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Need For Methamphetamine Programming in Extension Education

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Abstract: The study reported sought to identify the prevention education needs involving methamphetamine through survey methodology. The study focused on a random sample of U.S. states and the Extension Directors within each state, resulting in a 70% response rate (n = 134). Findings revealed that 11% reported they had received methamphetamine user prevention training and 23% had received safety training. Overall, perceived knowledge is low regarding methamphetamine production signs, use, state and federal laws, prevention resources, and identification of methamphetamine education resources. Yet perceived importance of the same topics is high, supporting the need for increased methamphetamine programming.

Introduction

Methamphetamine is a highly addictive drug that affects the human central nervous system. The drug can be injected, snorted, smoked, or ingested orally. Across the United States in small towns, rural farms, and cities, there are methamphetamine labs. One of the reasons for the popularity and growth of methamphetamine during the 1990s was because of the production of the smokable form of methamphetamine commonly referred to as "crystal meth." Mexico-based trafficking groups began to enter the methamphetamine market and dominated the trade throughout the 2000s (Donnermeyer & Tunnell, 2007). Clandestine "mom-and-pop" labs relocated to the Midwest and, thus, geographically expanded the methamphetamine market and introduced the drug to rural communities.

The purpose of the study reported here was to explore and describe the need for prevention education within the U.S. Extension System. The study focused on a random sample of U.S. states and the Extension Directors (or other designated appointee) within each state. The population described above was appropriate to research because Extension Directors associate with diverse populations at the local level in safety and health outreach programming.

Along with exploring and describing the perceptions through survey methodology, part of the study also was relational. The relational component identified correlations among selected characteristics and obtained

methamphetamine perceptions. Inferential analysis that identified whether there were significant differences among the characteristics of the Extension Directors further examined relational aspects. The results of the study will provide a better understanding of the education needs, if any, for methamphetamine prevention education. Extension programming can use these findings, as can other drug prevention and public health and safety programs.

Literature Review

Under President Obama's 2009 Rural White House Agenda, the first priority under the subhead of "Improve Rural Quality of Life" was methamphetamine. The Agenda stated: "Combat Methamphetamine: Continue the fight to rid our communities of meth and offer support to help addicts heal" (Office of the President Elect, 2009). The reasons for this national emphasis on methamphetamine included the costs of treatment, methamphetamine-related healthcare, productivity loss, related crime, child maltreatment and foster care, and overall safety associated with methamphetamine production and use. Besides the societal health and safety costs of methamphetamine treatment and production, methamphetamine has generated a severe economic burden on the already strained U.S. economy. Nicosia, Pacula, Kilmer, Lundberg, and Chiesa (2009) found that the economic cost of U.S. methamphetamine use reached \$23.4 billion in 2005.

Methamphetamine use and production is widespread: Although the drug originated in the Western region of the United States, clandestine labs are now in the Midwest. According to the National Clandestine Lab Seizure System (U.S. Drug Enforcement Agency [DEA], 2009), the state with the highest number of labs seizures was Missouri (1,368), and the second highest was Indiana (701). The move east spread methamphetamine across the United States and introduced the drug to rural audiences and individuals who recognized the profitability in methamphetamine production. However, because of recent laws in Mexico regarding a ban on the importation of ephedrine and pseudoephedrine in 2009, the production of methamphetamine in the United States most likely will change again.

Weisheit and Wells (2008) found that counties that had the highest seizure rates of methamphetamine labs also had a larger farm population. Rural areas are ideal environments for methamphetamine labs because of the limited law enforcement, open land (specifically large areas between residents), and access to anhydrous ammonia. Methamphetamine production produces easily detected odors.

The environmental dangers and health risks associated with methamphetamine are serious, especially to unsuspecting victims such as public safety first responders and community members who may accidentally come across a methamphetamine manufacturing operation. The danger is that the individuals processing the chemical components used in making methamphetamine are not skilled chemists and thus create a situation with high potential of explosion and contamination during the manufacturing process. Toxic gas leaks, chemical fires, and explosions often occur, putting the entire community at risk. Contaminated ground resulting from a methamphetamine lab is so dangerous the area is treated as a bio-hazardous waste scene.

