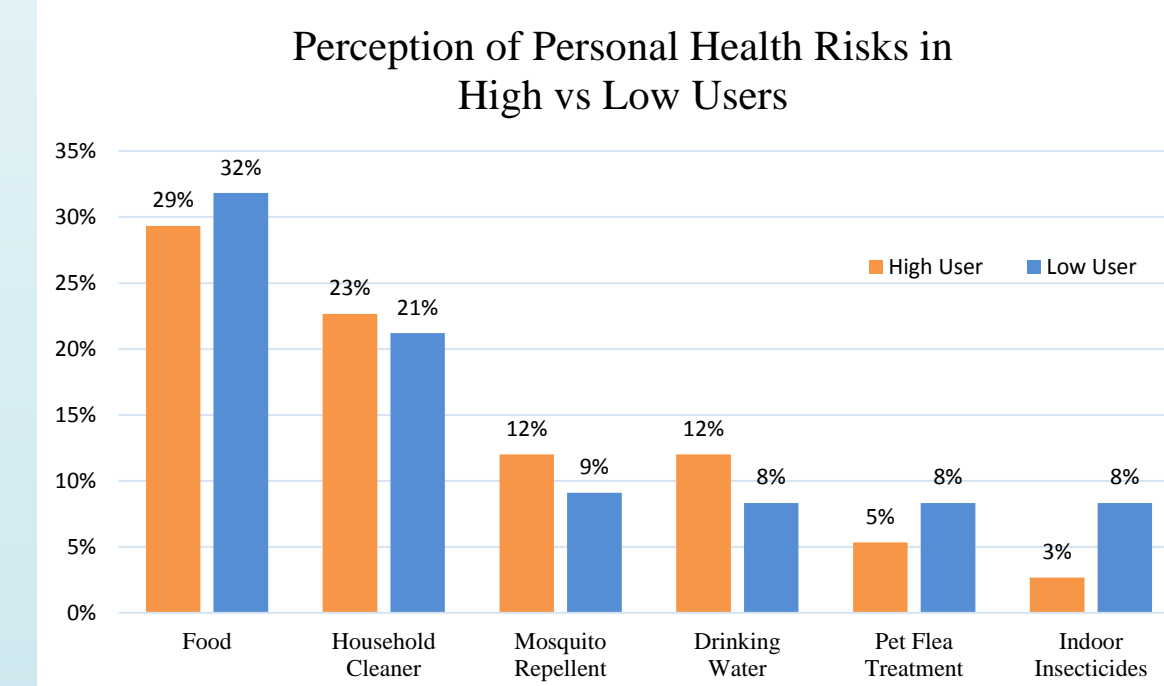
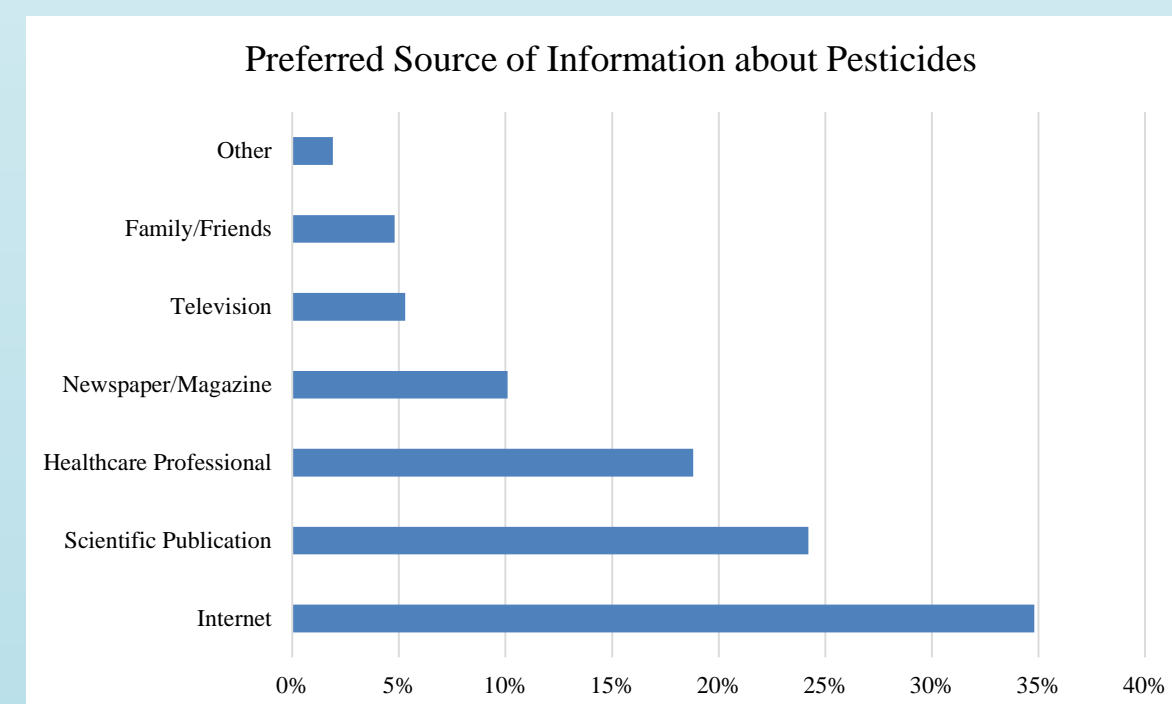
- Conducted a literature review.
- Developed and administered a 22 question survey to 240 adults at 6 locations across Vermont: Burlington Health Connect Fair at the YMCA; UVM Wind Ensemble; Burlington Farmer's Market; and Richmond, Charlotte, and Jericho Polling Stations.
- Quality control was randomly performed on 10%.
- Data was analyzed using Fisher's exact test on GraphPad ($p \leq 0.05$ was defined as significant for one-tailed test, and $p \leq 0.025$ for two-tailed test), and Excel PivotCharts.
- A variable for grouping respondents by level of pesticide use was established: the mean and sample standard deviation for the number of pesticides used by each person was calculated. A normal distribution was assumed, and the top 25th percentile were regarded as high-risk users.

