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Using Policy to Strengthen the Reach and Impact of Injury Prevention Efforts

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Injury prevention and control remains a key priority in public health and medicine. Across all age groups and regardless of the measure used, injury is a leading cause of morbidity and death with tremendous costs to society.[1-4] When considering the burden and scope of injuries, in the United States (U.S.) and elsewhere, injury prevention remains an important but under-resourced health concern.[5-7] Some specific injury prevention topics, such as road safety, have received the necessary attention and resources to have a significant impact. Investments made early led to the creation of tools and surveillance systems to track motor vehicle crashes and have made it possible to evaluate interventions and new policies.[8-12] These tools and resources, combined with the fact that it is easy to understand and convey the scope and dynamics of motor vehicle crashes have made it a top injury prevention priority.[13-15] However, these tools and resources are not available across all injury areas.

It is important, however, when discussing the success of road safety, to recognize the contributions made by technological advances, policy initiatives and legislation. In particular, there have been many innovative technological advances such as airbags, car and booster seats for children and interlock devices that prevent impaired driving in addition to other features that improve the safety of passengers and drivers.[15-16] While other areas of injury prevention can also benefit from technological advances, their relevance and applicability vary greatly across topics. More importantly, the largest successes in reducing motor vehicle crashes have stemmed from policy changes inspired by technological advances and new research findings documenting effective prevention strategies. Specifically, the implementation of primary restraint laws, graduated driver licensing and laws that prevent and reduce impaired driving have significantly reduced injuries and deaths due to motor vehicle crashes.[11,16-18] With motor vehicle injuries we know what to do, we know what works, and we know that doing the right thing saves lives and money. This is why the Centers for Disease Control and Prevention (CDC) has selected motor vehicle injuries as one of their public health priorities and labeled it a "Winnable Battle."[19]

We need more "winnable battles" in injury prevention and using policy as an effective strategy to drive change may be one of the most important tools available to us. Overall, the field of injury prevention lags behind other health topics in its strategic use of policy. Therefore, a more strategic emphasis of potential policy implications across topics in injury prevention research and control is an important priority. With this goal in mind, faculty and researchers across the Atlanta region in Georgia who are affiliated with the Emory Center for Injury Control (ECIC) were invited to submit papers to this special issue of the *Western Journal of Emergency Medicine* (*West*JEM) to highlight research and prevention efforts as well as conceptual injury-related topics that may have policy relevance. It is intriguing to read about the range of topics discussed and the different strategies that are proposed for prevention efforts and policy consideration. Several manuscripts address pertinent issues among youth including rape victimization and high-risk sexual behaviors, bullying, and media use.[20-23] Research and conceptual issues related to interpersonal violence for other vulnerable groups are also addressed and include marginalized women who use methamphetamines, men who have sex with men in the U.S. and in South Africa, victims of family violence in Mozambique and elder mistreatment.[24-29] Moreover, several of the research papers address issues related to poisoning of specific substances that include antiretroviral agents, ethylene glycol, and hydrogen sulfide.[30-32] Finally, one empirical paper evaluates the status of a field triage scheme for injured patients and two editorial contributions address the use of policy, and systems thinking in injury prevention.[33-35] This brief description of the manuscripts included in this issue highlights the diversity of research and conceptual topic development underway by our colleagues. Most notably, the topics covered and the range of recommendations and

strategies for prevention that they present underscore the importance of connecting research findings with real-world policy implications.

In moving the field of injury prevention forward, there are two important priorities. First, additional resources are needed for research, particularly ones that evaluates the impact of prevention and intervention efforts, which translates research into practice.[36-43] In order to provide a stronger rationale for investing in specific injury prevention strategies and translation of those strategies that work, we need to assess and communicate the burden of these injuries and their costs to decision makers. The CDC has recognized this need and recently provided an important new tool for reporting the costs of injuries by enhancing Web-based Injury Statistics Query and Reporting System (WISQUARS), provided on the web.[2] This enhancement will prepare cost of injury reports for both fatal and nonfatal injuries that can be used by practitioners, researchers and advocates when describing the burden and costs of injuries to justify new resources or to estimate costs saved when implementing new prevention or intervention strategies.

Second, injury prevention also needs more visibility. All of us working within injury prevention recognize the breadth of topics covered within our field. Unfortunately, most people who are not working within this field, including legislators, are less familiar with the important work that we do. Our reach and impact in terms of preventing injuries overall will depend on our success of communicating the scope and burden of injuries across a range of causes and mechanisms. If we actively seek to work more closely together across disciplinary fields, academic institutions, nonprofit organizations, and local, city, state and federal governments, we can better learn about and leverage our successes and resources. We have many successes to celebrate, but more importantly we have discoveries to make, new strategies to implement, and many more injuries to prevent. Let us work together to strengthen the reach and impact of our injury research and prevention efforts and let us make the field of injury prevention more visible.

We are grateful for our partnership with the Editors at *West*JEM for another terrific collaboration to highlight policy issues in injury prevention.

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Approaching Injury and Violence Prevention through Public Health Policy: A Window of Opportunity to Renew Our Focus

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As the new leader of the Centers for Disease Control and Prevention (CDC) National Center for Injury Prevention and Control, I am thrilled by the opportunity to comment on the future direction of the Injury Center, as well as the intersection of policy and injury prevention. As the cost of healthcare continues to rise and greater demands are placed on the healthcare system, the use of public health policy becomes increasingly critical to protect the public's health and prevent injury and its related morbidities and disabilities. I am committed to advancing the Injury Center's focus on policy strategies to ensure that each person has the opportunity to live life to its fullest potential through the creation of an environment that decreases injury risks and promotes safety.

I recently came to the CDC from Yale University, where I served as research director for the Department of Emergency Medicine at Yale School of Medicine and director of the Yale Center for Public Health Preparedness (YCPHP) at the Yale School of Public Health. During 1996-97, I served in Senator Paul Wellstone's office as a Robert Wood Johnson Health Policy Fellow, and several years later, as the president of the American Public Health Association. These experiences, along with many others at the local, state and national levels throughout my career, have contributed to my understanding of the importance and success of policy initiatives in addressing the problem of injury and protecting the health of our nation.

In the United States—regardless of sex, race, or economic status—injuries remain a leading cause of death for people of all ages. In fact, injuries are the leading cause of death for people ages 1-44. In addition to deaths, approximately 50 million injuries serious enough to require medical treatment occur each year. Injuries are extremely costly, responsible for $406 billion in lifetime costs in 2000 alone. All of this is particularly unacceptable because injuries are preventable, and in many cases we know what to do to prevent their occurrence, or mitigate their impact.

While the problem is widespread and the need is great, public health entities at the national, state and local level have been forced to take a deeper look at where our resources are being expended and how we can be the best fiscal stewards possible as we continue to fulfill our mission of preventing injuries and violence and minimizing their consequences. We have a window of opportunity for the field of injury and violence prevention to make a case for the role of policy as a cost-effective strategy to prevent injuries and violence. We can accomplish this by using science to create the evidence base for informing policy design and implementation. We can identify the problem, determine what works, promote effective policy strategies, and evaluate the impact and effectiveness of policy, examining both intended and unintended consequences.

Policy strategies or interventions go beyond the traditional approach of individual behavior change and focus on the community and societal level. This is in line with the Injury Center's use of the social-ecological model to frame discussion and organization of practices and research. The model sets the stage to examine and address factors that increase or decrease the risk for violence, injury, or promote recovery from trauma by dividing those factors into four levels: individual, relationship, community, and societal. Policy interventions address the overlapping elements of these levels by influencing systems development, organizational change, social norms, and individual behavior.

CDC's Injury Center is the federal agency responsible for addressing all phases of the injury research framework, from descriptive research to intervention development and testing to implementation research, for all causes of injury among all age groups. As we cannot focus on all types of injury all of the time, we set priority areas for our work. We are also aware of the need to continue efforts in injury surveillance in order to identify emerging issues so that we can address them as expeditiously as possible, and identify opportunities to intervene. By providing support for injury research and program implementation and evaluation, the Injury Center addresses its mission of supporting state health departments and other organizations to ensure that we are building

infrastructure to implement evidence-based interventions in the community. We are committed to ensuring that the evidence created through the research is being used to inform policies and that practice is informing research in a way that is reflective of the real experiences people encounter in their everyday lives.

Working in the policy arena, the injury and violence prevention community can help to ensure that policy solutions to prevent injuries and violence are based on the best science available, reflect and respond to audience needs and realities, and are updated as new learning emerges. Members of the community can play a critical role in educating policymakers about what is needed to decrease death and disability due to injury and violence.

The Injury Center is actively working with our largest external research grantees, the Injury Control Research Centers (ICRCs) and our Core State Injury (CSI) program (state health departments) to encourage research on policy interventions and to translate that research into action. Many of the ICRCs have been instrumental in advancing policy in their states or nationally, and their role is critical in ensuring that policy is grounded in evidence. They provide data, evaluations, analyses, testimony, and other resources to support policy change.

The Core State Injury program and state health department grantees are actively engaged in many levels of the policy process, including assessing and analyzing policies to determine their impact or potential impact on injury and violence prevention; convening interested groups to develop a plan for establishing policy strategies; using data and science to educate decision makers about the components and potential effects of the policies; increasing public awareness of existing policies or laws that prevent injuries and violence; and evaluating the impact of policies. Researchers and state health departments have not done this alone; countless advocacy groups, professional associations, businesses, and nonprofit organizations have been engaged in coalitions to advance injury and violence prevention policy. These efforts have led to some of the most critical policy successes in public health.

It is only through continuing to ensure that we have a strong science base, that is related to practice, can we work together to ensure that injury and violence prevention will become the premier public health achievement of the twenty-first century.

While CDC advocates for and supports the policy priorities of the executive branch, CDC does not use appropriated funds, directly or indirectly, to lobby any federal or state legislative body.

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Systems Thinking in Injury Prevention: An Innovative Model for Informing State and Local Policies

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Unintentional and violence-related injuries represent one of the leading causes of morbidity and mortality in the United States and in the state of Georgia. In response to the burden of injuries in Georgia, the Georgia Health Policy Center (GHPC) at Georgia State University convened some of the state's leading experts on trauma and injury prevention to learn about systems thinking that can leverage existing resources and processes and create synergy across institutions to inform state and local policies that seek to reduce injury.

John Sterman – renowned systems thinker and professor of management at Massachusetts Institute of Technology's Sloan School – writes in a 2006 American Journal of Public Health article, "Thoughtful leaders throughout society increasingly suspect that the policies we implement to address difficult challenges have not only failed to solve the persistent problems we face, but are in fact causing them. All too often, well-intentioned programs created unanticipated 'side effects.' The result is policy resistance, the tendency for interventions to be defeated by the system's response to the intervention itself."[1] Nowhere are policy-resistant systems more evident than in state capitols across the country. Legislation crafted with the best of intentions moves one problem forward but sets another back. A quick glance at typical committee structures of most state assemblies points to one structural culprit. Committees carved out by topic or strategy, rather than by larger purpose, are not able to incorporate the systemic nature – the interrelatedness – of our most significant health problems, including injuries. Systems thinking, a focus on "upstream" vs. "downstream" activities, and policies are needed, in particular for injury prevention, which is a broad and cross-cutting topic that interfaces across policy domains.

To address policy resistance, the GHPC legislative health policy certificate program fostered state legislators' capacity for systems thinking. Using childhood obesity as a case study, a diverse team of subject matter experts, legislators and legislative staffers developed a simple system dynamics model. A literature-based user interface allowed policymakers to explore policy interventions, alone or in combination and at varying intensities, in terms of impact on obesity outcomes and associated healthcare costs over the coming decade. The model was designed for real-time, hands-on exploration in a learning laboratory environment with real-life application. Policymakers were encouraged to predict outcomes, articulate theories, and inquire into differences between their own predictions and those generated by the model. The process brought legislators with differing viewpoints together with scientific and economic experts to develop a set of actionable policy options and priorities. The resulting model provided a framework, a common language, and a credible tool that has begun to stimulate a more rigorous discussion about effective and feasible policy options for reducing childhood obesity. Because the systems model is built with the most recent and best information in the literature and the knowledge of experts in the field, legislators who use the tool are basing their decisions on credible research and evidence.

The GHPC is now replicating this process for the issue of injury prevention. In March 2011, the GHPC convened some of Georgia's leading experts on trauma and injury prevention for a day-and-a-half work session. Participants also represented the Emory Center for Injury Control and others involved in injury prevention in Georgia. The participants learned about systems thinking and began the process for developing an interactive systems model to inform state and local policies to reduce injury. By design through this process, participants represented their own disciplines and framework for injury control and prevention. This interdisciplinary approach is critically important in developing a model that has applicability across settings. Therefore, part of the dynamic systems modeling for injury prevention was comprised of exposing and testing different mental models in a collaborative, non-political context. The results from this process were the beginning of a new and shared understanding about injury prevention, its complexities and priorities. Most importantly, this process also elucidated the most promising leverage points for programmatic or policy change to prevent injury, which is a typically underutilized policy strategy in injury prevention.

As we move forward in this process, it is our goal to strengthen the role of policy in injury prevention. The systems model we have developed in collaboration with stakeholders and legislators has the possibility to leverage our capacity, facilitate our dialogue, help determine priorities and to ultimately inform innovative policy approaches to injury prevention.

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Adoption of the 2006 Field Triage Decision Scheme for Injured Patients

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Background: When emergency medical services (EMS) providers respond to the scene of an injury, they must decide where to transport the injured patients for further evaluation and treatment. This is done through a process known as "field triage", whereby a patient's injuries are matched to the most appropriate hospital. In 2005-2006 the National Expert Panel on Field Triage, convened by the Centers for Disease Control and Prevention and the National Highway Traffic Safety Administration, revised the 1999 American College of Surgeons Committee on Trauma Field Triage Decision Scheme. This revision, the 2006 Field Triage Decision Scheme, was published in 2006.

Methods: State Public Health departments' and EMS' external websites were evaluated to ascertain the current status of implementation of the 2006 Field Triage Decision Scheme.

Results: Information regarding field triage was located for 41 states. In nine states no information regarding field triage was available on their websites. Of the 41 states where information was located, seven were classified as "full adopters" of the 2006 Field Triage Decision Scheme; nine were considered "partial adopters"; 17 states were found to be using a full version or modification of the 1999 Field Triage Decision Scheme; and eight states were considered to be using a different protocol or scheme for field triage.

Conclusion: Many states have adopted the 2006 Decision Scheme (full or partial). Further investigation is needed to determine the reasons why some states do not adopt the guidelines. [West J Emerg Med. 2011;12(3):275-283.]

INTRODUCTION

In the United States (U.S.), injury is the leading cause of death for persons aged 1–44 years.[1] In 2007, injuries were responsible for approximately 182,000 deaths in the U.S.,[1] with an additional 25 million injuries serious enough to require a hospital emergency department (ED) visit.[2] When an injury does occur and emergency medical services (EMS) providers respond, they must decide where to transport the injured patients for further evaluation and treatment. This is done through a process known as "field triage," whereby a patient's injuries are matched to the most appropriate hospital. The destination hospital (trauma center or a nontrauma center) chosen by the EMS providers has been shown to have an impact on an individual patient's outcome. The National Study on the Costs and Outcomes of Trauma reported a 25% reduction in mortality for severely injured patients who received care at a Level I trauma center rather than at a nontrauma center.[3]

In order to assist with destination transport decisions, EMS providers and their medical directors use field triage decision schemes to help ensure that they get the right person, to the right place, at the right time. These schemes are typically a combination of physiologic, anatomic, and mechanistic criteria that are intended to identify those patients with, or at risk of, a severe injury. Instead of developing individual decision schemes *de novo*, many states and local communities have used a version promulgated by the American College of Surgeons-Committee on Trauma

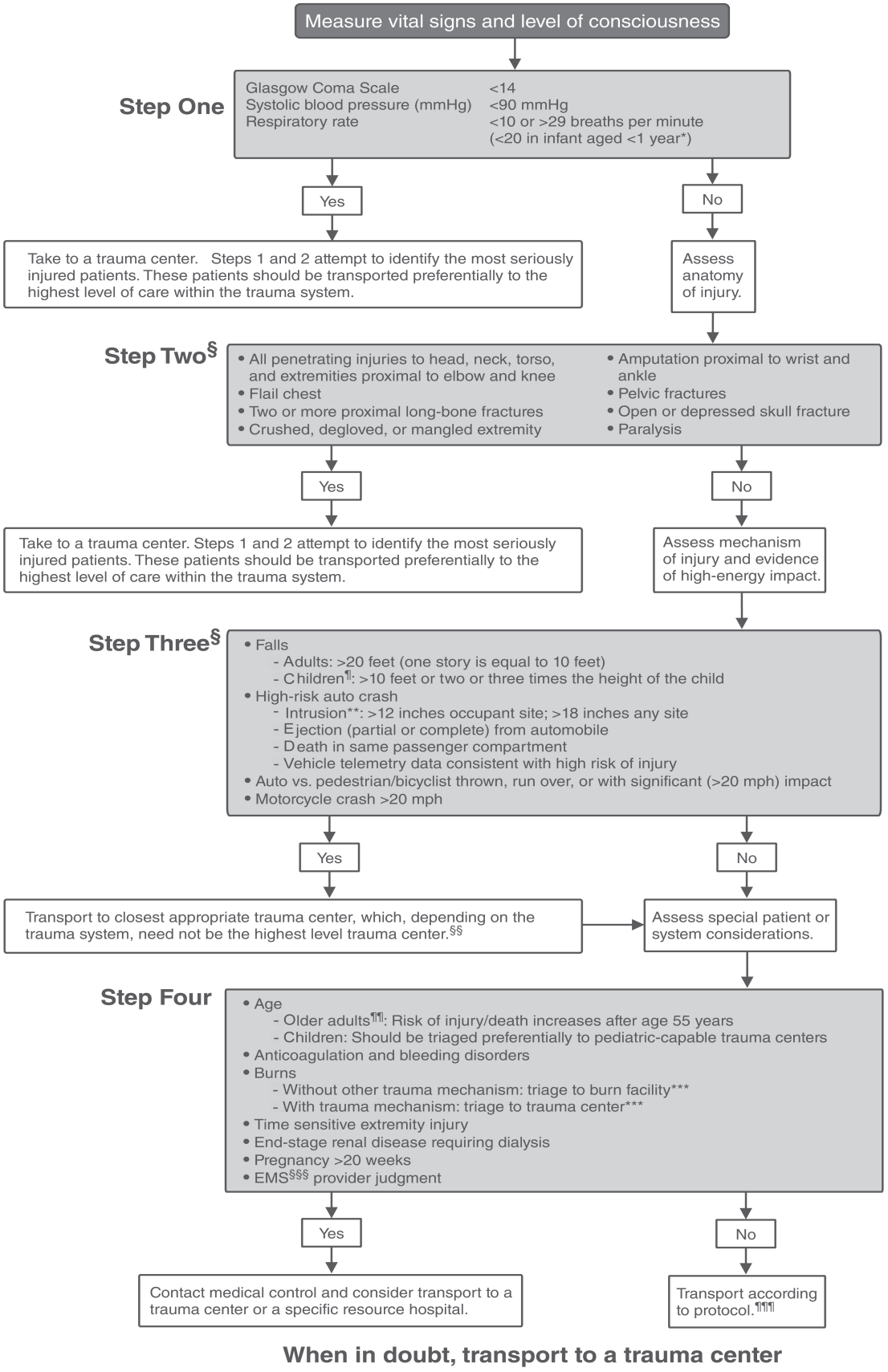

Figure 1. The 2006 field triage decision scheme. *Footnote*: Reproduced with permission from Morbidity and Mortality Weekly Report. Jan 23, 2009;58. [10]

SOURCE: Adapted from American College of Surgeons. Resources for the optimal care of the injured patient. Chicago, IL: American College of Surgeons; 2006. Footnotes have been added to enhance understanding of field triage by persons outside the acute injury care field.

* The upper limit of respiratory rate in infants is > 29 breaths per minute to maintain a higher level of overtriage for infants.

† Trauma centers are designated Level I-IV, with Level I representing the highest level of trauma care available.

§ Any injury noted in Steps 2 and 3 triggers a "yes" response.

¶ Age < 15 years

** Intrusion refers to interior compartment intrusion, as opposed to deformation which refers to exterior damage.

†† Includes pedestrians or bicyclists thrown or run over by a motor vehicle or those with estimated impact > 20 mph with a motor vehicle.