Among individuals at risk of exposure are unsuspecting children, real estate agents, property owners, property managers, prospective renters and homebuyers, garbage collectors, utility workers, plumbers, social service agents, law enforcement, and first responders. According to the National Drug Threat Assessment (2008), more than 1,100 children were killed at, removed from, or injured at a methamphetamine lab from 2007 to September 2008.

Extension Systems have identified a need and started methamphetamine education programs. However, no need assessments have identified the educational content. Many states, like Ohio, have not initiated any programs, while other states, like Montana and its Montana Meth Project, have extensive campaigns and materials available. In 2003, Montana recognized the emerging methamphetamine problem in the state, and

the Montana Department of Justice provided a grant to Montana State University (MSU) Extension Housing and Environmental Health (Astroth & Vogel, 2008). The grant funded a diverse team of Extension agents to develop an educational PowerPoint program that schoolteachers could use in the classroom. Tennessee is another state actively battling methamphetamine because a contributing factor for the methamphetamine problem in Tennessee is that the state borders eight states, with interstate highways crisscrossing four major Tennessee cities—making interstate drug trafficking inviting (Weinrauch & Liska, 2006). In 2007, Tennessee Governor Phil Bredesen designated \$1 million for after-school programs.

Through a 2009 Google Web search, the following Extension Systems had educational materials posted online regarding methamphetamine: Nebraska, Missouri, New Hampshire, Wisconsin, Wyoming, Iowa, Indiana, Kentucky, California, West Virginia, and Michigan. Of the states identified, Wisconsin and Indiana offered the most information. Wisconsin posted an online toolkit where visitors learn of other resources available in the state. Purdue Extension developed a lesson plan on methamphetamine, which is available online. Within the lesson plan, sample news releases, program outlines, and a teaching preparation guide are included.

Method

The study reported here focused on a random sample of U.S. states and the Extension Directors within each state. A random sample deemed appropriate because methamphetamine is a problem in rural, suburban, and urban areas. Because many states have or are restructuring their Extension Systems, identification of the sample population was difficult. A common population found among all states was the role of Extension Director (or similar appointee). Because Extension Directors work with diverse populations, are active in community engagement, and many live in the communities they service, they were an appropriate population to sample. A random sample of 50 states ($n = 44$) resulted in an $n = 207$ of Extension Directors. Cochran's formula (1977) calculated the sample size, with a confidence level of 95% and risk level of 5%.

The instrument was an online survey. A mixed-mode approach of U.S. mail and email disseminated and collected the questionnaire. Instrument validity was secured through an expert review ($N=4$). Reliability of the instrument was established through a pilot test among Ohio State University Extension agents ($N = 24$) who were not included in the sample of the study. The minimum reliability coefficient was established *a priori* as .7 (Nunnally & Bernstein, 1994). Cronbach's alpha was used to assess internal consistency of the domain of the instrument for the items that used Likert-type scales. All domains received a Cronbach's Alpha of .8 or higher.

Because multiple contacts have demonstrated to be an effective strategy for higher response rates by mail and Web surveys (Dillman, Smyth, & Christian, 2009), a series of five contacts was implemented in the procedure of data collection. To reach an ideal response rate, Linsky (1975) indicated that multiple follow-ups, pre-contact with subjects, use of hand-stamped return envelopes, incentive distribution, and institution sponsorship(s) with the title and signature of the responsible individual(s) were effective strategies to maximize a survey response. To control sampling error, frames were complete, and a 95% confidence interval was identified for sampling. Early and late respondents were compared for significant differences using t-tests for independent groups (Miller & Smith, 1983).