Survey Demographics

Total	Gender	Age	Highest Education
240	Male 48%	18-44 37%	High School 5%
	Female 52%	45-65 55%	Some College 13%
		65+ 9%	Undergraduate Degree 43%
			Graduate Degree 38%

Results

Greatest Source of Pesticide Exposure to You?		Greatest Risk to Your Personal Health?	
Food	33%	Food	31%
Mosquito Repellant	15%	Household Cleaner	21%
Household Cleaner	15%	Mosquito Repellant	10%
Pet Flea & Tick	10%	Drinking Water	10%
Lawn Weed & Feed	7%	Pet Flea & Tick	7%
Drinking Water	7%	Indoor Insecticide	6%
Weed Killer Spray	6%	Weed Killer Spray	6%
Indoor Insecticide	3%	Lawn Weed & Feed	4%
Unwashed New Clothes	3%	Bug Bombs	4%
Bug Bombs	2%	Unwashed New Clothes	1%



- Women were more likely than men to answer being "concerned" or "very concerned" about the health effects from exposure to pesticides ($p=0.0031$).
- There were no significant differences in responses between women of reproductive age and the rest of the population: responses analyzed included number of high and low pesticide users ($p=0.1531$), reported exposure ($p=1.0000$), spoke to a health care provider ($p=1.0000$), confidence in health care provider's knowledge ($p=0.8540$), confidence in own knowledge ($p=0.1385$), and concerned about health effects ($p=0.6009$).
- Users of household cleaner ($p=0.0002$), mosquito repellent ($p<0.0001$), and pet flea & tick treatment ($p=0.0003$) correctly identified their respective products as potential sources of pesticides more often than people that did not use the respective products.
- 37.5% of respondents reported changing their personal use of insect repellent as a result of human cases of West Nile Virus, EEE, and Lyme disease in Vermont. Respondents who reported a change in personal use were more likely to report mosquito repellent as their greatest source of pesticide exposure ($p=0.0168$).
- 52.5% of respondents replied that community or statewide aerial spraying for mosquito control is a greater source of pesticide exposure than indoor pesticide use. However, when asked which of the two poses the greatest risk to the health of the average Vermonter, 62.5% replied indoor pesticides.

Discussion / Conclusions

Limitations

- The population surveyed had a high level of education, and results may not be generalizable to all Vermonters.
- Certain subpopulations had cell counts that were too small to be statistically significant. These subpopulations included families with children <2 years old and individuals with occupational risks for exposure to pesticides.

Discussion / Conclusions

- Approximately one third of respondents perceived food as their greatest source and their greatest risk of pesticide exposure; household cleaners and mosquito repellents ranked next. Trends were consistent across subpopulations.
- Although 93% of respondents reported using pesticides, only 29% reported pesticide exposure.
- More than one third of respondents have changed their behavior in response to vector-borne diseases in Vermont.
- While the majority of respondents perceived community or statewide aerial spraying for mosquito control as a high source of exposure, most respondents do not live in the locations that have been treated.
- Given disparity between public use and perception, next steps should include educating individuals about sources of pesticides, how to minimize exposure, providing quality information regarding appropriate use of insect repellents, and where community or statewide aerial spraying for mosquito control actually occurs.
- Communication strategies could include public education and outreach, including promoting high-quality internet sites (respondents' preferred source of information).
- Given the high reported use of pesticide products, health professionals should be knowledgeable in discussing potential sources of exposure and health risks with patients.

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