§§ Local or regional protocols should be used to determine the most appropriate level of trauma center; appropriate center need not be Level I.

¶¶ Age > 55 years.

*** Patients with both burns and concomitant trauma for whom the burn injury poses the greatest risk for morbidity and mortality should be transfrred to a burn center. If the nonburn trauma presents a greater immediate risk, the patient may be stabilized in a trauma center and then transferred to a burn center.

††† Injuries such as an open fracture or fracture with neurovascular compromise.

§§§ Emergency medical services.

¶¶¶ Patients who do not meet any of the triage criteria in Steps 1-4 should be transported to the most appropriate medical facility as outlined in local emergency medical service protocols.

Figure 1 continued. The 2006 field triage decision scheme.

(ACS-COT). This scheme was first published in 1986.[4] It grew out of early efforts of the ACS-COT to develop a resource monograph that would provide guidance for the designation of certain healthcare facilities as trauma centers and for the care of the acutely injured.[5] Between 1986 and 1999, the ACS-COT Decision Scheme was revised three times (1990, 1993 and 1999).[6-8] With each revision, the scheme was re-evaluated by the ACS-COT and analyzed in the context of the available literature and expert opinion. Recommendations were then developed regarding modifications to the scheme.

In 2005, the National Expert Panel on Field Triage was established to guide the 2006 revision of the field triage scheme. This group was formed by the Centers for Disease Control and Prevention (CDC) in collaboration with ACS-COT and the National Highway Traffic Safety Administration (NHTSA). The group sought to bring additional disciplines into the revision process (e.g., emergency medicine, EMS, public health, the automotive industry and additional federal agencies). The goals of the panel were to provide a thorough review of the 1999 field triage scheme, examine and consider new and existing evidence, and assist with the dissemination and implementation of any revisions. The 2006 Field Triage Decision Scheme (Figure 1) was published by the ACS-COT in 2006 and was subsequently endorsed by 17 national organizations representing the spectrum of public health and acute injury care, with concurrence from NHTSA.[9-10] A description of the process of revision and the detailed rationale behind deleted, modified, and new triage criteria in the scheme was published in the CDC *Morbidity and Mortality Weekly Report (MMWR) Recommendations and Reports* in January 2009.[10]

The 2006 Field Triage Decision Scheme contains several important changes from the 1999 scheme (Figure 2) and these specific changes are outlined in Figure 3. Following the release of the 2006 Field Triage Decision Scheme, multiple efforts have been underway to disseminate the scheme and the rationale for the revision process contained within the *MMWR*.[10] Our study was conducted to gauge the implementation and use of the 2006 Field Triage Decision Scheme in the U.S. The objective of this study was to determine how many states have public documents demonstrating that they have adopted the 2006 Field Triage Guideline into their EMS protocols, using readily available public information and resources.

Since the expansion of online connectivity among the general public, websites for scientific and governmental information in the U.S. have developed to include comprehensive federal, state, county and municipal sites. Using simple search heuristics, internet search engines such as Google™, Yahoo™ and Bing™, has allowed the public and specialists alike ease of access to laws, policies and other administrative materials once difficult to locate and obtain in print.[11] The use of publicly available websites for this study was appropriate because we hypothesize that the presence of the guidelines on an individual state's website is a proxy for state adoption of the 2006 guideline.

METHODS

This project used online search engines to examine publicly available state EMS and health departments' websites. Searches were conducted during October 1, 2009, through April 30, 2010. The search engine Google™ was selected because of its volume of searches, with an average in the U.S. of six billion searches per month.[12] The authors inferred that a person searching for this type of information would likely use this search engine. For each state, authors used search terms such as field triage, trauma, triage guidelines, triage protocols, prehospital injury triage, and others. Authors examined websites for existing EMS

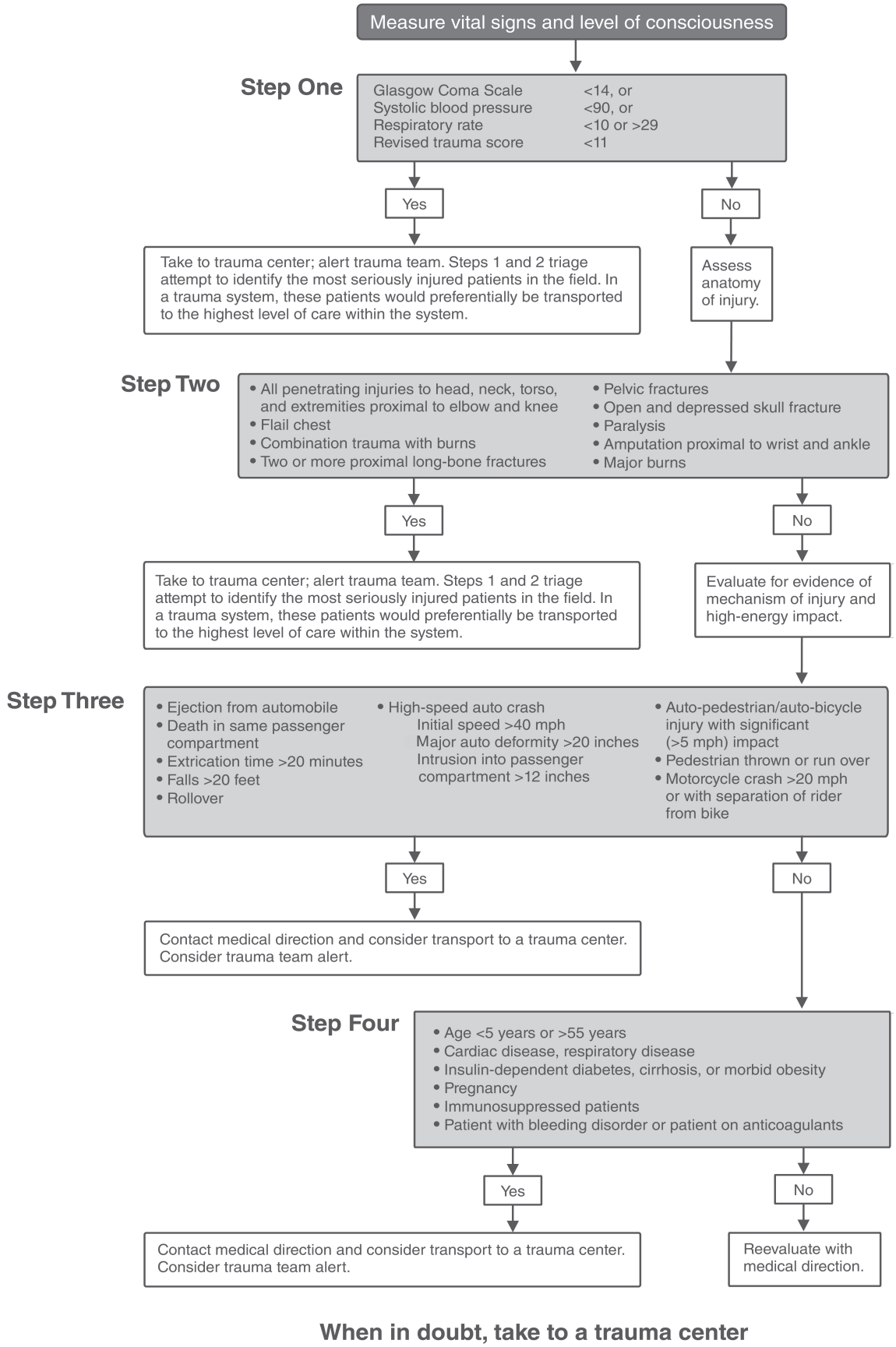

Figure 2. The 1999 field triage decision scheme.

Step One: Physiologic Criteria

- Add a lower limit threshold for respiratory rate in infants (aged < 1 year) of < 20 breaths per minute
- Remove revised trauma score < 11

Step Two: Anatomic Criteria

- Add crushed, degloved or mangled extremity
- Change "open and depressed skull fractures" to "open or depressed skull fractures"
- Move combination trauma with burns and major burns to Step Four

Step Three: Mechanism of Injury Criteria

- Add vehicular telemetry data consistent with high risk of injury
- Clarify criteria for falls to include:
  - adults: fall > 20 feet (two stories)
  - children aged < 15 years: fall > 10 feet or two to three times the child's height
- Change "high-speed auto crash" to "high-risk auto crash" and modify to include any of the following:
  - intrusion > 12 inches at occupant site
  - intrusion > 18 inches at any site
  - partial or complete ejection from the vehicle
  - death of another passenger in the same passenger compartment
  - vehicle telemetry data consistent with high risk for injury
- Revise "auto-pedestrian/auto-bicycle injury with significant (> 5 mph) impact" and "pedestrian thrown or run over" to "auto vs. pedestrian/bicyclist thrown, run over, or with significant (> 20 mph) impact"
- Revise "motorcycle crash > 20 mph with separation of rider from bike" to "motorcycle crash > 20 mph"
- Remove "initial speed > 40 mph, major auto deforimty > 20 inches, extrication time > 20 minutes, and rollover"

Step Four: Special Considerations

- Add "time-sensitive extremity injury, end-stage renal disease requiring dialysis, and emergency medical service provider judgement"
- Add burns from Step Two
  - burns without other trauma mechanism: triage to burn facility
  - burns with trauma mechanism: triage to trauma center
- Clarify aged < 5 years or > 55 years to read:
  - older adults: risk of injury or death increases after 55-years of age
  - children: should be triaged preferentially to pediatric-capable trauma centers
- Change "patient with bleeding disorder or patient on anticoagulants" to "anticoagulation and bleeding disorders"
- Change "pregnancy" to "pregnancy > 20 weeks"
- Remove "cardiac disease, respiratory disease, insulin-dependent diabetes, cirrhosis, morbid obesity and immunosuppressed patients"

Figure 3. Changes in the 2006 decision scheme compared to the 1999 decision scheme

protocols, memorandums, committee notes, and legislative or regulatory language. Once evidence of full or partial adoption was found, authors downloaded the relevant materials for each state .Two board certified and EMS fellowship trained emergency physicians (authors SMS and EO) independently examined the information. The reviewers carefully examined these materials with comparison to the 2006 Field Triage Decision Scheme and prior ACS-COT guidelines to ascertain the level of adoption (full or partial) by each governmental unit. If the reviewers agreed, the findings were entered into the database. If there was disagreement, the findings were discussed. If no consensus was reached, a third reviewer (EBL) was asked to examine the material to make a final determination. If no information was available on the publicly available websites, the state was documented as "information not available."

We considered a given state to have "full adoption" if the 2006 Decision Scheme was reproduced in its entirety on the website without modifications or if state legislation, rules, or committee minutes made direct reference to use of recommendations for the 2006 Decision Scheme. We considered states with only minor, non-substantial, additions (e.g., additional vital sign, or a language edit) to the complete 2006 Decision Scheme to be full adopters. We considered states to be partial adopters if any language clearly recognizable from the 2006 Decision Scheme (e.g. vehicular telemetry data consistent with a high risk or injury, time sensitive extremity injury) was present in any of their available field triage materials on the website (exceptions to this was when only a conjunction such as "and" or "or" was changed). We did not further stratify partial adopters. Next, we identified states that had some version (full or partial) of the 1999 field triage scheme on their website. Finally, we identified states with field triage schemes or methodology independent of the 1999 or 2006 schemes. Given the inherent language overlap in many of these latter two categories

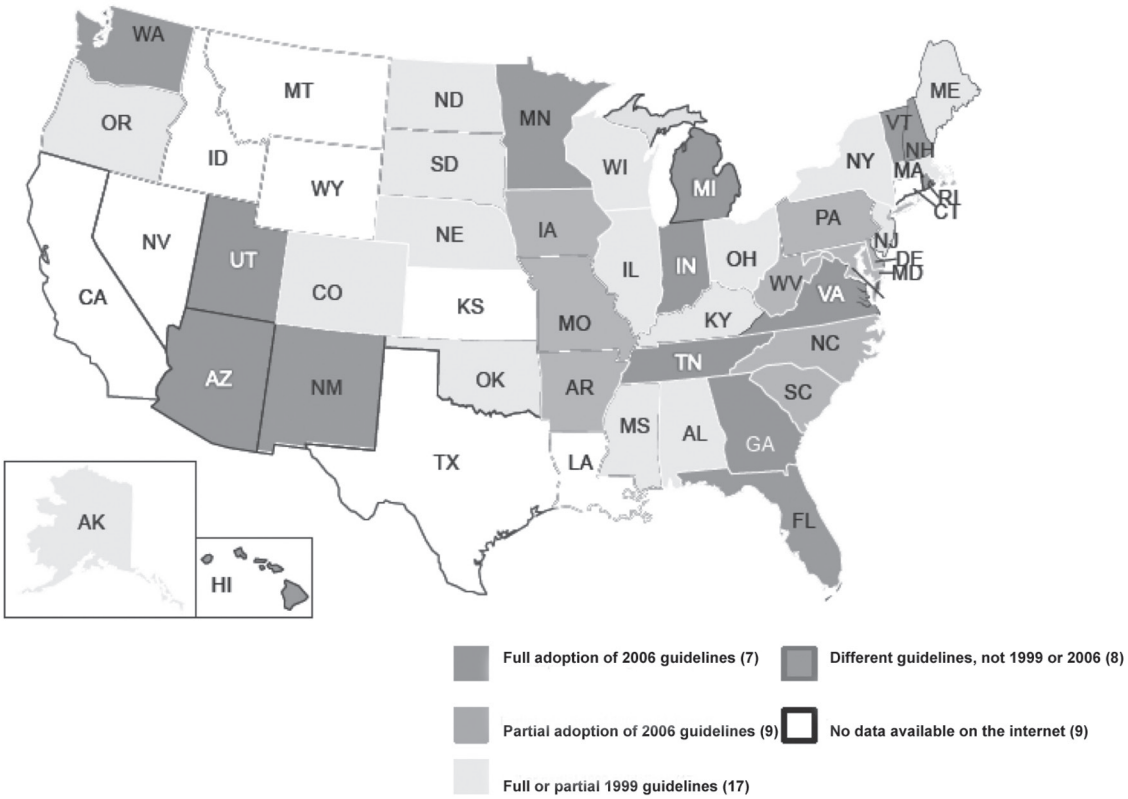

Figure 4. Adoption status of the 2006 field triage guidelines by state as of April 2010.

(1999 or other), the authors based their decisions regarding whether a scheme was consistent with 1999 on the language, flow, and organization of a given scheme.

For those states classified as either full or partial adopters, an analysis was performed using the U.S. Census Bureau's "Annual Estimates of the Resident Population for the United States, July 1, 2009."[13] We conducted this analysis to determine the percentage of the U.S. population living in an area with full or partial adoption of the 2006 Decision Scheme.

RESULTS

The authors located information regarding field triage on the publicly available websites for 41 states as of April 26, 2010. In nine states, the authors could not locate any information regarding field triage on their public websites.

Of the 41 states where authors located the information, seven (Arizona, Georgia, Indiana, Michigan, Tennessee, Utah and Virginia) were classified as "full adopters." Nine were considered "partial adopters" (Arkansas, Delaware, Iowa, Maryland, Missouri, North Carolina, Pennsylvania, South Carolina and West Virginia). Authors found 17 states using a full version or modification of the 1999 Field Triage Decision Scheme[8] (Alabama, Alaska, Colorado, Illinois, Kentucky, Maine, Massachusetts, Mississippi, Nebraska, New Jersey, New York, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Wisconsin). Reviewers judged that eight states (Florida, Hawaii, New Hampshire, New Mexico, Minnesota, Rhode Island, Vermont and Washington) were using a different protocol or scheme for field triage; the schemes were not clearly recognizable as versions of the 1999 or 2006 Field Triage Decision Schemes (Figure 4).

Based on the census data referenced above, states classified as full adopters represent 50,411,245 persons or 17% of the estimated 2009 U.S. population (303,039,262).[13] States classified as partial adopters represent 45,016,379 persons or 15% of the estimated 2009 U.S. population (303,039,262).[13]

We conducted a further analysis of those states classified as full and partial adopters. The states of Arizona and Tennessee made no changes to the 2006 Field Triage Decision Scheme prior to placing it on their respective websites.[14,15] Georgia adopted the 2006 Decision Scheme in its entirety, with only a minor addition to pediatric vital signs to Step one of the scheme, adding age specific criteria for the upper limit of respiratory rate in children under the age of six.[16] Utah made minimal changes and added language to Steps one, three and four as well as the transition boxes.[17] Although no protocol exists on its website, the EMS commission for Indiana has the legal authority from the state to "adopt rules concerning triage and transportation protocols for the transportation of trauma patients consistent with the field triage decision scheme of the ACS-COT"[18] and passed a motion in September 2009 to "develop rule language that requires transport ambulance provider medical directors to issue protocols

for the transportation of trauma patients consistent with the ACS-COT."[19] Similarly, in Michigan, the rules developed by the Michigan Department of Community Health governing the statewide trauma system state that "Protocols, which are established and adopted by local medical control, may be developed based on the standards incorporated by reference in these rules, *Resources for Optimal Care Of The Injured Patient 2006."*[20] Finally, the Office of EMS in Virginia in a 2009 review of triage processes within Virginia stated "Within this document [*Resources for Optimal Care Of The Injured Patient 2006]* is a triage scheme that has also been adopted by the CDC and NHTSA. The Office of Emergency Medical Services (OEMS) should use this document as it has the rest of the ACS/COT book and develop a statewide trauma triage scheme that will be incorporated into all EMS agencies patient care protocols in the applicable sections. This should in fact already be occurring."[21]

In states classified as "partial adopters," we found no consistency in the changes that were made. In some instances, the changes were minor. For instance, in South Carolina, the 2006 scheme was reproduced with a deletion from Step three (vehicular telemetry) and burns were not moved to Step four.[22] In others, the scheme largely represents the 1999 scheme or a different triage algorithm, but contained language specific to the 2006 Field Triage Decision Scheme (e.g., vehicular telemetry data consistent with a high risk of injury, time sensitive extremity injury) within the algorithm. Some states, such as Delaware, incorporated many of the elements of the 2006 scheme, but presented them as an outline and eliminated the binary branch points contained in the original algorithm. The modified guideline is consistent with the flow and formatting of this state's other prehospital protocols.[23] In contrast, Pennsylvania maintained the overall structure of the algorithm, but combined the physiologic and anatomic elements into one category and the mechanism of injury and special consideration elements into a second category. The Pennsylvania guideline also added state specific destination and mode of transport criteria to the guideline.[24] Similarly, the Arkansas triage scheme combined the physiologic and anatomic categories, and went into specific detail with respect to mode of transport, distance and time. However, unlike Pennsylvania, the Arkansas scheme is mostly derived from the 1999 document with a few elements from the 2006 Field Triage Decision Scheme.[25]

DISCUSSION

In its 2006 multi-volume report on the *Future of Emergency Care in the United States*, the Institute of Medicine called for the development of "model prehospital care protocols for the treatment, triage, and transport of patients."[26] Similarly, a multidisciplinary expert panel developed the 2006 Field Triage Decision Scheme in an effort to improve the field triage of injured patients across the U.S. It was endorsed by 17 national organizations, with concurrence from NHTSA. To the authors' knowledge, the *MMWR* represents the first concerted effort to promulgate national guidelines for the field triage of injured patients.[10]

Following its original publication in the ACS-COT monograph *Resources for the Optimal Care of the Injured Patient* in 2006, the supporting rationale and evidence for the scheme was published in the *MMWR* in January 2009.[9-10] Following these publications, the CDC pursued an active plan for disseminating the 2006 Field Triage Decision Scheme. The CDC provided 250,000 field triage print materials including the *MMWR*, pocket card, posters and training guides to EMS medical directors, administrators and providers. The *MMWR* was reprinted in its entirety in *JEMS: A Journal of Emergency Medical Services.*[27] Information regarding the Decision Scheme has been presented at international, national and regional conferences and has encouraged debate about the revisions contained in the 2006 version of the scheme.[28] Additionally, the CDC established a website (www.cdc.gov/fieldtriage) in January 2009 that has had 47,193 page views and 4,953 downloads of the *MMWR* as of April 30, 2010.[29]

This paper represents the first attempt to analyze the use of the 2006 Field Triage Decision Scheme and provides insight into the scheme's use, modifications and the population potentially covered by the field triage methodology.[9] It also is a measure of the challenge of disseminating, translating, and implementing a national policy or guideline at the local level. This effort reveals that 32% of the 2009 U.S. population is living in a community that was identified in this study as having adopted (partially or fully) the 2006 Decision Scheme. Furthermore, the availability of such information to the general public could also be considered a 'public notice' of official administrative support for the 2006 Field Triage Decision Scheme within the governmental unit responsible for EMS.

