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A survey of poison center knowledge and utilization among urban and rural residents of Arizona[☆]



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ABSTRACT

Background: Poison control centers (PCCs) hold great potential for saving health care resources particularly by preventing unnecessary medical evaluations. We developed a survey to better identify the needs and experiences of our service community. We hope to use these data to improve PCC outreach education and overall use of our services.

Method: A written questionnaire was developed in English and then translated into Spanish. Subjects agreeing to participate were then asked two verbal questions in English: are you at least 18 years of age? And; in what language would you like to complete the questionnaire; English or Spanish? All questionnaires completed by subjects ≥ 18 years of age were included. Questionnaires with missing responses, other than zip code, were included. Data collected include gender, age, zip code, primary language, ethnicity, education, health insurance status and experiences with the PCC. Subjects were not compensated for participation. Arizona zip codes were divided into "rural" or "urban" based on a census data website. Percentages and odds ratios were determined based on completed responses. Smaller subgroups, for some variables, were combined to increase sample sizes and improve statistical relevance.

Results: Overall, women and subjects with children at home (regardless of ethnicity) were significantly more likely to have heard of the PCC although Blacks and Spanish-speakers were significantly less likely to have heard of the PCC. Similarly, respondents with children at home and those reporting a prior home poisoning (regardless of ethnicity) were significantly more likely to have called the PCC. Blacks were significantly less likely to have called the PCC. These findings were similar among people living in urban zip codes but not statistically significant among rural responders.

Conclusions: Based on a small survey, race and language spoken at home were variables identified as being associated with decreased awareness of poison centers. Focusing on these specific groups may assist in efforts to increase PCC penetrance, particularly among urban communities.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.toxrep.2014.12.001](https://doi.org/10.1016/j.toxrep.2014.12.001).

References

- [1] J.B. Mowry, D.A. Spyker, L.R. Cantilena Jr., J.E. Bailey, M. Ford, 2012 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 30th Annual Report, *Clin. Tox.* 51 (2013) 949–1229.
- [2] AAPCC website: <http://www.aapcc.org/dnn/NPDSPoisonData/NPDSAnnualReports.aspx> (accessed 05.04.2014).
- [3] H.A. Spiller, B.A. Shirley, Health care facility utilization for poisoning exposures in urban and rural populations, *Vet. Hum. Toxicol.* 38 (6) (1996) 459.
- [4] <http://mcidc.missouri.edu/webas/geocorr12.html> (accessed 24.09.2013).
- [5] T.E. Kearney, K.R. Olson, L.A. Bero, S.E. Heard, P.D. Blanc, Health care cost effects of public use of a regional poison control center, *West. J. Med.* 162 (6) (1995) 499–504.
- [6] T.L. Bunn, S. Slavova, H.A. Spiller, J. Colvin, A. Nicholson, V.J. Bathke, The effect of poison control center consultation on accidental poisoning inpatient hospitalizations with preexisting medical conditions, *J. Toxicol. Environ. Health, Part A* 71 (4) (2008) 283–288.
- [7] C. Chafee-Bahamon, F.H. Lovejoy Jr., Effectiveness of a regional poison center in reducing excess emergency room visits for children's poisonings, *Pediatrics* 72 (2) (1983) 164–169.
- [8] D.L. Harrison, J.R. Draugalis, M.K. Slack, P.C. Langley, Cost-effectiveness of regional poison control centers, *Arch. Intern. Med.* 156 (1996) 2601–2608.
- [9] N.R. Kelly, M.D. Ellis, R.T. Kirkland, S.E. Holmes, C.A. Kozinetz, Effectiveness of a poison center: impact on medical facility visits, *Vet. Human Toxicol.* 39 (1) (1997) 44–48.
- [10] W.D. King, P.A. Palmisano, Poison control centers: can their value be measured? *South Med. J.* 84 (6) (1991) 722–726.
- [11] E. Zaloshnja, T. Miller, P. Jones, T. Litovitz, J. Coben, C. Steiner, M. Sheppard, The impact of poison control centers on poisoning-related visits to EDs – United States, 2003, *Am. J. Emerg. Med.* 26 (2008) 310–315.
- [12] B.J. Polivka, M. Casavant, S.D. Baker, Factors associated with health-care visits by young children for nontoxic poisoning exposures, *J. Commun. Health* 35 (2010) 572–578.
- [13] F. LoVecchio, S.C. Curry, K. Waszolek, J. Klemens, K. Hovseth, D. Glogan, Poison control centers decrease emergency healthcare utilization costs, *J. Med. Tox.* 4 (4) (2008) 221–224.
- [14] S.R. Offerman, The clinical management of acetaminophen poisoning in a community hospital system: factors associated with hospital length of stay, *J. Med. Toxicol.* 7 (1) (2011) 4–11.
- [15] Z.P. Vassilev, S.M. Marcus, The impact of a poison control center on the length of hospital stay for patients with poisoning, *J. Toxicol. Environ. Health, Part A* 70 (2007) 107–110.
- [16] V. Lee, J.F. Kerr, G. Braitberg, W.J. Louis, C.J. O'Callaghan, A.G. Frauman, M.L. Mashford, Impact of a toxicology service on a metropolitan teaching hospital, *Emerg. Med.* 13 (2001) 37–42.
- [17] H.A. Spiller, J.B. Mowry, Evaluation of the effect of a public educator on calls and poisonings reported to a regional poison center, *Vet. Hum. Toxicol.* 46 (4) (2004) 206–208.
- [18] E.P. Krenzelok, R. Mrvos, Initial impact of toll-free access on poison center call volume, *Vet. Hum. Toxicol.* 45 (6) (2003) 325–327.