The appropriate correlation for the scales of measurement of each variable was employed. One-way analysis of variance (ANOVA) and t-test for independent groups were performed to determine whether significant differences existed. For interpreting findings where a statistical significance ($\alpha = .05$) existed between two means for independent groups, Cohen's (1988) effect size is reported using the following scale: small effect ($d = .20$), medium effect ($d = .50$), and large effect ($d = .80$). For significant findings between k means (ANOVA), Cohen's (1988) effect size is reported using the following scale: small effect ($f = .10$), medium

effect ($f = .25$), and large effect ($f = .40$).

Results

The response rate was 70% for the study. The ages of Extension Directors ranged from 32 to 64, with an average age of 53. Fifty-six percent were male, and 44% were female. Years in current Extension title ranged from fewer than 6 months to 40 years, with a mean of 13 years. Approximately 50% of Extension Directors lived in a rural area, and 34% identified their Extension territory as rural. Thirty-six percent responded that their Extension territory was rural/suburban, making 80% of the Extension territories either rural or rural/suburban. Only 16% of Extension Directors lived in an urban area, and 5% served an urban territory. The community involvement of the sample was blocked into four categories: high (weekly), medium (monthly), low (yearly), and none. Twenty-six percent of the respondents had high involvement, which signified weekly interaction. Medium involvement represented monthly interaction, with 31% of Extension Directors in this category. The largest percentage, 34%, had low or yearly involvement. Nine percent of Extension Directors reported no community involvement.

When asked if Extension Directors had received methamphetamine training, the answers varied. Eleven percent received methamphetamine user prevention training, and 23% had been involved with methamphetamine safety training that included anhydrous ammonia theft and lab detection. Extension Directors in the Midwest region received the most user prevention training and safety training when the regions were blocked. However, 93% of Extension Directors wanted initial or additional training.

As part of the needs assessment for future methamphetamine programming in Extension, the sample was asked to rate their perceived knowledge on a six-point Likert scale. The scale was from low to high, with 1 representing low knowledge and 6 representing high knowledge. Ratings for all items were less than 3.0, representing low knowledge on the items presented.

Extension Directors perceived they knew the least about current federal laws regarding methamphetamine (80%), but were somewhat more familiar with current state laws regarding the drug (74%). Perceived knowledge was not much higher for identification of methamphetamine educational resources (72%) or methamphetamine prevention resources (75%). Overall, Extension Directors perceived they were the most familiar with signs of methamphetamine production (34%) and signs of methamphetamine use (35%).

Table 1.
Aggregated Responses Blocked as Perceived Low and High Knowledge

	Low Perceived Knowledge %	High Perceived Knowledge %
Signs of meth production	65.4	33.9
Signs of meth use	65.4	35.4
Your current state laws regarding meth	74.0	25.2
Current federal laws regarding meth	79.5	19.7

Meth prevention resources	74.8	24.4
Identification of meth education resources	71.7	27.6

Extension Directors also were asked to rate their perceived importance for others of the items in methamphetamine education. The educational areas that received the highest perceived levels of importance were: identification of methamphetamine education resources (76%), signs of methamphetamine use (76%), and signs of methamphetamine production (73%). Perceived knowledge was low regarding methamphetamine production signs, use, state and federal laws, prevention resources, and identification of methamphetamine education resources, although perceived importance of the same topics was high.

According to the description of magnitude by Davis (1971), gender and perceived knowledge had a substantial association ($r = .54$); location of Extension area and perceived knowledge had a substantial association ($r = .50$); and prior methamphetamine training and perceived knowledge had a substantial association ($r = .62$). Significant differences were found between perceived knowledge and perceived importance by male and female groups. The results indicated that males perceived themselves as more knowledgeable about methamphetamine, with a small effect size of $d = .35$. Yet females perceived methamphetamine education as more important for others with a medium effect size of $d = .44$.

Significant differences were found between perceived knowledge and Extension Directors who had prior methamphetamine user training. Results found those who had prior training perceived their knowledge significantly higher than those Extension Directors without prior user training, with a large effect size of $d = .72$. Significant differences were found between perceived knowledge and Extension Directors who had prior methamphetamine safety training. Results found those who had prior safety training perceived their knowledge significantly higher than those Extension Directors without prior user training with a large effect size of $d = .93$.