For the prehospital environment, prior guideline development for this segment of healthcare providers has faced challenges. In a qualitative, exploratory study of EMS professionals at a national conference, Sasson et al.[30] identified communication, uniform educational requirements and local EMS service coordination as potential operational barriers to the implementation of national guidelines for the termination of unsuccessful resuscitation efforts in the prehospital environment. Similarly, in a survey of 176 EMS agencies, Bingham et al.[31] reported ten unique barriers to implementation of the 2005 American Heart Association guidelines for out-of-hospital cardiac arrest. The barriers fell into three categories including: instructional delays, technology delays regarding defibrillators, and decision-making delays at the state and local level.[31] In addition, recent work by Weik[32] among a national sample of pediatric emergency services providers, suggests that adoption and compliance can be enhanced. This may be done through the incorporation of local performance measures in the presence

of state statutes, rules and regulations as well as the pivotal role of local emergency medicine 'champions' and existing job satisfaction by key EMS leaders.

There is a growing body of literature that examines the barriers and incentives for healthcare providers in the adoption, implementation and adherence to specific guidelines and clinical policies. In a 1999 article by Cabana et al.,[33] 32 years' of published studies of barriers to guideline adoption were analyzed. This study found that while the reasons for guideline adherence may not be generalizable across specialties, there were common elements regarding the modification of physicians' knowledge, attitudes, and behavior which could be addressed to reduce barriers to guideline adherence. Key issues such as lack of guideline awareness, familiarity, agreement, perceived self-efficacy and outcome expectancy in the context of institutional inertia and other external barriers were commonly reported. Furthermore, three Cochrane systematic reviews in the past two years, not only have confirmed these earlier findings, but also offer evidence to suggest that adoption and compliance may be improved by tailoring interventions to a given locality rather than at a national level.[34-36] However, the present study was unable to examine specific barriers to adoption of the scheme using the available methodology. Further evaluation of barriers is needed, and would certainly affect the development and execution of policies or programs designed to increase adaptation and strengthen implementation of not only these, but also additional guidelines targeting the prehospital environment.

LIMITATIONS

This study has several important limitations. Our methodology consisted only of internet searches of publicly available information. Location of relevant material not only depended upon the authors' ability to navigate to and locate the necessary information, but also on website design, maintenance, and content updates. Some states may have endorsed, adopted, or used the 2006 Field Triage Decision Scheme; however, these activities may not be adequately or appropriately reflected on their public websites. Thus, some states classified as "information not available" or using a different scheme, may in fact be using the 2006 Field Triage Decision Scheme, but they did not have that information readily available on their website. The states that actually use other guidelines may not be aware of the revisions or they simply may not have had time to update their guidelines on their respective websites. The authors did not conduct a formal survey of state health departments or EMS agencies, which may have provided more information regarding the current status of the adoption and use of the 2006 Decision Scheme. However, we thought that if information was not publicly available, then the dissemination and adoption of the guideline may not have occurred statewide. We acknowledge that placement of the 2006 Field Triage Decision Scheme on a website does not guarantee that the scheme is being used throughout a state. States vary in regulatory nature regarding the provision of EMS. Thus, a state may not be able to mandate use of the 2006 scheme within their local communities, and placement of the Decision Scheme on the website may not accurately reflect activities at the local level. Finally, we were not able to compare the speed and spread of adoption to prior revisions. In the past, the guideline has simply been part of the ACS-COT book *Resources for the Optimal Care of the Injured Patient* but there have not been the same extensive dissemination efforts that were used for the 2006 guideline.[4,6-9] However, given that at least eight states in this study used their own version of a field triage guideline, this suggests that there are states that are either not aware of the national guideline, or may not consider that the national guideline meets their needs.

CONCLUSION

Accurate field triage is critical. Getting the right person, to the right place, at the right time can have a profound impact on patient morbidity and mortality as well as overall system efficiency, effectiveness, and safety.[3] The 2006 Field Triage Decision Scheme incorporates a rigorous review of the available science on field triage and represents the multidisciplinary expertise of individuals across the spectrum of public health and acute injury care. Many states have adopted the 2006 Decision Scheme either fully or partially. However, further investigation is needed to determine the reasons why some states may choose not to adopt the guidelines and whether such a decision represents a need for more enhanced guideline dissemination or incorporation of perceived local needs and considerations.

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Suburban Poverty: Barriers to Services and Injury Prevention among Marginalized Women who Use Methamphetamine

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Objective: This paper aims to identify the needed healthcare and social services barriers for women living in suburban communities who are using or have used methamphetamine. Drug users are vulnerable to injury, violence and transmission of infectious diseases, and having access to healthcare has been shown to positively influence prevention and intervention among this population. Yet little is known regarding the social context of suburban drug users, their risks behaviors, and their access to healthcare.

Methods: The data collection involved participant observation in the field, face-to-face interviews and focus groups. Audio-recorded in-depth life histories, drug use histories, and resource needs were collected from 31 suburban women who were former or current users of methamphetamine. The majority was drawn from marginalized communities and highly vulnerable to risk for injury and violence. We provided these women with healthcare and social service information and conducted follow-up interviews to identify barriers to these services.

Results: Barriers included (1) restrictions imposed by the services and (2) limitations inherent in the women's social, economic, or legal situations. We found that the barriers increased the women's risk for further injury, violence and transmission of infectious diseases. Women who could not access needed healthcare and social resources typically used street drugs that were accessible and affordable to self-medicate their untreated emotional and physical pain.

Conclusion: Our findings add to the literature on how healthcare and social services are related to injury prevention. Social service providers in the suburbs were often indifferent to the needs of drug-using women. For these women, health services were accessed primarily at emergency departments (ED). To break the cycle of continued drug use, violence and injury, we suggest that ED staff be trained to perform substance abuse assessments and provide immediate referral to detoxification and treatment facilities. Policy change is needed for EDs to provide the care and linkages to treatment that can prevent future injuries and the spread of infectious diseases. [West J Emerg Med. 2011;12(3):284-292.]

INTRODUCTION

Methamphetamine (MA) is a stimulant that affects the central nervous system and releases dopamine neurotransmitters to the brain while simultaneously inhibiting their uptake. This produces a pleasurable experience along with increased activity and decreased appetite. The effects of MA "may include increased blood pressure, hyperthermia, stroke, cardiac arrhythmia, stomach cramps and muscle tremor; acute negative psychological side effects include anxiety, insomnia, aggression, paranoia and hallucinations," while MA withdrawal may produce "fatigue, anxiety, irritability, depression, inability to concentrate and even suicidality."[1] MA use can damage nerve terminals and cause body temperature to become dangerously elevated.

MA users, compared to users of other drugs, have more serious health problems, risk behaviors and exposure to

human immunodeficiency virus (HIV) infection.[2-10] A review of the literature on MA use and injury found that injuries were primarily associated with driving and violence, as well as related to MA production.[11]

Studies show that drug-using females, especially those who inject drugs, are a vulnerable population for transmission of infectious diseases.[2,5] Female MA users also show more indicators of depression than male users and are more likely to report they use MA for self-medication and weight-loss.[12] While female MA users are vulnerable to the same risk factors as men, social and economic context has a greater impact on women MA users than on men, and women are motivated to use MA for social and emotional reasons rather than sexual stimulation. [13-14] Moreover, injuries related to physical violence were reported more among female than male MA users.[15]

Research shows that injection risk behaviors among drug users are socially learned and influenced by the social context of drug use.[16-23] Yet we have little understanding of the social context of suburban drug users, their risk behaviors, and their awareness of drug-related diseases. Even less is known regarding socially marginalized suburban women who use drugs and lack access to needed healthcare. Due to the stigma related to drug use, the risk for injury is intensified for women who use drugs and are afraid of admitting to their drug use, often intimidated by potential legal repercussions.

The aim of this paper is to identify the barriers to needed healthcare and social services for suburban women who use or have used MA. We used a sample of women interviewed in a research study on MA users in the suburbs funded by the National Institute on Drug Abuse (NIDA). Our broad long-term goal is to better understand how to provide services for women marginalized by drug use and poverty in order to prevent further injury, violence and transmission of diseases.

METHODS

Based on a two-year study on MA use in the suburbs, we found that women were at greater risk for injury and diseases than were the men in our study. This prompted a second study to further examine the social context, reasons for drug use, risk behaviors and access to needed healthcare and social services among a sample of female MA users living in the suburbs. The study field included the 12 counties that surround a large metropolitan area in the southeastern United States. Only those counties recognized as suburban areas of the city were included in our field recruitment.

Recruitment and Screening

Recruitment began with researchers spending time in the field and becoming acquainted with various drug-using networks. We used a combination of targeted, snowball, and theoretical sampling methods to recruit non-institutionalized participants.[24,25] We first used a screening process to ensure that participants passed the eligibility criteria: being 18-years or older and having used MA in the suburbs. Screening consisted of asking questions that were not related to the criteria (e.g., do you have children, are you employed) so that criteria eligibility could not be guessed. The researcher's university Institutional Review Board approved the study protocol. Data collection started in February 2010, and the last participant was enrolled in March 2011.

Data Collection

We used a longitudinal design consisting of three interviews: a first in-depth interview, drug history and risk behavior inventory; a second follow-up interview; and a third follow-up interview in conjunction with a focus group. Participants chose to join a focus group or conduct the third follow-up interview alone. Interviews were audio-recorded and conducted in a private location agreed upon by the interviewer and participant, including the participant's home, private library rooms, a private university research office and the interviewer's car. The principal investigator and trained, certified research assistants conducted the interviews face-to-face. No identifying material was collected. Signed consent was obtained before collecting information. The recordings were transcribed verbatim. The qualitative data included field notes, interviewer notes, and transcripts of interviews and focus groups. All data were protected by a certificate of confidentiality granted by NIDA, which also protected the researchers from court subpoena. This certificate aided in helping to gain the trust of the participants, as was our willingness to help women access the resources they needed. Our involvement with accessing resources merits further explanation.

During the first interviews, participants were provided a list with the numbers and addresses of the healthcare and social services in their counties in response to their expressed needs. These included medical and dental services, psychiatric counseling, family counseling, legal services, employment services, screening for (HIV), hepatitis C (HCV) and sexually transmitted diseases, detoxification and drug treatment, food and housing services. Initially, we drew from a pamphlet of resources that was freely provided by local government and non-profit social services, and we added those we found through our own searches on the internet. At the follow-up interviews we inquired about the women's success at accessing and using services from the individualized resource list we gave them. During the focus group sessions, we again discussed each resource we provided, if it had been contacted, and how successful the women were in having their needs met by these resources. After a few follow-up interviews, and upon learning that the majority of resources the women had contacted either did not respond or responded negatively to requests for help, we began to call from the lists ourselves to confirm what the women told us. The typical response to our inquiries was to be referred to another service. Based on these referrals, our resource list increased.

Sample

Thirty-one women were interviewed, and of these over half completed all three interviews. Ages ranged from 19 to 50-years-old. Twelve were active users of MA, defined as having used MA at least once in the 30 days prior to the last interview. Seventeen reported to having injected drugs, and four knew of their positive HCV status. Twenty-four women were identified as part of a marginalized sub-population, defined as having little or no employment, no permanent housing, no dependable transportation, and inconsistent access to a telephone number. While all women asked for and were given resource lists for their specific needs, we primarily worked with the marginalized and most vulnerable women to try to find needed resources. This subgroup represents the majority of the women described in this paper.

RESULTS

All transcripts and notes were coded to better examine the barriers the women experienced. The commonly reported barriers were combined under one of two categories: restrictions and limitations. Restrictions are barriers implemented by the social service or their regulatory agency, such as mandatory fees and waiting lists. Limitations are related to the women's own limited resources to access services, such as lack of phone or transportation.

Restrictions to Services

The most common restrictions experienced by our participants were identification requirements, mandatory fees, waiting lists, service use caps and having a criminal or drug use history, which virtually "blacklisted" the women from accessing resources. Below we give examples of these restrictions based on our field experience with the population and quotes from the participants. We learned that many participants already knew of these restrictions, and, therefore, never attempted to access resources that might have been available to them. Others who had already been turned away previously attempted to access them again in the naïve hope that our referral provided some source of social capital.

Government Approved Identification

Most services require some form of identification (ID)—typically a government-issued ID, such as a driver's license or military card. Our efforts to help our participants obtain an ID led to a "Catch-22" dilemma when we discovered they needed an official birth certificate to be issued an ID, but they could not obtain their birth certificate unless they provided proof of identification. For example, one homeless participant looking for shelter had lost all but one proof of ID (an old social security card). Her official driver's license had been stolen, and she could not be re-issued one until she provided two acceptable proofs of ID, one being a birth certificate. The process of obtaining her birth certificate continued to present challenges, as she needed an immediate form of payment over the phone, a fax machine to send her proof of ID, and an address to receive the certificate, all of which were unavailable to her. Without her ID, we were not able to help her find any shelter or even obtain food from the community food pantry.

Another young woman left all her belongings and paperwork when she abruptly left the trailer where she had lived with an abusive boyfriend. When we tried to help her obtain these items, her ex-boyfriend said he had thrown them away. Without her ID, she was prohibited from accessing needed treatment. We soon learned that what one woman said was true for all: "If you don't have two forms of ID, together, you don't have nothing."

Mandatory Minimum Fees

The primary resource needed by the women that was most inaccessible was healthcare, including medical, psychological and dental services. Clinics that charged sliding scale fees revealed a minimum payment that often presented a restriction for many homeless and almost homeless women. Those services that did not charge a fee had other restrictive payment requirements, such as proof of Medicaid, which presented a seemingly insurmountable challenge of paperwork for those who might qualify. Only one woman in our sample who attempted to qualify for Medicaid actually obtained it, after a nearly two-year wait. When we met her she had been unemployed for years, a victim of domestic violence, and indicated what appeared to be mental health problems. Blinded in one eye by a recent accident, she was helped with the copious paperwork by the women in her community.

Women without Medicaid or insurance typically could not afford even the minimum payment. When we told one woman about a program that required a minimum of only $12, she replied:

> "Well, if I could afford it then I would do that. I would, but I can't afford that 12 dollars a day. I can't. There's no way. I mean, I do good to come up with a couple dollars a day to put in my car so I can get somewhere…but it's hard."

Perpetual Waiting Lists

Long waiting lists were a significant barrier for housing, medical and dental services, emergency financial assistance, and inpatient substance abuse treatment. To our surprise, even domestic violence shelters had waiting lists. Most of our participants who attempted to access resources for which they qualified reported various responses from the service providers that essentially meant there was a waiting list. For example, one woman told us, "They wasn't giving out any assistance until the first of the month when they got funds in." Others who asked to get on a list were told that the waiting list was closed.

Service Use Caps

Another surprising finding was that the services needed by the most poor had restrictions on the number of times they

could be used. These included emergency food services and homeless shelters. One homeless woman described her situation saying, "Once you leave the shelter, you can't go back for six months, so that wasn't an option. I had nowhere to go; I was headed for the woods." We heard similar stories outside the only homeless shelter in one suburban county as the homeless were turned away for reaching their maximum nights of use without finding employment.

In another instance, we found that if the homeless women did not use a service for several weeks, their files would be closed. After a patient's files were closed, their name was placed at the end of a long waiting list when they tried to access services again. This was the case at a suburban health center providing a narrow range of physical and mental health services where some women became unable to access needed psychotropic medications. The state of these women during this time left them more vulnerable to numerous health and safety risks.

Blacklisted: Criminal Records and Drug and Alcohol Screens

Criminal convictions, particularly drug convictions, affected our participants' ability to receive food, shelter, and other basic resources they needed when employment was almost impossible to obtain due to their record. In other cases, the women would have been eligible to stay at the only homeless shelter in the area but were restricted due to drug and alcohol testing. Rather than any desire to be "high," we learned that their reasons for continuing drug use were due to their insecure situations, mental health issues, or physical and emotional pain that was left untreated. In fact, many women wanted help for their addiction to alcohol or drugs. One woman who was expelled from a shelter told us she would like to have drug treatment, and she tried to stop on her own, but it was difficult in her current homeless status: "I'm having a hard time struggling with drugs. I do need treatment, but I can't get in [and] I don't have a way to comply with the shelter rules."

The use of drugs and alcohol to ease their troubled state of existence is well known, and we found women are especially susceptible to using alcohol or drugs when in a relationship with a user. For example, one woman, who had been drug-free for over three months, was allowed entry to a homeless shelter and permitted to stay after she found part-time employment at a nearby business. She was doing well until she accepted a beer from a homeless man she befriended and was denied entry to the shelter after failing a breathalyzer test. The next time we saw her; this 50-year-old woman was prostituting on a busy highway and staying at a low-rate motel where she took her clients.

Limitations to Service Use

In addition to the barriers that restricted access to services, the women often did not use services for which they qualified, due to social and economic limitations endemic among marginalized populations. The most common limitations experienced by our participants were no transportation, lack of communication technology, and fear of unwanted governmental intrusion.

Lack of Public Transportation

Transportation limitations were ubiquitous for our suburban population. If there was any public transportation in the suburban communities, it was very limited in terms of geographic coverage and frequency of service. Additional transportation services offered in some counties had other limitations, such as short hours of operation and appointment requirements.

Some women asked neighbors with cars for help; however, when they relied on the charity of others, they were often at the mercy of these people's busy schedules, and frequently left without a ride due to unforeseen circumstances. Since the women did not have reliable transportation, they missed multiple appointments and either stopped trying access services or, at times, were told they could not schedule another appointment since they had missed so many. Suburban women who knew of free or affordable services in the city were cut off from these more comprehensive and accommodating urban service centers for lack of transportation.

We discovered that among most of the marginalized communities we studied, men owned cars more than did women. The working-class men typically needed a car since they relied on it for many kinds of part-time work that required their own equipment (i.e. small construction jobs, scrap metal collection, landscaping). The farther away from shopping and service areas the women lived, the more dependent they were on men with cars. We found that this meant some women remained dependent on abusive partners with access to transportation. One participant described her geographically isolated situation when her abusive partner left her, "I can't get anywhere. I can't do anything. I'm stuck."

Communication Problems: "Leave a Message"

As mentioned previously, even those females who were fortunate enough to have a residence were often faced with the dilemma of not having a working phone number for callbacks from social services. We found that most of the phone numbers listed for social services were answered with a voice mail recording asking the caller to leave their name and a number to call back, which these women usually could not provide. Moreover, even when calls were answered by a live staff person, it was typically a volunteer or intern who wanted nothing but a name and phone number to give to a supervisor at an undisclosed later date. As one participant attempting to find a job through her county's department of labor explained, "Well, I mean, I gave someone's phone number, but, you know, that's not their problem. When you look for a job, you got to have a phone." Another woman corroborated when she

tried to access financial services, "They wanted a telephone number to call you back, and you get a recording…but they acted like they would help me if I had a number for them to call back." Eventually, our researchers helping the women left our own phone number, but we were rarely called back. While we became frustrated, our participants became disheartened. "Just forget it," we heard too often when we encouraged them to try again.

Fear of Government Intrusion

Fear of governmental intrusion was also a serious concern for the women who were using or had used illegal drugs and were seeking help. Homeless shelters often drug test mothers with children, putting them at risk for unwanted intervention by the Department of Family and Child Services. Others had already experienced losing their children to social service care and were afraid to even attempt help from any government source.

Most of the women did not want contact with law enforcement, which limited their access to services. For example, one woman called us to ask to go to an emergency department (ED). She did not have transportation, and in the past she was billed for the ambulance. The EDs we contacted told us that if a patient needed to get to the hospital without an ambulance, they should call the police. Typically, current or former drug users who have had negative encounters with the police in the past were not willing to do this since it calls attention to their drug-using situation. Domestic violence shelters also tended to have this same requirement. To keep their locations confidential, they preferred that clients arrive in a police car. Our female participants were repeatedly unwilling to call the police for help. As one said, "How do I know I can trust them? No, no way, I'm not doing that."

Consequences of Barriers to Services

Injuries

The lack of health services often resulted in injuries associated with continued drug use. The women recounted their experiences of untreated injuries to themselves or their families due to a lack of ongoing medical care. During a focus group, one woman explained:

> "My son broke his arm and I didn't have insurance so they just put a temporary cast on him and that's all they would do. They will say, "Follow up with so-and-so [family doctor] in two days." When you go to that doctor then you got to write a check or they're just not going to take you."

Another participant in the focus group agreed as she held up a broken finger, describing a similar scenario: "I was supposed to follow up with a surgeon but I didn't have the money, it's still broken and it still hurts!"

In some instances, use of the drug itself was involved in the injuries sustained by the women. The interviewer was summing up this woman's case:

> "You had an accident on methamphetamine so that's why you can't see well. Well, you were on Xanax and methamphetamine at the time. And you fell and the knife went into your eye…[Participant: To the back of my skull.]"

Remaining in these vulnerable circumstances without resources left women at risk of serious injury that often went improperly treated.

Violence

One chronic social disease that often resulted in injury was domestic violence. Nearly 80% of the suburban women in our sample experienced domestic violence, and many lived with abusive partners in their homes or had former violent partners living in their communities. This left them at risk for unexpected violence. One woman admitted that her missing teeth were due to an estranged husband's anger, and he still showed up unannounced at the home where she was now living. Without the social capital or economic means to obtain a legal divorce, there was little for her to do but wait until he hit her before she could call the police. She had learned, as another woman corroborated, that without physical abuse, the police in her area would not do anything. Two women in our sample reported having been taken to the police station and jailed when they were defending themselves against abusive husbands and the police believed they were the perpetrators of the violence instead.

Those women with no one to take them in reported assaults by strangers. Barriers to homeless shelters, described above, left the women exposed to violent attacks on the street, such as the homeless woman who recounted a violent episode that left a visible scar:

> "I was cut in '07 in my face and my hand by a [man] on the street. Just for no reason, he just walked up, gang-related shit, you know. And I'm too old to be out there fighting off these people on the streets… And he thought well, gee, there goes a—let me go cut her up. Nobody's going to miss her. I've even had police officers tell me that. "How many man hours, how many tax dollars do you think we're going to spend looking in the woods for your butt? If you're stinking in the woods, we'll find you one day."

Infectious Diseases

Seventeen women in our sample were injectors, and as such they were at risk for more health problems in the absence of needed services. Focus group discussions revealed how the scarcity of services that address drug use in suburban areas increases this population's risk of injury and infectious disease. The unavailability of new syringes heightens their risk of injury, as does their lack of proper sterilization knowledge and equipment. One participant said, "A lot of people don't have access to water or boiling water. Yeah, they use dirty creek water. I've seen somebody use lake water, and

I've seen people use spit." While some women knew that syringes were more accessible in the city, few of our participants had transportation or ventured that far if they did. Most expressed apprehension of buying syringes in a pharmacy for fear of being labeled a drug user. The women who knew how to obtain syringes often got them from friends who were diabetic or who knew a diabetic.

Public health issues, such as the spread of infectious diseases, emerged as a major concern. Only half of the women in our sample knew their HCV status, and of these, four women reported to have been diagnosed with HCV. While many women had not been tested for years, a few learned of their status while in jail. Participants with HCV reported multiple barriers to treatment, and untreated injectors were at higher risk for injury while they remained untreated. These women were unable to obtain laboratory tests to diagnose the stage of their HCV or receive consistent medical attention. For example, a female injector, 21-years-old, recently learned that she had HCV when she was in jail for possession and distribution of MA. When asked if she knew how she got it, she replied, "Hepatitis C…is very prevalent in [suburban town]. I can name at least five friends that have it." At the time of her last interview, she was receiving no healthcare or further treatment due to lack of resources, including no insurance and no transportation. Moreover, she was refused care at two public clinics because she did not live in the same county and did not have the proper paperwork. Subsequent contact with her revealed that she was continuing to inject MA in high-risk social settings.

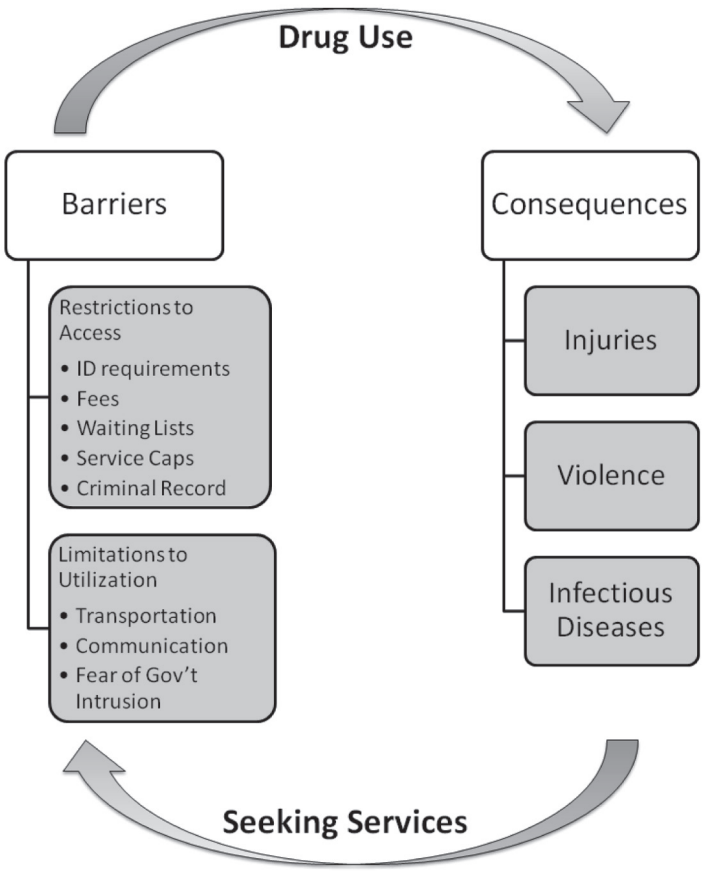

Figure 1. Cycles of barriers to social services and drug use.

Treatment for Drug Abuse

Gender played a part in lacking access to detoxification, stabilization units and/or drug treatment facilities. In the area of our study, many more inpatient facilities exist for men than for women. For women with children, the premium for bed space is especially high. In an attempt to find a detoxification and treatment residence for one woman, 45 calls were made to various treatment facilities by the participant and our research staff. This count, drawn from field notes, did not include call transfers, returned calls, or unreported calls. This homeless woman, like most of those we interviewed, was a polydrug user taking whatever was available to ease her suffering. Withdrawing from physical addiction to methadone and Xanax, she went to an ED and was released after 12 hours as "medically stable" while still homeless, psychologically drug addicted, and without medication for her high blood pressure. When we called the ED to understand why she was released without detoxification and drug treatment for opioids, the hospital staff responded, "We can't give our beds to drug addicts." Her continued drug use left her vulnerable to greater injuries as she combined drugs that were available to her from unreliable sources. Similar to many of the most marginalized and vulnerable women in our study, we lost contact with her.

Detoxification is not available to MA users for the purpose of MA withdrawal. Other than evidence of a threat of harm to self or to others, free public-funded facilities required the presence of benzodiazepines or alcohol in the bloodstream for the patient to be considered for long-term detoxification and treatment. Some women learned that if they said they were suicidal, they might be accepted into an ED and possibly a detoxification facility. In one case, a woman who had recently relapsed knew from previous experiences at an ED in another county that she had to have alcohol in her blood and be suicidal to be admitted. She presented with these symptoms and received long-term help. Today this woman lives in a safe aftercare home and has employment.

DISCUSSION

Our findings show two alarming facts regarding access to needed services for the most marginalized women living in suburban areas: (1) legitimate services have numerous restrictions and limitations that act as barriers to obtaining needed healthcare, shelter, and other resources; (2) these barriers frequently leave these women in a vulnerable state and subject to further injury, violence or infection.

The stories of these women revealed a cycle of drug use followed by barriers encountered while attempting to access needed social services, followed by more drug use to ease their now increasing pain and suffering. Figure 1 depicts this

cycle of barriers to needed services and the drug use that are both causes and consequences of each other in a recursive process.

The cycle does not necessarily begin with drug use. MA was frequently cited by the women as a way of forgetting emotional scars, such as childhood traumas like rape and molestation. Others used it to cope with domestic violence and emotional abuse. The consequences of using MA–chiefly injury, violence, and disease–subsequently led the women to seek health and social services.

Restrictions such as ID requirements and long waiting lists were met with apathy by marginalized service consumers, who tended to surrender hope of accessing needed resources based on past experiences. Inability to access emergency resources, such as shelter in the winter, psychotropic medications, or follow-up care to ED visits, left the women open to greater risks and vulnerable to injuries.

Limitations to services were exacerbated by the lack of public transportation in suburban areas. Reliance on transportation for the most basic needs, such as food, work, and healthcare, left many of the women in vulnerable situations with abusive partners or voluntarily exposing themselves to harm from former boyfriends or strangers in exchange for transportation.

For the majority of our socially isolated participants, EDs were their only source of healthcare. Others have found, similarly, that EDs are the primary source of healthcare for chronic drug users and other vulnerable populations.[26, 27] A study by Larson et al[28] found that a high rate of ED use was associated with barriers to regular care similar to those we found, including lack of insurance, inability to pay for services, difficulty with transportation, and substance abuse issues. Healthcare use and risk prevention awareness has been shown to help prevent HIV and other infectious disease transmission, but a lack of resources and continuity of care are barriers to healthcare and treatment.[29-33]

The ED is an important point of contact between marginalized drug users and health and social service providers, often during times of greatest need. Kellerman[34] identified ED physicians and staff as critical sources for injury control. Yet our study findings show that marginalized female MA users living in the suburbs not only experienced multiple barriers to healthcare use, but they also lacked continual care or injury prevention after ED visits. McCoy[35] suggests that this may be due in part to the fact that primary and emergency providers of healthcare may lack sufficient knowledge and training when dealing with substance users. The same study shows that simple drug user awareness training can both improve attitudes and knowledge about users and their needs as well as encourage implementation of drug use screening and assessment protocols. We echo others' suggestions for care providers to identify health and social needs when marginalized users present at EDs and to connect them with social workers and resources beyond their stay in the ED.[28, 35, 36]

LIMITATIONS

The major limitation of this study is that it cannot be generalized beyond the research sample. However, as a primarily qualitative study, it does not require a probability sample. The goal is to gain a better understanding of injury risk behaviors and access to healthcare and social services among a suburban sample of female MA users. A convenience sample is sufficient to achieve this goal.[37-9] Despite its limitations, the findings from this qualitative study contribute to the literature an in-depth and detailed understanding of injury risks faced by marginalized women living in the suburbs.

CONCLUSION

We know that drug use is a significant factor in violence and injury, particularly among women, and MA-using females are more likely to be exposed to injury and violence than their male counterparts.[15] Our findings show that healthcare and social services are related to injury and violence prevention, but in the suburbs these services often are overburdened, under-funded and intimidating to drug-using women. Lack of services or access to services leaves women and their children vulnerable to the risk of injuries. We found that many of these women receive their only healthcare while incarcerated or at EDs. We know that preventative healthcare at public funded clinics is a more feasible solution, and ultimately is less costly to the taxpayer than emergency care.[31, 34]

More can be done within the public health field to prevent injury among drug-using populations. Prevention and intervention initiatives can be placed in community health clinics with specialized staff trained in drug-related injuries and diseases. Women and others who come to the ED for drug-related injuries or ask for drug treatment should be taken to the appropriate treatment facility, either detoxification units or residential treatment. Those who test positive for HCV should be offered continued care.[40] Compared to public spending for those who repeatedly use ED for injuries, and who are at greater risk for contracting infectious diseases, providing treatment appears to be a more economically feasible solution than to discharge drug addicts seeking treatment when they are "medically stabilized." If this is the current policy, efforts should be made to have policy changed.

Finally, attention needs to be focused on addressing the needs and limitations that are unique to vulnerable populations in the suburbs. While urban areas have the greatest numbers of residents needing social and healthcare resources, they also have more services aimed at the poor. However, suburban rates of poverty and associated drug use and crime are increasing.[41] Suburban ED staff should be trained in substance abuse assessment, HIV and HCV prevention, screening and continued care, and to provide drug users who present at EDs access to treatment on demand. While these require short-term funding, they are less costly to municipal and state healthcare budgets than the long-term expenses incurred by treating

the multiple injuries and diseases resulting from untreated drug addiction and associated violence and transmission of infectious diseases.

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Injury Secondary to Antiretroviral Agents: Retrospective Analysis of a Regional Poison Center Database

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Introduction: Poisoning is an increasingly important cause of injury in the United States. In 2009 poison centers received 2,479,355 exposure reports, underscoring the role of poison centers in intentional and unintentional injury prevention. Antiretroviral (ARV) agents are commonly prescribed drugs known to cause toxicity, yet the frequency of these incidents is unknown. The objectives of this study were to quantify the number of reported cases of toxicity secondary to ARV agents at a regional poison center, and to describe the circumstances and clinical manifestations of these poisonings.

Methods: We conducted a retrospective review of poison center records between December 1, 2001, and January 7, 2010.

Results: One hundred sixty-two exposures to ARV agents were reported to the poison center, of which 30% were intentional and 70% were unintentional. Three patients developed major toxicity and no deaths occurred. The remaining patients developed moderate and minor effects as defined by poison center guidelines.

Conclusion: ARV drug toxicity appears to be infrequently reported to the poison center. Fatal and major toxicities are uncommon, and intentional overdoses are associated with a more serious toxicity. Educational efforts should encourage clinicians to report toxicities related to the use of ARV agents to poison centers in order to better study this problem. [West J Emerg Med. 2011;12(3):293-295.]

INTRODUCTION

Poisoning, an important cause of morbidity and mortality in the United States (U.S.), can be intentional or unintentional. Poison centers receive reports from the public, as well as healthcare professionals, for poisoning exposures in the 50 states and U.S. territories.[1] The data is compiled and monitored in a near-real time setting through the National Poison Data System.[2]

Antiretroviral agents (ARVs) are commonly prescribed drugs with well-characterized adverse effects. They are effective in improving survival rates for patients with human immunodeficiency virus and acquired immunodeficiency syndrome.[3] However, chronic adverse effects, such as pancreatitis, hypersensitivity, peripheral neuropathy and nephrolithiasis, can limit clinical effectiveness and in some cases may be fatal. Lactic acidosis is the most serious adverse effect. It can be seen in the setting of acute overdose, as well as with chronic therapeutic use, and has a mortality of 33-57%.[4]

The true incidence of intentional or unintentional injury due to ARVs is unknown. A total of 5,563 exposures to ARVs were reported to the American Association of Poison Control Centers between 2001 and 2008, of which 29% were intentional. Five deaths were reported and 4% of patients had major clinical outcomes.[2]

This study will quantify the number of intentional

and unintentional injuries due to toxic exposures to ARV medications reported to the Georgia Poison Center (GPC).

METHODS

The GPC is located in Atlanta and serves the state of Georgia. It receives more than 80,000 exposure calls per year and has one of the largest call volumes when compared to the rest of the nation's poison centers. Specialists in Poison Information Systems (SPIS) answer all incoming calls from both persons in the community and medical professionals. Their tasks are to record pertinent information about the poisoning and make recommendations regarding management. The patient's name, age and gender are recorded, as well the names of all substances involved, amount, route, circumstances, time of exposure and symptoms. These data are entered into the poison center database using a combination of specific data fields and free text space.

Based on information from the initial phone call, the SPIS classify clinical outcome due to the exposure as a no effect, minor, moderate, major outcome or death. Case outcomes are classified as minor when the effect involves only one organ system, is short in duration and has no permanent effects. Effects that are more prolonged (as judged by the SPIS) or involve more than one organ system are termed moderate outcomes. Major outcomes involve permanent disability or life-threatening exposures. Exposures that do not meet these criteria are deemed to have no potential to be toxic, or not related to the reported clinical effect, and are not followed to an outcome.

The poison center attempts to follow all exposures involving minor, moderate or major effects to outcome via phone calls to the patient or treating facility. Any additional information obtained from these phone calls is entered into the poison center database in the same fashion as the initial call. Occasionally, the poison center is unable to obtain further information about the case.

Two study investigators accessed the poison center database in July 2009, and January 2010. They queried for entries involving any ARV agent from December 1, 2001, through the date accessed, most recently, January 7, 2010. Information obtained for each case included patient age, gender, substances ingested, effects, therapies administered, management site and medical outcome (when available). We performed descriptive statistics on demographics, type of medication and category of outcome after overdose. The local institutional review committee approved this study.

RESULTS

One hundred sixty-two exposures were documented between December 1, 2001 and January 7, 2010, with 15 patients lost to follow up. The average patient age was 27-years-old (standard deviation [SD] 19 years) and 100 cases (62%) were male. Zidovudine was the most common single drug reported as causing toxicity. It was involved in 46 patients as a single or combination drug.

Of the 162 exposures, 49 (30%) were judged intentional and 113 (70%) unintentional or unknown. We classified intentional exposures as suspected suicide (96%) or intentional misuse (4%). Unintentional exposures were classified as therapeutic error (58%), general unintentional (33%), adverse drug reactions (8%) or unknown (1%). General unintentional exposures are those not otherwise categorized as adverse drug reaction, therapeutic error, or unknown.

Of the 162 patients, 51 (31%) were categorized as potentially toxic or related to the clinical effect and were followed to clinical outcome. Thirty-four (67%) of these patients had intentional exposures. Of the 51 patients that were followed to a clinical outcome, 6% had a major, 27% had a moderate, 23% had a minor, and 51% had no effect. There were no patient deaths. Table 1 summarizes the above findings.

The three patients who had a major effect were admitted to a critical care unit. Two of these cases were reported as intentional ingestions and the third was an unknown exposure. One exposure involved Trizivir® which contains abacavir, lamivudine and zidovudine. This patient developed coma. A second exposure was to lamivudine (Epivir®) 300mg tablets, efavirenz (Sustiva®) 200mg capsules and abacavir (Ziagen®) 300 mg tablets. This patient developed lactic acidosis, renal failure and coma. The final case with major toxicity involved exposure to stavudine alone. This patient developed renal

Table 1. Clinical outcomes for intentional and unintentional exposures of antiretrovirals.

Clinical outcome	Intentional exposures (n=49)	Unintentional exposures (n=113)
Followed to outcome - major effect	2	1
Followed to outcome - moderate effect	10	4
Followed to outcome - minor effect	9	4
Followed to outcome - no effect	13	8
Not followed – nontoxic or not related to an effect	5	91
Unable to follow	10	5

failure and coma. The number of pills ingested and non-ARV co-ingestants were not reported to the GPC for these cases.

Among patients categorized with moderate effects, six reported exposure to multiple ARVs. Six patients were admitted to critical care units, three to psychiatric facilities, and the others required minimal medical treatment. The most common effects reported in this group were hypertension (six patients), tachycardia (four patients), agitation (three patients), hypotension (three patients) and vomiting (three patients).

Thirteen patients were reported to have minor effects. One patient had a three-drug exposure and four patients had a two-drug exposure. The most common effects reported in this group were drowsiness or lethargy (four patients), abdominal pain (three patients) and vomiting (three patients).

Excluding the 15 patients that were lost to follow up, 54% of the intentional exposures had a major, moderate, or minor effect. This is in comparison to 8% of unintentional exposures.

DISCUSSION

Overall, exposures to ARVs comprise a small percent of the annual exposures reported to the GPC. There is no discernable trend in the number of exposures reported per year (Figure 1). There were a small number of cases of toxicity from ARV medications reported as well. Furthermore, only a small percentage of the total reported cases (2% or three patients) led to major toxicity. Due to our low numbers of critically ill patients, we are unable to predict which patients are at risk for severe morbidity or mortality. Based on our data, the majority of exposures to ARVs, whether intentional or unintentional, led to self-limited or no clinical effects.

As reported above, 54% of patients with intentional exposures had clinical effects, compared with 8% of patients with unintentional exposures. This results from larger doses of medications ingested by patients with intentional exposures compared to those who have adverse reactions due to therapeutic usage. Unfortunately, information on ingested dose is not consistently available.