Results found Extension Directors in the Midwest region perceived their knowledge of methamphetamine significantly higher than those in other regions, with a medium effect ($f = .29$). The South and Midwest regions perceived methamphetamine education as more significantly important than other regions with a medium effect size ($f = .27$). The West, South, and Midwest Extension Directors perceived methamphetamine as a significantly greater threat in their areas than the Northeast, with medium effect ($f = .31$). Extension Directors in the West, South, and Midwest perceived their media dependency as significantly higher than the educators in the Northeast, with a medium effect ($f = .33$).

Significant differences were found between perceived knowledge and the community involvement of Extension Directors. Results found those who had high or medium community involvement perceived their knowledge significantly higher than those Extension Directors with low or no community involvement. The effect size was small at $f = .09$.

When asked about methamphetamine characteristics, Extension Directors responded that farmers should be a primary audience for methamphetamine safety programming. Eighty-eight percent of Extension Directors agreed farmers should be an audience, and 87% agreed methamphetamine safety should be taught in farm safety programs. At the time of the study, more than one-half of Extension Directors (58%) did not believe their state offered methamphetamine safety programming. An alarming finding was that only 62% of Extension Directors responded they agreed or strongly agreed that they knew what to do if they suspected a methamphetamine lab in their community.

Extension Directors also were asked who they believed should receive training about methamphetamine. Twelve groups were presented, and each received more than 70% agreement that the group should receive methamphetamine training (Table 2). However, school officials topped the list, with 98% of Extension Directors reporting they need to receive methamphetamine training. Ninety-five percent of Extension Directors believed parents and public health employees also should receive training. Extension Directors also were asked to fill-in any additional groups. Responses ranged from grandparents to agriculture chemical dealers.

Table 2.
Community Groups That Need Methamphetamine Training

Community Group	Percent	n
Farmers	84.9	107
Local Extension Directors	84.9	107
Law enforcement	91.3	115
School officials	97.6	123
Public health employees	95.2	120
Fire departments	85.7	108
EMTs	88.1	111
Judges	70.6	101
Doctors	80.2	89
Children (<12)	60.3	76
Adolescents (>12)	90.5	114
Parents	95.2	120
None of the above	0.8	1

Recommendations and Implications

The findings presented revealed a strong need for methamphetamine training in Extension education. Extension Directors perceived their knowledge as low and their perceived need for that knowledge as high. Also, only 11% of Extension Directors have received methamphetamine prevention education training, and 23% reported they had received methamphetamine safety training. Although the knowledge of methamphetamine-related issues was low among Extension Directors, each state Extension System should evaluate where geographically methamphetamine production and use are high to target training.

The initial step in methamphetamine programming is training Extension personnel. Rural crime researchers or law enforcement should train Extension personnel in all aspects of methamphetamine use and production. Training could consist of a one-day conference or through videos, podcasts, or written materials accessible through the Web.

Given that a need for methamphetamine programming exists, each area and region within states should evaluate the educational needs of their publics. The findings in the study reported here support prior research that methamphetamine is not a homogenous problem geographically. In addition, in an era of increased technology and limited financial and human resources at the federal and state levels in Extension, state Extension Systems should evaluate their current programming to identify openings in existing educational efforts for methamphetamine programming.

Offering resources on the Web, holding seminars in pre-existing conferences, and incorporating methamphetamine into successful drug prevention or agricultural safety programming are low-cost tactics to increase methamphetamine awareness among varying audiences. Extension personnel can tap into already-established community and youth groups such as the Girl Scouts, Senior Citizen Centers, and agricultural groups (i.e., Pork Producers Associations, 4-H, County Fair committees, Master Gardeners), and offer to be a guest presenter at meetings.

Methamphetamine production is constantly changing, and safety education must be timely to meet the needs of communities. However, the primary audiences for safety programming identified in the research reported here should include adolescents and their parents, law enforcement, public health employees, and school officials. Methamphetamine safety is not a homogenous problem geographically. Programmers must remember and assess their local communities to determine their area's specific educational needs.

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