In 2008, 60 U.S. Poison Centers reported receiving 4,333,012 exposure calls from the public or health care providers.[2] Although ARVs represent a small proportion of the reported exposures, the potential for serious injury due to these agents remains and is a public health concern. Clinicians should be encouraged to report all injuries due to pharmaceuticals to poison centers. This will help organizations, such as the AAPC, to construct less subjective data-collection tools. This could lead to more sensitive monitoring of trends of side effects of specific therapeutic agents or the use of certain pharmaceuticals, such as ARVs, for intentional injury. In this current era of preventive medicine and drug safety, a comprehensive, and rigorous, real-time surveillance system will prove invaluable to healthcare and public health. Policy makers and pharmaceutical companies can then use this information to minimize risks posed to patients by these drugs.

LIMITATIONS

There are several limitations to this study. First, it was a retrospective analysis of relatively few cases. Cases of ARV toxicity may have been misclassified as an unknown ingestion. Poison center data have been shown to be prone to incompleteness and inaccuracy. Second, some of the compounds involved in exposures reported to the GPC have been introduced within the last 10 years, meaning less data exist on toxicities due to intentional or unintentional overdose for these compounds in the clinical setting. Furthermore, with fewer than 10 exposures reported for many of these compounds, drawing a link between exposure and outcomes is not possible. Moreover, the reported dose ingested is often unknown or uncertain. Lastly, we had 15 patients lost to follow-up.

CONCLUSION

Major toxicity and death due to ARV medication are rare occurrences, as currently reported to the GPC. Patients with intentional exposures were more likely to have clinical effects than patients with unintentional exposures. Clinicians should be encouraged to report suspected intentional or unintentional injury due to pharmaceuticals to their local poison center. In the future, policy makers can mandate reporting injuries by healthcare professionals from commonly used and or potentially toxic medications and greatly enhance the accuracy of existing surveillance systems.

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Intentional Ethylene Glycol Poisoning Increase after Media Coverage of Antifreeze Murders

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Background: The media can have a profound impact on human behavior. A sensational murder by ethylene glycol (EG) poisoning occurred in our state. The regional media provided extensive coverage of the murder. We undertook this investigation to evaluate our incidence of EG poisoning during the timeframe of before the first report linking a death to ethylene glycol to shortly after the first murder trial.

Methods: Descriptive statistics and linear regression were used to describe and analyze the number of EG cases over time. A search of the leading regional newspaper's archives established the media coverage timeline.

Result: Between 2000 and 2004, our poison center (PC) handled a steady volume of unintentional exposures to EG [range: 105–123 per year, standard deviation (SD)=7.22]. EG exposures thought to be suicidal in intent increased from 12 cases in 2000 to 121 cases in 2004. In the 19 months prior to the first media report of this story, our PC handled a mean of 1 EG case with suicidal intent per month [range: 0–2, SD=.69]. In the month after the first media report, our PC handled 5 EG cases with suicidal intent. When media coverage was most intense (2004), our PC received a mean of 10 EG suicidal-intent calls per month [range: 5–17, SD=3.55]. Although uncommon, reports of malicious EG poisonings also increased during this same period from 2 in 2000 to 14 in 2004.

Conclusion: Media coverage of stories involving poisonings may result in copycat events, applicable to both self-poisonings and concern for malicious poisonings. Poison centers should be aware of this phenomenon, pay attention to local media and plan accordingly if a poisoning event receives significant media coverage. The media should be more sensitive to the content of their coverage and avoid providing "how to" poisoning information. [West J Emerg Med. 2011;12(3):296-299.]

BACKGROUND

Previous studies have shown that the media can affect human behavior. For example, published literature demonstrates links between the media and several categories of human behavior. Media influence has been implicated in encouraging copy-cat suicide events, sexuality at an earlier age, impressions about ideal body image, eating disorders and violence.[1-5]

In January 2001, a Forsyth County, Georgia, firefighter suddenly died. The Georgia Bureau of Investigation ruled the firefighter died from ethylene glycol (EG) poisoning. At the time of his death, the firefighter was living with a 911 operator named Lynn Turner. In 1995, Mrs. Turner's husband, a Cobb County, Georgia, police officer, also had died unexpectedly. After the firefighter's death, the police officer's body was exhumed. Ultimately the Cobb County Medical Examiner changed his cause of death from cardiac dysrhythmia to EG poisoning. In November 2002, Lynn Turner was charged with murder.

The regional media provided extensive coverage of the case. The story received national attention in 2004 when the first murder trial was broadcast live on Court TV. During this time period, the clinicians at the Georgia Poison Center

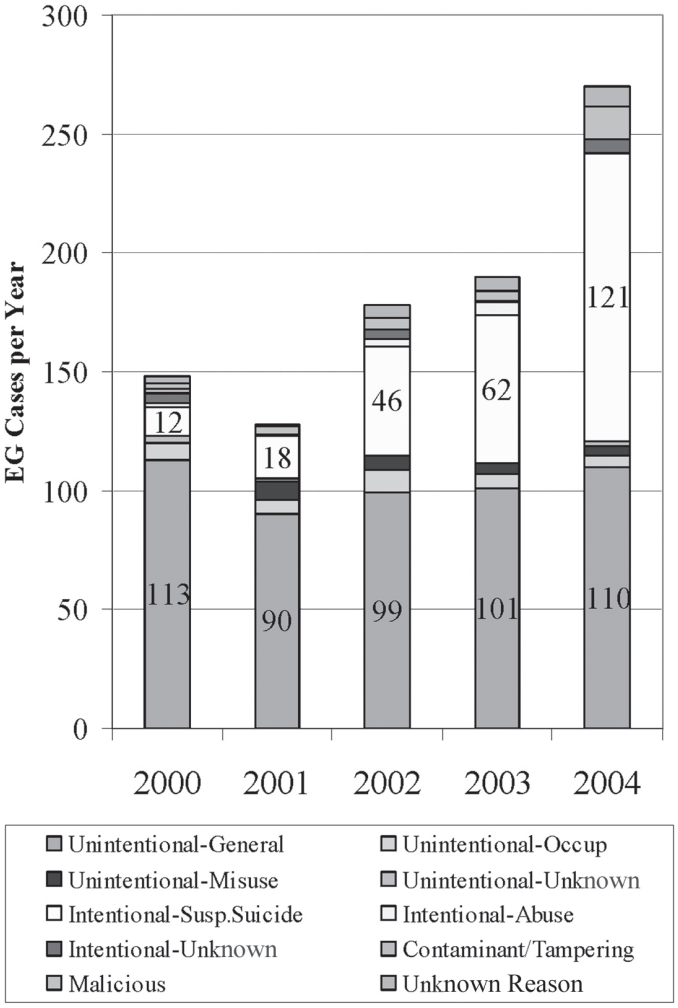

Figure 1. Ethylene glycol (EG) cases by intention.

(GPC) felt there was a significant increase in the number of EG poisoning cases being managed by the center, both by intentional ingestions of suicidal intent and potentially malicious events. We undertook this investigation to evaluate our incidence of EG poisoning during the timeframe of before the murder of the firefighter (2000) to shortly after the first murder trial (2004).

METHODS

The GPC tracks all call data in an electronic database (Call Tracking System, Jacksonville FL). Data fields captured from each call include caller name, date, exposure substance, patient demographics and intent (suspected suicide, malicious, unintentional) of the exposure. We queried this dataset from January 2000 to December 2004, for all exposure cases involving EG. To establish a media coverage timeline of the murder case and to correlate the media coverage with the GPC data, we performed an electronic search of the archives of the Atlanta Journal-Constitution (AJC). We used descriptive statistics and linear regression to describe and analyze the number of EG cases over time.

RESULTS

The results of this retrospective analysis show the number of EG cases by intent per year of study in Figure 1. The annual number of human exposures to EG handled by our poison center increased steadily from 148 to 270. The number of EG cases categorized as suicidal in intent increased ten-fold from 12 cases in 2000 to 121 cases in 2004; however, unintentional EG cases remained steady during our study period with a mean of 115 per year (range: 105-123, SD=7.22). Poison center cases involving suspected malicious EG poisoning increased from two to 14 cases during the study period. Due to the retrospective nature of this analysis, we are unable to determine whether physician suspicion of EG poisoning may have increased and, therefore, whether physicians called the poison center more often for similar clinical scenarios than in previous periods.

In the 19 months prior to the first media report of the EG homicide, our poison center handled a mean of one EG suicide case per month (range 0-2, SD=0.69). In the month after the first media report, we identified five EG cases with suicidal intent. Figure 2 reveals the number of EG cases in relation to the media reports discovered in our search of the AJC. During 2004, when the media coverage was most intense, the mean number of EG cases with suicidal intent was 10 per month (range 5-17, SD=3.55). Well-defined clusters of suspected EG suicides appear to correlate closely with the media timeline. The peak number (n=17) of cases per month occurred in May 2004, when the trial was broadcasted on national television.

EG suspected suicide cases were more likely to involve males than females. In 2004, there were 25 cases involving females and 96 involving males. Male suspected-suicide cases also increased more rapidly than females. Teenagers showed the smallest increase in suspected EG suicides over the study period. Among females, suspected EG suicides appear more common in the 40-49 years age group. Most cases occurred in a residential setting, where the site of exposure is recorded. Of those cases during the study period with known outcomes, most cases suffered moderate to severe injury. There was no recognized increase in fatality rate during this period.

DISCUSSION

To our knowledge, this is the first study that has linked media coverage of a murder by poison with an increase in the number of suicide attempts involving the poison. We believe this association is real and cannot be fully explained by other factors. The overall call volume of our poison center did not significantly change during the study period, so the increase does not appear to be secondary to increased poison center penetrance into our region nor better collection of data. Similarly, we are unaware of any reason clinicians would suspect or confirm the diagnosis of EG poisoning more readily during this time period. It also seems unlikely that EG suddenly became more readily available for ingestion. The fact that our number of unintentional cases of EG ingestion did not significantly change supports this view. Examples of

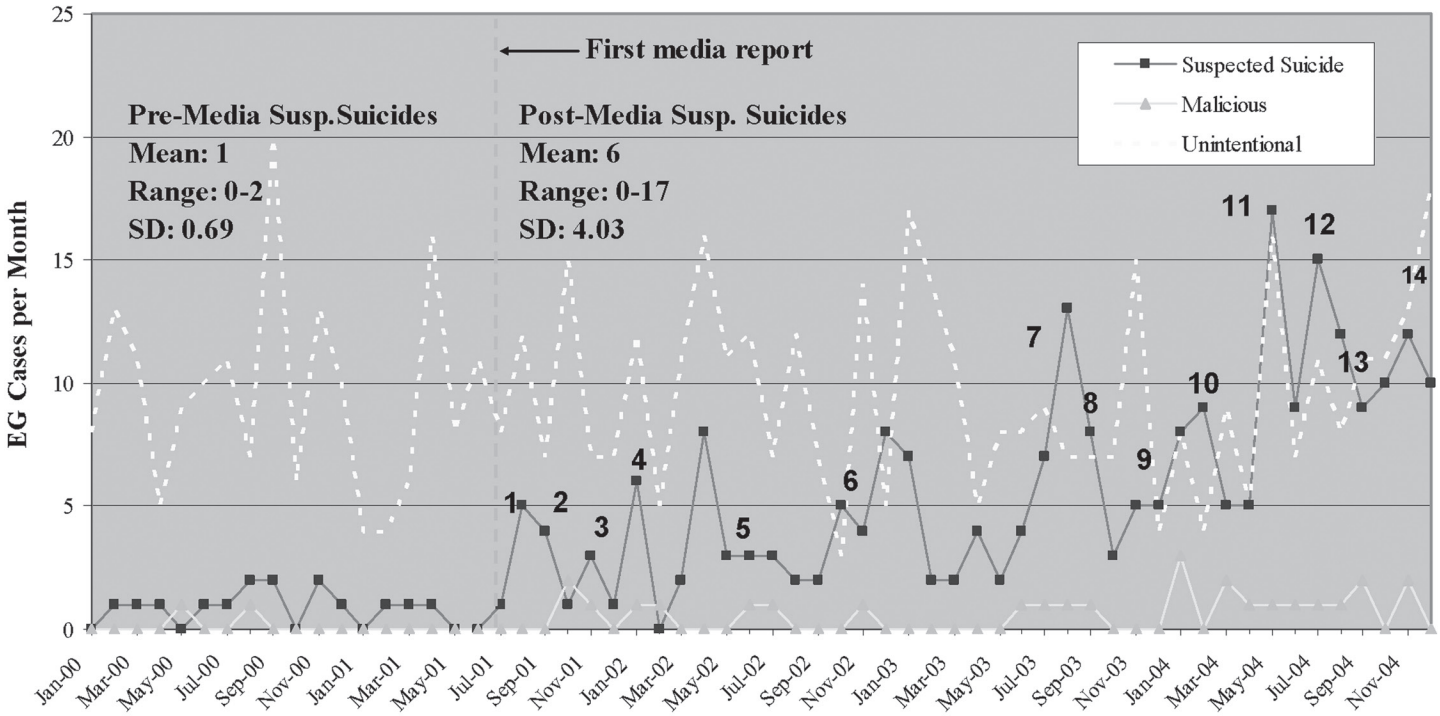

Figure 2. Ethylene glycol (EG) cases per month by intention: 2000-2004.

	Media Timeline
1	Investigation opened once boyfriend's Jan 2001 death attributed to EG poisoning, husband's body exhumed
2	Results show husband's 1995 death due to EG poisoning
3	Boyfriend's death ruled homicide; body of 2nd law enforcement officer exhumed
4	Lab results show 2nd officer's death not due to EG poisoning
5	Husband's 1995 death ruled homicide
6	Lynn Turner formally charged with husband's 1995 murder & declared prime suspect in boyfriend's 2001 murder
7	Pre-trial hearing; court rules to allow testimony on boyfriend's death because of case similarities
8	Court rejects plea to bar testimony on boyfriend's death in husband's murder trial
9	Court rejects plea to bar EG lab test results
10	Trial begins but change of venue ordered after 62 of 65 jurors questioned said they had heard about the case in pretrial publicity
11	Trial broadcast live on national TV; ends with guilty verdict and immediate life sentence
12	Investigators question whether deaths of another woman and her former boyfriend were caused by EG poisoning
13	Lynn Turner formally charged with boyfriend's murder & faces new charges for falsifying documents for loan
14	Prosecutors announce plan to seek death penalty

SD; standard deviation

unintentional exposure would be a toddler who is found mouthing a container with EG or an adult who swallowed a mouthful of EG while siphoning fluid from an automobile radiator.

The GPC is one of 57 poison centers in the United States that belong to the American Association of Poison Control Centers (AAPCC) and uploads its data in near real-time to the National Poison Data System (NPDS).[6] The AAPCC prepares the NPDS annual report that gives statistics and information on all the poisoning in a calendar year. The outbreak in Georgia had an effect on NPDS data. In 2000, the Georgia cases of EG ingestion with suicide intent represented less than 3% of all such cases reported to NPDS.[7] By 2004, the Georgia cases represented 16% of such cases reported to NPDS.[8]

We selected the Atlanta Journal Constitution (AJC) as our media marker, partly because it is the largest newspaper in our state and partly because of the convenience of its online archives searching tool. We do not feel that the EG suicide-intent patients were necessarily getting media information solely from the AJC but rather the AJC reports represent

important points of the murder case that were probably covered at the same time by other media sources, such as newspapers, television and radio.

The number of poison center cases of EG exposures with suspected malicious intent increased from two cases in 2000 to 14 cases in 2004. However, to our knowledge, none of the cases were ever proven to be malicious and likely represented the coding process of an inquisitive or concerned caller. For example, a year ago the poison center received a call from an individual who stated his stepmother killed his father with EG. The case would be coded as an EG exposure with malicious intent, and more than likely the caller would be told if the individual was concerned he/she should contact the proper authorities. So, while the actual number of true malicious poisoning may not have increased, it is still interesting that the number of cases coded this increased; this may represent increased awareness of the lethality of EG from the media coverage. In fact this type of call to a poison control center is consistent with the findings of LoVecchio et al [9] who after the 2001 anthrax terrorism deaths reported a substantial increase in the number of possible anthrax exposure calls.

It is unclear what culpability the media has in our outbreak. It is possible that all of the media-influenced EG suicide-intent cases began with depression, and the media reports only influenced the selection of the suicide substance consumed. Some medical toxicologists are reluctant to give media interviews about the latest unusual drug of abuse, for fear that the media report itself with induce others to try the substance. Poison centers often provide public education through the media, but recipients can use this knowledge either to take added precautions or to use as a means of committing further mayhem. The optimal means of public education under such circumstances remain an area for further study.

The media does have an obligation to accurately report the news. Perhaps an attempt could be made not to sensationalize the case or not repetitively name the poison used in murder-by-poison cases. Poison centers should be aware of poisoning events that occur in their region and have a heightened suspicion that future copycat exposures may occur.

Lastly, in 2004 Lynn Turner was convicted of the murder of her husband, followed by a March 2007 murder conviction of her boyfriend. She was sentenced to life in prison without parole. On August 30th, 2010, at the age of 42, Turner was found dead at the Metro State Prison. An autopsy by the state's Chief Medical Examiner indicated Turner died from a toxic amount of her prescribed blood pressure medication, propranolol.

LIMITATIONS

We only used the AJC to represent media reports in our state. Other media sources may not have covered the Lynn Turner EG murder case as closely. Our study was retrospective in nature, so we did not have the opportunity to prospectively inquire if any of our suicide-intent patients were directly influenced by the Lynn Turner case. Additionally, not all poisonings are reported to the poison centers and many exposures are uncharacterized.

CONCLUSION

Media coverage of stories involving poisonings may result in copycat events, applicable to both self-poisonings and possible malicious poisonings. Poison centers should be aware of this phenomenon, pay attention to local media, and plan accordingly if a poisoning event receives significant media coverage. The media should be more sensitive to the content of their coverage and avoid providing "how-to" poisoning information.

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Suicide Fads: Frequency and Characteristics of Hydrogen Sulfide Suicides in the United States

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Objective: To assess the frequency of hydrogen sulfide (H_2S) suicides and describe the characteristics of victims in the United States (U.S.) since the technique became common in Japan in 2007.

Methods: To ascertain the frequency of intentional H_2S related deaths in the U.S. prior to the start of the Japanese trend in 2007, we searched the multiple-cause-of-death data from the National Vital Statistics System. To collect as much information about the victims as possible, we sent an email to the National Association of Medical Examiners (NAME) listserv asking for their cooperation in identifying cases of H_2S suicide. To identify cases that were not voluntarily reported by medical examiners but were reported by the media, we conducted Google searches using the search terms: "hydrogen sulfide suicide," "H_2S suicide," "detergent suicide," "chemical suicide," and "suicide fad." We obtained all available autopsy reports and abstracted information, including the site of the incident, the presence of a note warning others about the toxic gas and the demographic characteristics of the victims. We contacted medical examiners who potentially had custody of the cases that were identified through media reports and requested autopsies of these victims. When unable to obtain the autopsies, we gathered information from the media reports.

Results: Forty-five deaths from H_2S exposure occurred in the U.S. from 1999 to 2007, all unintentional. Responses from the NAME listserv yielded autopsy reports for 11 victims, and Google searches revealed an additional 19 H_2S suicides in the U.S. since 2008. Overall (n=30), two cases were identified during 2008, 10 in 2009, and 18 in 2010. The majority of victims were white males, less than 30-years-old, left a warning note, and were found in cars. There were five reports of injuries to first responders, but no secondary fatalities.

Conclusion: H_2S suicides are increasing in the U.S., and their incidence is probably underestimated by public health officials and physicians. First responders are at risk when assessing these victims due to the severe toxicity of the gas. Emergency providers must be aware of H_2S suicides to educate others and care for the rare survivor. [West J Emerg Med. 2011;12(3):300-304.]

INTRODUCTION

Hydrogen sulfide (H_2S) is an infrequent but well recognized occupational and industrial hazard and is a cause of substantial morbidity and mortality. Typical occupational scenarios involve exposure to high concentrations of H_2S gas released from petrochemical plants, sewers, volcanoes, or manure pits. Fatalities of workers and rescuers involved in these incidents have been reported extensively.[1-6] The toxicodynamic effect of H_2S is similar to cyanide in that it binds to cytochrome-*c* oxidase and is classified as a cellular asphyxiant. High concentrations of H_2S are associated with sudden loss of consciousness (the so-called "knockdown" effect), apnea and rapid death. Lower level exposures have resulted in pulmonary edema and keratoconjunctivitis among survivors.[7]

Fatal intentional exposures in the United States (U.S.) have not been described in the medical literature; however,

Table 1. Victim characteristics by case.

Year	Autopsy Available?	Age	Sex	Race	Warning note present?	Location of victim	Additional casualties?
2008	No	23	M		Yes	Car	No
2008	Yes	23	M	White	Yes	Car	No
2009	Yes	31	M	White	Yes	Car	No
2009	Yes	31	M	Black	No	Bathroom	No
2009	Yes	42	M	White	Yes	Car	No
2009	No	29	M	White	Yes	Car	No
2009	Yes	42	F	White	Yes	Car	No
2009	Yes	22	M	Black	Yes	Car	No
2009	No	21	M		Yes	Car	No
2009	Yes	22	M	White	Yes	Car	No
2009	No		M		Yes	Car	No
2009	No		M		No	Car	No
2010	Yes	22	M	White	Yes	Car	No
2010	No		F		Yes	Car	No
2010	Yes	21	M	Black	Yes	Closet	No
2010	Yes	20	M	White	Yes	Car	No
2010	Yes	44	F	White	Yes	Car	No
2010	No	20	F		Yes	Car	No
2010	No	33	M		No	Car in garage	Yes
2010	No	35	F		No	Car	Yes
2010	No	18	M		No	Bedroom	Yes
2010	No	31	M		Yes	Car	No
2010	No		M		Yes	House	No
2010	No	24	M	White	Yes		No
2010	No	23	M		No	Car	Yes
2010	No		M		Yes	Car	No
2010	No	24	M		Yes	Car	Yes
2010	No		M		Yes	Car	Yes
2010	No	40	M		Yes	Car	No
2010	No		M		Yes	Motel room	No

suicides using H_2S have been described in Japan since 2007.[8] These suicides have been dubbed "detergent suicides" by the media because they are carried out by mixing household chemicals (often an acidic toilet bowl cleaner as a proton donor and insecticides or bath salts as a sulfur source) to produce toxic concentrations of H_2S gas.[9] The specifics of this technique became available on Japanese websites in late 2007. It is thought that availability of this information contributed to a dramatic increase in the number of these cases reported.[10, 11] In 2007, there were only 27 cases of H_2S suicides in Japan; however, 517 cases were reported between January and July in 2008.[7] To date, there has not been a comprehensive survey for fatalities from intentional inhalation of H_2S gas in the U.S. Furthermore, because there is no single database for reporting causes of death or methods of suicide, it is likely that the prevalence of this "fad" may be underestimated by public health officials and emergency responders, the latter being at increased risk when attempting to extricate patients or victims from an environment of highly toxic H_2S. Through exploring the characteristics of these patients, we hope to educate emergency providers about the dangers posed by this novel suicide technique.

METHODS

To ascertain the frequency of intentional H_2S related deaths in the U.S. prior to the start of the Japanese trend in 2007, we searched the multiple-cause-of-death data from the National Vital Statistics System (NVSS) available via the

Table 2. Examples of household chemicals that can be mixed to produce H_2S gas in toxic concentrations.

Acid Sources	Sulfur Sources
Lysol® ready to use disinfectant (4-8% citric and hydroxyacetic acid)	Artist oil paints (0-15% zinc sulfide)
Lysol® toilet bowl cleaner (9.5% HCl)	Dandruff shampoos (1.0% selenium sulfide)
Sno Bol® toilet cleaner (15% HCl)	Pesticides (5-30% calcium polysulfides)
The Works® toilet bowl cleaner (15-25% HCl)	Spackling paste (1-2% zinc sulfide)
Blue-Lite® germicidal acid bowl cleaner (20.5% phosphoric acid)	Some latex paints (6.6% zinc sulfide)
Kaboom® shower, tub, and tile cleanser (5-7% urea-monohydrochloric acid)	Garden fungicides (5-90% sulfur)
Tile, stone cleaners (1-30% HCl)	Selected bath salts (25-35% sulfur)

HCl, hydrochloric acid

National Center for Health Statistics (NCHS) at the Centers for Disease Control (CDC). Mortality data from the NVSS are a fundamental source of demographic, geographic, and cause-of-death information. These data are provided through contracts between NCHS and vital registration systems operated in the various jurisdictions legally responsible for the registration of vital events and are considered the most comprehensive source of vital statistics in the U.S. These data are available to the public for query on the CDC website.

To collect as much information about the victims as possible, we sent an email to the National Association of Medical Examiners (NAME) listserv asking for their cooperation in identifying cases of self-inflicted H_2S poisoning. All information obtained was voluntarily contributed by medical examiners and was compliant with the Health Insurance Portability and Accountability Act regulations. All documents were transmitted by secure fax or by mail; all autopsies and patient identifiers were kept in a locked file cabinet. Medical examiners determined that the cause of death was H_2S in these cases based on the conditions of the event, such as presence of "rotten egg smell" in the environment and the presence of chemicals on scene that produce H_2S in sufficient concentrations as to cause death. To identify cases that were not voluntarily reported by medical examiners but were reported by the media, we also conducted multiple Google searches using the search terms: "hydrogen sulfide suicide," "H_2S suicide," "detergent suicide," "chemical suicide," and "suicide fad."

Once cases were identified, we then obtained all available autopsy reports and abstracted information including the site of the incident, the chemicals used, the presence or absence of a note warning others about the toxic gas, and the demographic characteristics of the victims, mainly age, gender and race. We contacted medical examiners who potentially had custody of the cases that were identified through Google searches and media reports and requested autopsies of these victims. When unable to obtain the autopsy reports, we gathered as much information as possible from the media reports themselves.

RESULTS

According to the multiple-cause-of-death data from the NVSS, NCHS, there were 45 deaths from H_2S exposure in the U.S. from 1999 to 2007, but all were deemed unintentional. To date, the NVSS has only been compiled through 2007, thus it could not be queried for deaths occurring from 2008-2010. Responses from the NAME listserv inquiry yielded full autopsy reports for 11 victims from 2008 to 2010. Google searches revealed an additional 19 H_2S suicides in the U.S. since 2008. The sentinel case was identified by Google search and occurred August 26, 2008. The most recent case was also identified via Google search and occurred October 1, 2010. Overall (n=30), only two cases were identified during 2008, followed by 10 cases in 2009, and 18 in 2010. Victims were identified in 12 different states. The majority of victims were male (83%). Ten victims were identified as "white," three were identified as "black," and the remaining 17 had no racial identifiers. Age was available for 23 of the victims, who ranged from 20 to 44 years of age. Fourteen victims were less than 30 years of age. Twenty-four of the victims left notes warning neighbors and first responders of the potentially hazardous chemical suicide underway. Twenty-three (77%) victims were found in cars. There were five reports of injuries to first responders, but there were no secondary fatalities. The specifics of injuries to first responders were not available, however at least three required evaluation in the emergency department (ED).

DISCUSSION

"Detergent suicides" are becoming increasingly common in the U.S. Following the two sentinel cases in 2008, the number of victims increased five-fold in 2009, and nearly doubled again in 2010. The characteristics of this population are similar to other high fatality suicide modalities in that the majority of victims for whom demographic data is available are white males. As is referenced on the Japanese websites, it appears that the majority of victims believed that they were being considerate of first responders by selecting enclosed environments (such as cars and closets) and posting notes

warning them of the toxic gas within. In this survey, however, there were reports of injuries to five first responders. This clearly demonstrates that H_2S suicides constitute a threat to first responders, and that recognition of potential H_2S scenarios and appropriate personal protective equipment should be discussed to prevent further morbidity and mortality.

Overall, it seems likely that we can expect the frequency of H_2S suicides to increase as this method is popularized in media coverage of these deaths and more websites appear offering guidance on this issue. Additionally, the household chemicals needed to create toxic concentrations of H_2S gas are myriad and readily available in stores and on the internet. Given the facts that there were no H_2S suicides reported in the NVSS through 2007 and no media reports of H_2S suicides prior to 2008, it seems clear that this reporting represents an actual increase in cases and not simply an increase in media reporting of such events.

As emergency providers it is critical to be aware of this practice in order to adequately assess and educate bystanders and first responders after non-fatal exposures, as well as provide appropriate care to the rare victim that survives the initial attempt. To date, there have not been any fatalities among first responders involved in these incidents; however, two emergency medical technicians in North Carolina were sent to the ED for irritant respiratory symptoms after attempting to rescue a woman from her car when no warning sign was posted.[12] Furthermore, an incident in Japan in which a 14-year-old girl committed suicide with H_2S resulted in 90 ill neighbors after the gas seeped into adjacent apartments.[13] These events illustrate the potential for inadvertent casualties associated with these suicides and highlight the need to educate ED providers regarding management of H_2S exposures.

Additionally, this study demonstrates a need for change in health policy to address the need for quicker dissemination of suicide statistics to prompt early implementation of prevention strategies. Furthermore, the fact that the majority of H_2S suicides were publicized on the internet or on television news highlights the responsibility of the media in disseminating perhaps more information than is prudent when discussing novel suicide techniques. There is a role for public health officials in addressing the manner and extent of such potentially destructive information when shared with the general public.

LIMITATIONS

This study is limited in that cases were referred by medical examiners on a voluntary basis only or when a publically available account (i.e. internet) could be attributed to the correct medical examiner. It is likely that there may be additional cases that were not captured in our query of medical examiners via listserv. Furthermore, it is also possible that additional H_2S suicides occurred that were not reported in the media, and therefore not identified by Google searches. Analysis of the descriptive characteristics of these events was also limited by the lack of availability of full autopsy reports for 19 of the 30 victims.

CONCLUSION

To date, the incidence of suicide by intentional inhalation of homemade H_2S gas is probably underestimated by physicians and public health officials. It seems likely that we can expect these rates to increase as H_2S suicides are popularized in media coverage of these deaths and more websites appear offering guidance on this issue. Public health officials should be aware of this disturbing trend in order to implement plans for prevention of morbidity and mortality due to intentional H_2S exposure. Furthermore, first responders must be knowledgeable about these events to protect themselves when approaching a potential H_2S victim.

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Pre-Teen Alcohol Use as a Risk Factor for Victimization and Perpetration of Bullying among Middle and High School Students in Georgia

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Objective: We examined the association between pre-teen alcohol use initiation and the victimization and perpetration of bullying among middle and high school students in Georgia.

Methods: We computed analyses using data from the 2006 Georgia Student Health Survey (N=175,311) of students in grades 6, 8, 10 and 12. The current analyses were limited to students in grades 8, 10 and 12 (n=122,434). We used multilogistic regression analyses to determine the associations between early alcohol use and reports of both victimization and perpetration of bullying, perpetration only, victimization only, and neither victimization or perpetration, while controlling for demographic characteristics, other substance use, peer drinking and weapon carrying.

Results: Pre-teen alcohol use initiation was significantly associated with both bullying perpetration and victimization relative to non drinkers in bivariate analyses (OR=3.20 95%CI:3.03-3.39). The association was also significant between pre-teen alcohol use initiation and perpetration and victimization of bullying in analyses adjusted for confounders (Adj.OR=1.74; 95%CI:1.61-1.89). Overall, findings were similar for boys and girls.

Conclusion: Pre-teen alcohol use initiation is an important risk factor for both the perpetration and victimization of bullying among boys and girls in Georgia. Increased efforts to delay and reduce early alcohol use through clinical interventions, education and policies may also positively impact other health risk behaviors, including bullying. [West J Emerg Med. 2011;12(3):305-309.]

INTRODUCTION

Bullying in schools is a significant public health problem that has received renewed interest and attention because of its widespread scope and devastating consequences.[1-6] The state of Georgia is no exception and, in 2010, the Georgia General Assembly modified the existing law by expanding the definition of bullying and requiring local school districts to notify parents when their child bullies or is a victim of bullying.[7] Moreover, the law was also modified to require school districts to adopt policies that prohibit bullying and to have age-appropriate consequences and interventions available for all schools.[7] With these policy changes there will likely be opportunities to address risk factors for bullying. Bullying perpetration and bullying victimization have been associated with psychosocial problems, including frequent excessive drinking among middle and high-school students.[1,2] However, less is known about the role of early alcohol use initiation in bullying, despite a growing literature indicating a strong link between early alcohol use initiation and a range of other health-risk behaviors and outcomes.[8-18]

Early alcohol use is highly prevalent in the United States (U.S.) where nearly 8,000 adolescents ages 12-17 use alcohol for the first time on an average day.[19] Moreover, national data show that 21% of high school students initiate alcohol use prior to age 13.[20] Early alcohol use is an important risk factor for adverse short- and long-lasting health problems, such as alcohol dependence, other substance use and criminal activity, unintentional injuries, unplanned and unprotected sex, suicidal ideation and attempts, and involvement in youth and dating violence.[8-17] However the association between age of alcohol use initiation and bullying perpetration and victimization appears not to have been previously examined in a large, representative population and may have important implications for future policy, research and practice.

METHODS

The Georgia Student Health Survey, conducted in 2006, was administered to 181,316 students in the sixth, eighth, tenth, and 12th grades. Data were collected in middle and high schools to assess youth risk behaviors and other factors.[16,21] Of the 181,316 completed questionnaires, 6,005 were eliminated due to an affirmative response on a validity check question regarding a fictitious drug (Have you ever used the drug zenabrillatol?), resulting in 175,311 remaining valid completed questionnaires. The overall participation rate was 45.9%. The distribution of study participants by sex (girls 51.4%, boys 49.6%) and race/ethnicity (White 47%, Black 38%, Latino 7%, other 4%, Asian 3%) closely match the population demographics for the school year (White 49%, Black 38%, Latino 8%, Asian 3%). The survey was designed by the state's Department of Education to gather information required by the Federal Department of Education for annual yearly progress reporting. Students in grades six, eight, ten and 12 who attended public middle and high schools participated in the study by completing the surveys anonymously and on school computers during school hours. Investigators obtained parental permission for participation via a passive consent process. Investigators received approval from the local institutional review board to conduct secondary analyses of this database.

Measures

Early alcohol use initiation was assessed by asking students the age when they started using alcohol. We trichotomized responses to indicate alcohol use initiation prior to, or after, reaching the age of 13 or if the participant was a nondrinker. Students were also asked if they had five or more drinks in one sitting (binge drink), and responses were coded to indicate binge drinking on one or more days in the past month. Students were also asked a question about where their peers drink alcohol with a response option indicating that their peers were nondrinkers (responses were coded to indicate any versus no peer drinking). Participants were also asked if they currently use alcohol and other drugs (responses coded to indicate any versus no current alcohol or drug use) and if they brought a weapon to school in the past month (responses coded to indicate having brought any weapon to school versus not). Students were asked separate questions to determine if they had been bullied or threatened or if they had bullied or threatened others in the past 30 days. We combined responses to these dichotomous questions to create a four-level variable to indicate bully victimization only, bully perpetration only, both bully perpetration and victimization, and neither. Students also reported demographic characteristics including sex, race/ethnicity, and grade level.

Analyses

We conducted cross-sectional multilogistic regression analyses to determine the associations between alcohol use initiation and bullying involvement. Unadjusted and adjusted models were computed. All analyses were limited to students in grades 8, 10 and 12 (n=122,434). We analyzed data using the SAS 9.2 and SUDAAN 10.0 statistical software.

RESULTS

Among student participants, 24.4% reported bully involvement as a perpetrator (8.9%), a victim, (8.7%) or both (6.8%). Involvement in bullying, which varied by sex, race/ethnicity and grade level, is shown in unadjusted and adjusted models (Table 1 and Table 2). Pre-teen and teen alcohol use initiation was associated with all forms of bullying involvement (victimization, perpetration and both) in unadjusted analyses, although pre-teen alcohol use initiation had the strongest odds ratios for victimization and both bully perpetration and victimization. In adjusted models, pre-teen alcohol use initiation was associated with all forms of bullying even when considering the role of binge drinking, current alcohol and drug use, peer drinking and bringing a weapon to school.

DISCUSSION

This study found significant associations between pre-teen alcohol use initiation and bullying involvement among youth in Georgia. Youth who reported pre-teen alcohol use initiation were significantly more likely than non-drinkers to report any form of bullying and these associations remained statistically significant even when controlling for potential confounding variables. These findings support earlier research indicating that early alcohol use initiation is associated with a range of risk behaviors and that bullying is strongly linked to alcohol use.[1,2, 8-18] It is particularly intriguing to note that pre-teen alcohol use initiation remained more strongly associated with all forms of bullying than current binge drinking. Binge drinking has been associated with violence among youth across studies.[22-26] Therefore, the current findings demonstrate the importance of researching the circumstances in which adolescents initiate alcohol use and why they continue to drink.[27-31] Moreover, the findings show that pre-

Table 1. Crude associations between early alcohol use initiation and bullying among 8th, 10th and 12th grade students in Georgia.

	Victimization Only OR (95%CI)	Perpetration Only OR (95%CI)	Perpetration and Victimization OR (95%CI)
Alcohol initiation			
<13-years-old	**4.59 (4.36-4.83)**	**1.32 (1.24-1.40)**	**3.24 (3.06-3.43)**
>13-years-old	**2.81 (2.67-2.95)**	**1.08 (1.02-1.13)**	**1.91 (1.80-2.02)**
Nondrinker	1.00	1.00	1.00
Sex			
Girls	**0.72 (0.70-0.76)**	**1.14 (1.09-1.18)**	**0.81 (0.78-0.85)**
Boys	1.00	1.00	1.00
Race/ethnicity			
Black	**1.56 (1.50-1.64)**	**0.64 (0.61-0.67)**	0.99 (0.95-1.04)
Latino	1.04 (0.95-1.14)	**0.71 (0.65-0.77)**	0.97 (0.88-1.06)
Asian	0.88 (0.77-1.01)	**0.72 (0.64-0.81)**	0.92 (0.81-1.05)
Other	**1.75 (1.60-1.91)**	1.02 (0.93-1.12)	**1.30 (1.17-1.44)**
White	1.00	1.00	1.00
Grade level			
8th grade	**2.13 (2.01-2.25)**	**2.80 (2.63-2.97)**	**3.06 (2.85-3.27)**
10th grade	**1.39 (1.31-1.48)**	**1.57 (1.47-1.67)**	**1.53 (1.42-1.64)**
12th grade	1.00	1.00	1.00

Associations are assessed using bivariate multilogistic regression analyses. Significant associations in boldface.

teen alcohol use initiation had the strongest association with victimization only, which also raise new questions about the factors associated with victimization, perpetration or both. More research is needed to better determine the concurrent risk behaviors associated with different profiles of bullying behaviors.

LIMITATIONS

There are several limitations that should be considered when interpreting these findings. First, the study is based on self-reported data of students in Georgia and results may not generalize to other populations or to youth who no longer attend school. It should be noted, however, that the prevalence of early alcohol use initiation prior to age 13 among high school students in Georgia is not different from the rest of the nation (20.7% in Georgia compared to 21.1% nationwide).[32] Moreover, the prevalence of bullying in Georgia in the past month was somewhat lower than the national rates reported from 1998 (over a school term and among students in sixth through tenth grades) but may be explained by the different time periods captured (past month versus school term) as well as age groups included.[1] Second, while the study was based on a census of students in Georgia, not a sample, the relatively low participation rate (45.9%) may limit the generalizability of the findings to beyond students who participated in the survey. Nonetheless, the analyses are based on a very large number of participants (n=122,434) which increases the likelihood that the findings are indeed representative of a large population of students. Third, while the findings show statistically significant associations, more specific temporal ordering cannot be determined, nor can causality be inferred. Fourth, other factors not assessed in the survey or analyses, such as sadness, child maltreatment experiences, and other family factors such as exposures to alcohol use, may also be important in the associations between early alcohol use and bullying.[29,33]

CONCLUSION

The current study examined the association between early alcohol use initiation and bullying in a very large epidemiological survey of students in Georgia. The findings show that early alcohol use initiation is an important risk factor for bullying involvement. Future longitudinal research is needed to better determine the circumstances in which adolescents initiate alcohol use and how these motives and contexts may be related to bullying involvement. In the context of the recently implemented new policies regarding bullying, particularly in Georgia, it will be important to assess the extent to which these policies will have a positive impact on bullying, as well as the significant risk factors for bullying such as early alcohol use. Perhaps more importantly for policy and practice, given the strong associations observed between alcohol use initiation and bullying, combined efforts that seek to reduce and prevent a range of adolescent health-risk behaviors earlier

Table 2. Multivariate associations between early alcohol use initiation and bullying among 8th, 10th and 12th grade students in Georgia.

	Victimization Only Adjusted OR (95%CI)	Perpetration Only Adjusted OR (95%CI)	Perpetration and Victimization Adjusted OR (95%CI)
Alcohol initiation			
<13-years-old	**2.04 (1.91-2.19)**	**1.18 (1.10-1.27)**	**1.89 (1.75-2.04)**
>13-years-old	**1.37 (1.28-1.47)**	1.00 (0.93-1.06)	**1.25 (1.15-1.34)**
Nondrinker	1.00	1.00	1.00
Sex			
Girls	**0.82 (0.79-0.86)**	**1.17 (1.12-1.21)**	**0.94 (0.89-0.98)**
Boys	1.00	1.00	1.00
Race/ethnicity			
Black	**1.76 (1.68-1.84)**	**0.64 (0.61-0.67)**	1.04 (0.98-1.09)
Latino	1.09 (1.00-1.20)	**0.71 (0.65-0.77)**	0.98 (0.89-1.07)
Asian	1.00 (0.87-1.14)	**0.72 (0.64-0.81)**	0.97 (0.85-1.11)
Other	**1.82 (1.66-1.99)**	1.01 (0.92-1.11)	**1.28 (1.16-1.42)**
White	1.00	1.00	1.00
Grade level			
8th grade	**2.63 (2.48-2.79)**	**2.89 (2.72-3.08)**	**3.46 (3.23-3.72)**
10th grade	**1.52 (1.43-1.61)**	**1.58 (1.48-1.68)**	**1.60 (1.49-1.72)**
12th grade	1.00	1.00	1.00
Binge drinking*	**1.44 (1.36-1.52)**	**0.89 (0.83-0.96)**	**1.10 (1.03-1.18)**
Current alcohol and drug use*	**1.63 (1.54-1.73)**	1.05 (0.99-1.12)	**1.43 (1.34-1.53)**
Peer drinking*	**1.77 (1.68-1.88)**	**1.14 (1.09-1.20)**	**1.25 (1.18-1.33)**
Brought weapon to school*	**4.32 (4.00-4.66)**	**2.37 (2.15-2.62)**	**6.49 (6.00-7.02)**

Associations are assessed using multivariate multilogistic regression analyses. Significant associations in boldface.

*Dichotomous variables where the reference categories are coded as no binge drinking, no current alcohol or drug use, no peer drinking, and not having brought weapon to school.

in life may be warranted. There are several available and effective alcohol policies and strategies that may also affect bullying and other health-risk behaviors.[18,22] Efforts that seek to evaluate implemented strategies across possible health outcomes are sorely needed and may be particularly relevant for the prevention of alcohol use, as well as bullying and other forms of violence, given the strong associations across these factors and also because of possibly shared etiology.

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Associations between Electronic Media Use and Involvement in Violence, Alcohol and Drug Use among United States High School Students

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Objective: We identified associations between time spent watching television and time spent playing video or computer games or using computers and involvement in interpersonal violence, alcohol and drug use in a nationally representative sample of United States high school students.

Methods: We analyzed data from the 2007 national Youth Risk Behavior Survey. Exposure variables were time spent watching television and time spent playing computer or video games or using computers (hereafter denoted as "computer/video game use") on an average school day; outcome variables included multiple measures assessing involvement in violence and alcohol or drug use. Chi-square tests were used to identify statistically significant associations between each exposure variable and each of the outcome variables. We used logistic regression to obtain crude odds ratios for outcome variables with a significant chi-square p-value and to obtain adjusted odds ratios controlling for sex, race, and grade in school.

Results: Overall, 35.4% (95% CI=33.1%-37.7%) of students reported frequent television (TV) use and 24.9% (95% CI=22.9%-27.0%) reported frequent computer/video game use. A number of risk behaviors, including involvement in physical fights and initiation of alcohol use before age 13, were significantly associated with frequent TV use or frequent computer/video game use, even after controlling for sex, race/ethnicity and grade.

Conclusion: Findings highlight the need for additional research to better understand the mechanisms by which electronic media exposure and health-risk behaviors are associated and for the development of strategies that seek to understand how the content and context (e.g., watching with peers, having computer in common area) of media use influence risk behaviors among youth. [West J Emerg Med. 2011;12(3):310-315.]

INTRODUCTION

Media use is highly prevalent among young people; eight to 18-year-olds spend an average of 7.4 hours per day using media, including 1.5 hours per day using a computer outside of school work, and 80% of teens have some type of gaming console.[1-2] The viewing or use of violent or aggressive television (TV) programs or computer and video games is associated with adverse health outcomes including interpersonal violence.[3] The link between exposure to violent media and involvement in violent behavior has been extensively researched across different youth population groups.[4-7] Research also links frequent media use and other risk behaviors and outcomes such as obesity, earlier sexual activity, earlier alcohol and drug use, and heavier use of a range of substances.[8-10,12-17] Most previous studies, however, have focused on a specific health-risk behavior, making it difficult to determine the range of possible health outcomes across studies and populations that may be associated with

Table 1. Percentage of United States high school students who reported violence, alcohol or drug use by time spent watching television and time spent playing video or computer games or using a computer for something that was not school work on an average school day--Youth Risk Behavior Survey, 2007.

	Watched TV ≥ 3 hours/day			Used Computers ≥ 3 hours/day			Watched TV > 3 hours/day & Used Computers ≥ 3 hours/day		
Risk Behavior	**Yes (%)**	**No (%)**	**χ^2 p-value**	**Yes (%)**	**No (%)**	**χ^2 p-value**	**Yes (%)**	**No (%)**	**χ^2 p-value**
Violence-related behaviors									
Carried a weapon[a]	19.5	17.1	ns	21.0	17.0	< .001	23.4	17.1	.002
Carried a gun[a]	6.0	4.5	ns	6.3	4.7	.006	7.6	4.7	< .001
Carried a weapon on school property[a]	6.0	5.6	ns	7.3	5.3	.001	8.2	5.4	.002
In a physical fight[b]	39.0	33.2	< .001	39.4	33.9	< .001	42.8	34.1	< .001
In a physical fight on school property[b]	14.3	11.1	< .001	15.1	11.3	< .001	17.4	11.4	< .001
Experienced dating violence[c]	10.7	9.3	ns	10.7	9.6	ns	11.6	9.5	ns
Ever physically forced to have sexual intercourse[d]	8.2	7.5	ns	8.0	7.6	ns	9.6	7.4	ns
Alcohol Use Behaviors									
Lifetime alcohol use	75.2	75.0	ns	76.2	74.6	ns	75.4	75.0	ns
Drank alcohol before age 13	27.1	22.1	< .001	28.2	22.4	< .001	30.3	22.8	< .001
Current alcohol use[a]	41.4	46.6	.011	44.8	44.8	ns	43.0	45.1	ns
Drank alcohol on school property[a]	4.7	3.8	ns	5.5	3.7	.007	6.9	3.7	.002
Episodic heavy drinking[e]	22.4	28.0	< .001	25.4	26.3	ns	22.7	26.6	.006
Bought alcohol in a store[f]	5.3	4.9	ns	4.7	5.2	ns	4.8	5.1	ns
Other Drug Use Behaviors									
Lifetime marijuana use	38.4	38.0	ns	38.5	37.9	ns	39.9	37.8	ns
Tried marijuana before age 13	9.8	7.4	.003	9.7	7.7	ns	11.5	7.8	.007
Current marijuana use[a]	20.0	19.5	ns	21.5	19.1	ns	23.4	19.2	.005
Used marijuana on school property[a]	5.5	3.9	.001	6.8	3.7	< .001	8.8	3.8	< .001
Lifetime cocaine use	7.1	7.2	ns	7.8	6.9	ns	8.3	7.0	ns
Current cocaine use[a]	3.8	2.9	ns	4.8	2.8	.002	6.0	2.9	.003
Lifetime inhalant use[g]	14.5	12.8	ns	16.5	12.4	< .001	16.8	12.9	.005
Lifetime heroin use	3.0	1.8	.006	3.6	1.8	< .001	5.1	1.8	< .001
Lifetime methamphetamine use	4.6	4.2	ns	5.6	3.9	ns	6.2	4.1	ns
Lifetime ecstasy use	6.1	5.6	ns	7.0	5.4	ns	7.8	5.5	ns
Lifetime hallucinogenic drug use	7.1	8.1	ns	8.2	7.6	ns	9.0	7.6	ns
Lifetime illegal steroid use	4.6	3.5	ns	5.0	3.5	ns	6.6	3.5	.004
Lifetime illegal injection-drug use	2.4	1.7	ns	3.2	1.6	.002	4.2	1.6	.005

ns, not significant;
[a] During the 30 days before the survey; [b] During the 12 months before the survey; [c] Hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend during the 12 month before the survey; [d] When they did not want to; [e] Had five or more drinks of alcohol in a row within a couple of hours on at least one day during the 30 days before the survey; [f] Among students who currently drank alcohol during the 30 days before the survey; [g] Sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high one or more times in their life.

frequent media use. In response to this limitation, the current study uses the 2007 Youth Risk Behavior Survey (YRBS) to examine specific associations between TV-viewing, video or computer game playing or computer use, and violence, alcohol and other drug use at the population level.

METHODS

The YRBS is a biennial national survey of United States high school students administered by the Centers for Disease Control and Prevention (CDC) to assess priority health-risk behaviors.[18] The 2007 YRBS used a three-stage cluster-

Table 2. Crude (COR) and adjusted odds ratios (AOR) for association between risk behaviors and time spent watching television and time spent playing video or computer games or using a computer among U.S. high school students, Youth Risk Behavior Survey (YRBS), 2007

	Time Spent Watching Television on an Average School Day							
	Simple Logistic Regression Results					Multivariate Logistic Regression Results		
	Watched Television ≥ 3 hours/day					Watched Television ≥ 3 hours/day		
Risk Behavior	Yes (%)	No (%)	COR	95% CI	p-value	AOR	95% CI	p-value
In a physical fight[b]	39.0	33.2	1.28	1.16, 1.42	< .001	ns	ns	ns
In a physical fight on school property[b]	14.3	11.1	1.34	1.16, 1.55	< .001	ns	ns	ns
Drank alcohol before age 13	27.1	22.1	1.31	1.14, 1.50	< .001	1.18	1.03, 1.35	.017
Current alcohol use[a]	41.4	46.6	0.81	0.70, 0.95	.009	ns	ns	ns
Episodic heavy drinking[c]	22.4	28.0	0.74	0.66, 0.84	< .001	ns	ns	ns
Tried marijuana before age 13	9.8	7.4	1.37	1.11, 1.69	.004	1.23	1.01, 1.52	ns
Used marijuana on school property[a]	5.5	3.9	1.43	1.15, 1.78	.002	1.36	1.11, 1.66	.004
Lifetime heroin use	3.0	1.8	1.66	1.20, 2.30	.003	1.62	1.12, 2.34	.012
	Time Spent Playing Video or Computer Games or Using a Computer							
	Used Computers ≥ 3 hrs/day					Used Computers ≥ 3 hrs/day		
	Yes (%)	No (%)	COR	95% CI	p-value	AOR	95% CI	p-value
Carried a weapon[a]	21.0	17.0	1.30	1.14, 1.48	< .001	ns	ns	ns
Carried a gun[a]	6.3	4.7	1.36	1.11, 1.66	.003	ns	ns	ns
Carried a weapon on school property[a]	7.3	5.3	1.40	1.17, 1.68	< .001	ns	ns	ns
In a physical fight[b]	39.4	33.9	1.27	1.14, 1.41	< .001	ns	ns	ns
In a physical fight on school property[b]	15.1	11.3	1.40	1.18, 1.65	< .001	1.24	1.04, 1.47	.017
Drank alcohol before age 13	28.2	22.4	1.36	1.18, 1.56	< .001	1.26	1.11, 1.44	.001
Drank alcohol on school property[a]	5.5	3.7	1.52	1.15, 2.00	.004	1.44	1.09, 1.91	.012
Used marijuana on school property[a]	6.8	3.7	1.89	1.51, 2.36	< .001	1.79	1.43, 2.23	< .001
Current cocaine use[a]	4.8	2.8	1.79	1.33, 2.41	< .001	1.78	1.32, 2.40	< .001
Lifetime inhalant use[d]	16.5	12.4	1.40	1.22, 1.60	< .001	1.42	1.24, 1.63	< .001
Lifetime heroin use	3.6	1.8	2.00	1.45, 2.76	< .001	1.83	1.26, 2.66	.002
Lifetime illegal injection-drug use	3.2	1.6	2.08	1.27, 3.39	.004	1.90	1.16, 3.10	.012

ns, not significant;
[a] During the 30 days before the survey.; [b] During the 12 months before the survey; [c] Hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend during the 12 month before the survey.; [d] Sniffed glue, breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high one or more times in their life.

sample design to obtain a representative sample of students in grades nine through 12 who attended public and private schools in the 50 states and the District of Columbia. We obtained parental permission following local procedures and participation was voluntary. Students anonymously completed the self-administered questionnaire during a regular class period. An institutional review board at the CDC has approved the national YRBS.

Measures

Exposure variables were time spent watching TV and playing computer or video games or using computers (hereafter denoted as "computer/video game use") on an average school day. We assessed time spent watching TV with the question "On an average school day, how many hours do you watch TV?" Time spent using computers/video games was assessed with the question "On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Nintendo, Game Boy, PlayStation, Xbox, computer games and the Internet.)" Outcome variables were 26 risk behaviors related to violence and alcohol and other drug use. Exact wording of the questions can be found in Section 6 of the 2007 Data User's Manual (http://www.cdc.gov/HealthyYouth/yrbs/data/history.htm).

Statistical Analysis

We dichotomized responses to exposure variables to less than three hours/day and greater than or equal to three hours/day to reflect frequent TV use and frequent computer/video game use. We selected this cut-off based on the American Academy of Pediatrics recommendation to "Limit children's

total media time (with entertainment media) to no more than one to two hours of quality programming per day" (http://aappolicy.aappublications.org/cgi/reprint/pediatrics;107/2/423.pdf). Responses to outcome variables were dichotomized to reflect any report of the risk behavior.

Analyses performed in SUDAAN accounted for stratification of counties by racial concentration and urban/rural status, and clustering of schools within counties at the first stage of sampling, and for unequal probabilities of selection.[19] We used chi-square tests to identify statistically significant associations between the exposure variables and each outcome variable. Logistic regression was used to obtain crude odds ratios for outcome variables with a significant chi-square p-value and adjusted odds ratios controlling for sex, race, and grade in school. Because we performed a number of statistical tests, results were considered significant when $p < 0.02$.

We also used logistic regression models to determine the contribution of both TV and computer/videogame use for any significant outcome associated with either form of media use. Finally, a model was used to determine whether the association between computer/video game use and fighting at school was independent of alcohol and other drug behaviors.

RESULTS

The school response rate was 81%, the student response rate was 84%, and the overall response rate was 68%. The final analysis data set included 14,041 students from 157 schools.

Overall, 35.4% (95% CI=33.1%-37.7%) of students reported frequent TV use and 24.9% (95% CI=22.9%-27.0%) reported frequent computer/video game use. Moreover, 12.8% (95% CI=11.6%-14.2%) reported frequent TV and computer/video game use. Those who reported frequent TV use and those who reported frequent TV and computer/video game use were significantly younger and more likely to be male, black non-Hispanic or Hispanic, and in ninth or tenth grade than those who did not. Students who reported frequent computer/video game use were significantly younger and more likely to be male, of race other than White non-Hispanic, and in ninth or tenth grade than those who did not.

The prevalence of risk behaviors by TV and computer/video game use is shown in Table 1. The prevalence differed significantly for eight risk behaviors by TV use and for 12 risk behaviors by computer/video game use. For all but two of these – current alcohol drinking and episodic heavy drinking – risk-behavior prevalence was higher among those who reported frequent TV use or frequent computer/video game use than among those who did not. The prevalence for 16 risk behaviors was significantly higher among those who reported both frequent TV and computer/video game use than among those who did not.

We show crude odds ratios for risk behaviors with a significant chi-square p-value by TV use, and the adjusted odds ratios controlling for sex, race/ethnicity, and grade in Table 2. Three risk behaviors were still significantly associated with frequent TV use after controlling for sex, race/ethnicity and grade, including initiation of alcohol use before age 13. Crude odds ratios for risk behaviors with a significant chi-square p-value by computer/video game use, and the adjusted odds ratios controlling for sex, race/ethnicity, and grade are also shown in Table 2. Eight risk behaviors were still significantly associated with frequent computer/video game use after controlling for sex, race/ethnicity and grade, including initiation of alcohol use before age 13.

The same risk behaviors associated separately with frequent TV or computer/video game use also were associated with reporting both frequent TV and computer/video game use. In addition, involvement in a physical fight, carrying a weapon on school property, current marijuana use and lifetime illegal steroid use were significantly associated with reporting frequent TV and computer/video game use after controlling for sex, race/ethnicity and grade (data not shown).

When we added computer/video game use to the models for each of the three risk behaviors associated with TV use, computer/video game use was significantly associated with each behavior while TV use was no longer independently associated. Similarly, when TV use was added to the model for each of the eight risk behaviors associated with computer/video game use, TV use was not found to be significantly associated with any of the behaviors while computer/video game use remained significantly associated with each risk behavior. When the seven alcohol and drug use risk behaviors significantly associated with computer/video game use were added separately to the model for fighting at school that already included computer/video game use, each of the seven risk behaviors was significantly associated with fighting at school while computer/video use was no longer independently associated (data not shown).

DISCUSSION

Frequent TV use, frequent computer/video game use and frequent use of both TV and computers/video games were significantly associated with several of the risk behaviors examined. Of particular interest are the associations between video and computer use and involvement in physical fights, which is a topic extensively researched previously.[4-7] These associations have generated a long-standing debate about the content and ratings of video and computer games and the ages for which some games may be appropriately introduced and used by youth. Additionally, our findings support earlier research by demonstrating that initiation of alcohol before age 13 is associated with TV-viewing as well as media and computer use. These findings are very important since early initiation of alcohol has significant short- and long-term health implications.[20-30] Taken as a whole, these findings confirm, with a nationally representative sample, what other researchers have found in smaller studies and with specific populations,

and provide a more comprehensive epidemiologic description of these associations.[4-7]

Several limitations to this study should be considered when interpreting the findings. First, the YRBS data do not contain detailed information on the exposure or outcome variables, such as which TV programs were watched or the content or ratings of any computer or video games played. Second, the survey is cross-sectional and cannot be used to infer causality. Third, the findings pertain to students attending school and may not generalize to those who are not in school. Finally, these analyses examined the basic associations between different forms of electronic media and risk behaviors and did not assess the influence of other possible confounders.

The high prevalence of media use among high school students and the association between high media use and health-risk behaviors emphasizes the need for parents, schools and healthcare providers to monitor youth screen time. The American Academy of Pediatrics, for example, has reported that office counseling is effective and suggests that pediatricians and other healthcare providers ask about the number of hours per day a child or adolescent is watching in order to advocate for safer media environments for children (http://aappolicy.aappublications.org/cgi/content/abstract/pediatrics;124/5/1495). Similarly, the American Psychological Association has suggested that parental involvement and monitoring is part of the solution and also introduced policy-related legislation in 2010 (the Healthy Media for Youth Act) to increase research in the area of media use and to emphasize the need for new strategies to reduce inappropriate media use (http://www.apa.org/about/gr/issues/women/healthy-media-week.aspx). While the field of youth media use is getting increased attention, our findings provide empirical evidence that even brief and broad measures of frequent TV and computer/video game use are associated with health-risk behaviors, especially involvement in physical fights and early initiation of alcohol use. The findings highlight the need for research on media exposure and health-risk behaviors as well as measures that seek to understand how the content and context (e.g., watching with peers, having computer in common area) of media use influence risk behaviors among youth.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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A Case Study with an Identified Bully: Policy and Practice Implications

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Objective: Bullying is a serious public health problem that may include verbal or physical injury as well as social isolation or exclusion. As a result, research is needed to establish a database for policies and interventions designed to prevent bullying and its negative effects. This paper presents a case study that contributes to the literature by describing an intervention for bullies that has implications for practice and related policies regarding bullying.

Methods: An individualized intervention for an identified bully was implemented using the Participatory Culture-Specific Intervention Model (PCSIM; Nastasi, Moore, & Varjas, 2004) with a seventh-grade middle school student. Ecological and culture-specific perspectives were used to develop and implement the intervention that included psychoeducational sessions with the student and consultation with the parent and school personnel. A mixed methods intervention design was used with the following informants: the target student, the mother of the student, a teacher and the school counselor. Qualitative data included semi-structured interviews with the parent, teacher and student, narrative classroom observations and evaluation/feedback forms filled out by the student and interventionist. Quantitative data included the following quantitative surveys (i.e., Child Self Report Post Traumatic Stress Reaction Index and the Behavior Assessment Scale for Children). Both qualitative and quantitative data were used to evaluate the acceptability, integrity and efficacy of this intervention.

Results: The process of intervention design, implementation and evaluation are described through an illustrative case study. Qualitative and quantitative findings indicated a decrease in internalizing, externalizing and bullying behaviors as reported by the teacher and the mother, and a high degree of acceptability and treatment integrity as reported by multiple stakeholders.

Conclusion: This case study makes important contributions by describing an intervention that is targeted to specific needs of the bully by designing culture specific interventions and working with the student's unique environmental contexts. Contributions also are made by illustrating the use of mixed methods to document acceptability, integrity and efficacy of an intervention with documented positive effects in these areas. In addition, implications for policy and practice related to the treatment of students identified as bullies and future research needs are discussed. [West J Emerg Med 2011;12(3):316-323].

INTRODUCTION

Bullying is one of the most significant school problems experienced by children and adolescents and affects approximately 30% of students in U.S. public schools.[1] This included 13% as bullies, 10.6% as victims and 6.3% as bully-victims.[2] Bullying has been defined as repeated exposure

to negative events within the context of an imbalanced power relationship.[3] Bullying is a serious public health problem that may include verbal or physical injury, as well as social isolation or exclusion.[3-4] As a result, research is needed to establish a database for interventions designed to prevent bullying and its negative effects within the context of school policies.[4]

Researchers have found that bullying may have deleterious effects for both perpetrators and victims, including social, emotional, mental health and academic concerns, as well as loss of instructional time.[5-12] For example, a relationship has been found between bullying behavior and internalizing problems (i.e., depression and anxiety), as well as externalizing problems (i.e., aggression and hyperactivity).[11-12] Further, bullies have been found to have more conduct problems and less favorable views of school than their non-bullying peers, which may lead to academic disengagement.[5]

Rationale for the Case Study

The purpose of this case study is to describe the implementation of an individualized psychoeducational intervention with an identified bully and to report the outcomes of the intervention in terms of acceptability, integrity and efficacy.[13] This case study was unique because we used mixed methods (i.e., both qualitative and quantitative methods) to contribute to the database on acceptability, integrity and efficacy by providing a rich description of the cultural and contextual variables that may influence the implementation and outcomes of the intervention.[14] This case study was distinctive because it used the Participatory Culture-Specific Intervention Model (PCSIM) to design, implement, and evaluate the intervention.[15] Based on an ecological-developmental stance, PCSIM addresses individual and cultural factors related to mental health and promotes cultural competence using culturally valued resources and coping skills.[16-18] PCSIM uses an iterative data collection process that incorporates feedback from stakeholders to promote treatment acceptability and cultural validity, treatment integrity and efficacy.[15] The research questions were: (1) What was the nature of acceptability from the perspectives of stakeholders? (2) What was the treatment integrity of intervention implementation? (3) Was there a reduction in this student's: (a) externalizing symptoms, (b) internalizing symptoms and (c) bullying behaviors?

METHOD

Context and Informants

We conducted this study in a southeastern urban public school district with 2,484 students and 499 students at the target middle school. The population was diverse with respect to ethnicity (approximately 40% African American, 52% Caucasian, 2% Asian, 2% Hispanic and 4% multiracial) and socioeconomic status (30% free and reduced lunch). The research team had an ongoing collaborative relationship with this school district for eight years.[19] Bullying behavior was addressed in the district discipline policies, which were distributed to students at all grade levels. The school response to bullying depended on severity and could include: student participation in a conference with school personnel, assignment to alternative lunch area, partial or full day in-school suspension (ISS), out of school suspension, financial restitution for the repair of any damage, or consideration of an alternative placement for up to 10 school days.

The informants included the mother of the target student, the interventionist, a classroom teacher, the seventh-grade school counselor and the target student. The target student's mother, Ms. S., was an African-American woman who worked in the education field. The interventionist was an African-American female doctoral-level school psychology graduate student who was certified as a school psychologist and had 10 years of classroom teaching experience. The seventh grade counselor was an African-American female masters-level school counselor who had been employed by the district for many years. Based on the tenets of PCSIM, stakeholders participated as informants by providing data to develop intervention goals and to assess intervention acceptability, integrity and efficacy.[15]

Qualitative Data

Interviews

All interviews were semi-structured and produced qualitative data. Interviews were conducted with the mother, teacher and the target student. Interviews were conducted with all informants prior to intervention to facilitate development of the intervention sessions. The pre-intervention student interview was audio taped, transcribed and coded for major themes. The interventionist took ethnographic notes during all other interviews. Teacher and parent interviews were conducted post-intervention to enhance outcome data. Parent interview questions included a focus on the target student's behavior at home and school, parent concerns related to his behavior, and the results of previously employed strategies. The course instructor, which this student received the lowest conduct grade, participated in data collection (i.e., interviews, observations, and surveys). Examples of the questions from the student, teacher and parent interviews are reported in Table 1.

Behavioral observations

The referred student was observed in structured (classroom) and less structured settings (hallway, lunch) to determine the frequency and nature of bullying behaviors and to aid in intervention development. We used a narrative approach (i.e., rich description) for conducting behavioral observations to gain information regarding peer and teacher interactions.

Table 1. Sample interview questions asked of the bullying student, his parent and teacher.

Student	Parent	Teacher
What is the worst thing you ever did? (or, just name some bad thing you've done).	Describe your concerns related to your child's behavior.	Describe your child's classroom behavior.
What is the worst thing that has happened to you?	How long have you been concerned about your child's behavior?	How does he interact with adults?
What is the best thing you ever did? (or, just name some good thing you've done).	What kind of behavioral strategies have been implemented? What was the outcome?	How does he interact with peers?
What is the best thing that has happened to you?	What are your child's strengths/interests?	Describe his academic performance.
What things get you upset or mad? Why?	Describe your parenting style.	Describe your classroom behavioral expectations.
What do you do when angry?	How does your child relate to his sibling and other family members?	What strategies have been implemented to improve his classroom behavior?
What do your parents do when you do things that you shouldn't?	Have there been any recent significant changes in the home environment?	What was the outcome?

Evaluation/Feedback Forms

We used qualitative student evaluation and interventionist feedback forms to gather narrative information related to intervention implementation, including acceptability and integrity of the intervention. The student feedback forms were completed at the end of each intervention session and were used to determine what the participant liked about the session, as well as what he would change about the session. The interventionist feedback form was completed following each session and provided documentation about culture-specific modifications as well as treatment acceptability and self-assessment of the interventionist's performance.

Quantitative Measures

Behavior Assessment Scale for Children: Second Edition

The Behavior Assessment Scale for Children (BASC-2) was administered to the teacher, parent and student pre- and post-intervention.[23] These data from the student were not considered because of observations indicating that the student did not read the items carefully and, instead, provided invalid responses. The BASC-2 is a behavior rating scale that was designed to evaluate personality characteristics, emotions, self-perceptions or parent/teacher perceptions of adolescents. At-risk T-scores range from 60 to 69 while T-scores of 70 or above are considered clinically significant. This instrument has high test-retest reliability (r = .91) and internal consistency (α = .89).[23] We used the internalizing, externalizing and bullying scales for this case study.

Child Self Report Post Traumatic Stress Reaction Index

The Child Self Report Post Traumatic Stress Reaction Index (CPTS-RI) was administered before and after the intervention to determine change in symptoms related to post-traumatic stress experienced by the target student.[20] The CPTS-RI was used to supplement information provided by the BASC-2 regarding internalizing problems. The CPTS-RI has high internal consistency (α = .86) and test-retest reliability (r = .84). Although the CPTS-RI does not yield standard scores, raw scores of 38 and above have been described as clinically significant in previous research.[21,22]

Qualitative Data Analysis Procedures

The qualitative data (interviews, observations, & evaluation feedback forms) were subject to thematic analysis by having one coder read through each piece of data to create a list of themes that were reflected by these data.[24] We employed a deductive approach to coding in which the coder identified information regarding externalizing, internalizing and bullying behaviors in the data.[17] After the first coder had read through all data to generate a list of themes, a group of three coders read through all of the data again and used a consensus-based approach to confirm or modify each theme. This team also selected quotes illustrating these themes.[25]

Quantitative Data Analysis Procedures

We analyzed the pre/post quantitative data (internalizing and externalizing from the BASC-2) using a two-step process that included calculation of the Reliable Change Index (RCI) and determination of whether an observed change was clinically significant.[26-28] We calculated the RCI based on the standard error of measurement or reliability of the instrument and the student's pre- and post-scores for each instrument. We used the following formula based on Jacobson & Truax ($RCI = X_2 - X_1/S_{diff}$). S_{diff} is calculated by taking the square root of $2(S_E)^2$, where S_E is the test's standard error of measurement.[27] RCI scores of 1.96 or greater are considered to be statistically significant. Mean scores from the CPTS-RI and bullying content scales were analyzed descriptively. We

Table 2. Sessions, goals, and cultural modifications used to individualize the curriculum.

Session	Goal(s)	Cultural Modifications
#1 Clinical Interview	Explore individual student characteristics; collect pertinent background information.	Increased the amount of time for rapport building due to the participant's reluctance to disclose personal information.
#2 Collage	Increase awareness of positive feelings, likes, and self-awareness of culturally valued competencies.	Emphasis on drawing activity instead of dialog focused activity to allow the participant to disclose information indirectly.
#3 School map	Identify safe and unsafe spaces and the people or policies that contribute to those safe and unsafe spaces at school.	Emphasis on drawing activity instead of dialog focused activity to allow the participant to disclose information indirectly.
#4 Ecomap	Identify supportive, stressful, and ambivalent relationships in their schools, families, and communities; Develop strategies to improve, maintain or cope with key relationships	Emphasis on drawing activity instead of dialog focused activity to allow the participant to disclose information indirectly.
#5 and #6 Empathy	Expand empathic reasoning ability. Challenge beliefs related to empathy.	Use of examples from the participant's family history to make the activity more relevant.
#7 Anger Management	Learn prosocial ways to express negative emotions.	Use of scenarios based on teacher and counselor reported incidents.
#8 Problem-solving	Learn 5-step problem solving model; Learn to apply model to bullying situations.	Use of scenarios based on classroom observations.

Note. Adapted with permission of the authors.[29] Please contact second author for more details regarding the curriculum.

did not calculate RCI scores for these two variables because standard scores are not reported for the CPTS-RI and there are insufficient data about reliability and standard error of measurement for these two instruments.

Background of the Case Study

The target student for the intervention was David, a 12-year-old African-American student in the seventh grade. David's mother (Ms. S.) provided background and medical information. David lived with his mother and nine-year-old sister. His family history included a recent martial separation. However, regular contact with his father was maintained through weekend and extended holiday visitation. David's medical history included a diagnosis of Attention Deficit Hyperactive Disorder, which was managed through medication and counseling.

Reason for referral

David was referred for the bullying intervention by members of the administrative and counseling staff and was described as a "provocative bully" by administrators and teachers. An administrator indicated that David had a tendency to "annoy" his peers verbally until they "reach[ed] their limit" and as a result became physically aggressive with him. The administrator described David's behavior as verbal bullying. The school counselor expressed concerns about his limited ability to engage in prosocial interactions with peers and school personnel, as David appeared to "ignore the comments of adults" and seemed unaware of how his actions or remarks were perceived by peers. Ms. S. (David's mother) expressed concern that her son was becoming verbally aggressive in reaction to being bullied at school. She cited school reports of inappropriate comments to teachers and peers as evidence of David's verbal aggression and indicated that his bullying behaviors persisted or escalated irrespective of school and home interventions. Ms. S. and the school personnel stated that they were interested in determining the best ways to intervene.

INTERVENTION

Data obtained from interviews, surveys, review of records and observations were used to develop an individualized eight session intervention to address David's bullying behavior.[29] Intervention sessions are described in Table 2 including the sessions, the goals, and cultural modifications that resulted in the individualization of the curriculum.[29]

RESULTS

Consistent with the PCSIM, we evaluated this case by examining both the process and the outcomes of the intervention that was implemented with a student who had been identified as a bully-victim. We answered the acceptability, integrity, and efficacy of the intervention for this case study.[15,30-32]

Acceptability: Research Question 1

We defined acceptability as the extent to which stakeholders (e.g., mental health professionals, parents, teachers and students) find a particular treatment or intervention to be fair, appropriate, reasonable and consistent

Table 3. Pre-post scores for internalizing, externalizing and bullying.

Respondent	Composite/Scale	Pre-test	Post-test	Degree of Change
Teacher	BASC-II Externalizing Problems	66	58	RCI = -3.33*
Teacher	BASC-II Internalizing Problems	61	46	RCI = -3.54*
Teacher	BASC-II Bullying	66	59	Clinical Change**
Parent	BASC-II Externalizing Problems	61	61	0
Parent	BASC-II Internalizing Problems	39	41	RCI = .44
Parent	BASC-II Bullying	62	62	No Change
Student	Internalizing Problems	20	7	Descriptive Evidence of Change***

* Statistically Significant change (Reliable Change Index [RCI] > 1.96)
** While RCI could not be calculated this represented clinical change from the at risk range to normal limits.
*** While RCI could not be calculated with this measure, there was a substantial magnitude of change on this measure.

with their expectations of treatment.[31] We collected acceptability data through parent, facilitator, student and teacher report and used data to modify the curriculum in an effort to increase acceptability and efficacy.[15] For example, David reported in the session evaluation that activities that were less contingent upon verbal interaction were more acceptable than those that required him to discuss emotions. Through the recursive process of the PCSIM, subsequent sessions were adapted to allow for choice between various less verbally demanding tasks, such as those that allowed David to respond to the curriculum by creating artwork such as drawings or collages.[16]

Examples of high acceptability also were revealed through post-intervention data obtained from all stakeholders. For example, Ms. S. indicated that she viewed the intervention as an important resource to address her son's social deficits related to interpersonal relationships with peers and family members. David's teacher acknowledged the value of the intervention as a reinforcement tool by informing David of her ongoing communication with the interventionist to encourage him to behave appropriately in order to have positive remarks relayed about his behavior. We also obtained measures of acceptability from the interventionist after each session, suggesting that initial sessions were less acceptable due to the resistance encountered and the slow development of rapport between the interventionist and the target student. However, treatment acceptability increased during subsequent sessions as rapport developed due to curriculum modifications made based on student feedback (i.e., less verbal input was required).

Integrity: Research Question 2

We defined integrity as the degree to which core program elements are implemented and cultural adaptations are documented.[15] This study employed a partnership model to maintain treatment integrity, by focusing on collaboration with stakeholders in order to be culturally responsive while maintaining the essential components and content of the intervention.[30] We obtained integrity data through the interventionist feedback forms to evaluate the ways in which session goals were met. Based on a thematic analysis of these forms, treatment integrity was high as session goals were met in all of the intervention sessions (meeting the threshold of greater than 80% implementation of intervention components).[31]

Efficacy: Research Question 3a –Externalization

We collected qualitative and quantitative results related to David's externalizing behaviors from the teacher and parent report. The teacher reported in an exit interview that David no longer engaged in disruptive activities after completing assignments but instead chose to read. David's mother reported a decrease in the number of phone calls received regarding disciplinary concerns from the school during and after the intervention. There was a clinically significant difference in the teacher pre- and post-intervention BASC-2 scores reflecting reduced externalizing behaviors (RCI = -3.74). There was no change indicated by the parent pre- and post-test BASC-2 scores on externalizing behaviors (Table 3).

Efficacy: Research Question 3b- Internalization

The school counselor reported that David was less withdrawn at the end of the intervention. For example, she indicated that he made eye contact and acknowledged the statements or requests of school personnel, which were skills addressed in sessions related to empathy and perspective taking. Although David's CPTS-RI raw score of 20 did not meet the threshold of clinical significance (i.e., 38 and higher), his post-intervention score of seven suggested a lower perception of internalizing symptoms associated with post-traumatic stress after the intervention. Specifically, he indicated that he had fewer bad dreams and was better able to concentrate at school. Quantitative findings from the BASC -2 included a clinically significant decrease in Internalizing Behaviors based on Teacher report (RCI = -3.79). However, there was no change related to internalizing symptoms based on parent report.

Efficacy: Research Question 3c- Bullying

The results of the BASC-2 completed by his teacher revealed that David's bullying behavior decreased based on pre-post test data. His score on the bullying content scale from the teacher BASC-2 decreased from the at-risk range (SS = 66) to within normal limits (SS = 59) for students his age. Ms. S. reported no change on the parent BASC-2 from pre- (SS= 62) to post-test (SS = 62) in regards to David's bullying behavior. However, as mentioned earlier, she reported the number of discipline referrals decreased during and after the intervention. Further, qualitative findings from school personnel also suggested improvement in David's behavior after the intervention. Additional support for positive change in this area is that there were no additional counseling or disciplinary referrals for the remainder of the school year (Table 3).

Discussion

This case study contributes to the literature related to intervention with bullies by providing an in-depth description of a promising intervention model and by using mixed methods resulting in evidence that this intervention had high acceptability, integrity and efficacy.[13] Using the PCSIM, this intervention successfully integrated data about the culture of bullying within the target school, as well as using knowledge gained through collaboration with parents, teachers and school personnel. [15,20] This psychoeducational intervention engaged multiple stakeholders, including school personnel, the mother, and the target student, to facilitate intervention acceptability and integrity and thereby increased the likelihood that the desired outcomes would be achieved.[15,30] Further, the use of mixed methods and multiple informants strengthened validity of the intervention and evaluation by examining findings across multiple informants and multiple sources of data.[14]

An important finding in this case study was related to the efficacy of this intervention. Based on prior literature, the referral concerns and the pre-intervention data, the intervention was designed to reduce behaviors and symptoms associated with externalization, internalization, and bullying.[11-12] Predicted reductions in externalizing behaviors and bullying were partially confirmed with quantitative findings reflected by the RCI for externalization and clinical significance on the bullying scale from the BASC-2.[26-28] Additional support was provided by qualitative data from interviews and observations. Similarly, the predicted reductions for internalization were partially confirmed based on the RCI for internalization on the BASC-2 as well as by descriptive data from the CPTS-RI. These quantitative findings were confirmed by qualitative data obtained from school personnel. However, it is noted that the findings for internalizing were not supported by parent report.

The participatory approach to problem identification and intervention development incorporated in the PCSIM was successful in several ways.[15] For example, school personnel and the target student's mother identified ongoing communication with the interventionist as a strength of the intervention. This enabled teachers to provide insight into the daily interactions of the students, the previous intervention efforts of school personnel, and an overview of the student's social, emotional and academic strengths and challenges. Further, collaboration with the interventionist provided teachers with an opportunity to experience the target student in a different light by examining the influence of family context on the student's behavior. This interaction between stakeholders and the interventionist exemplified the recursive nature of the PCSIM and illustrated the potential importance of mental health consultation in facilitating positive outcomes when intervening with bullies.[15,33]

LIMITATIONS AND FUTURE RESEARCH

Since this case study was conducted with a single participant, more research is clearly needed to demonstrate the acceptability, integrity and effectiveness of this individualized intervention with identified bullies. In addition, given the range of findings from both the parent and teacher, future efforts should be designed to include input over time from multiple participants and to use these data for recursive revision of intervention plans. School-based (e.g., school counselors, school psychologists, school nurses) and mental health practitioners are uniquely qualified to design and implement culture-specific interventions for bullies in schools by using their relationships with stakeholders, along with ongoing data collection, to increase intervention acceptability, integrity and efficacy.[15] Future research may include a greater emphasis on systematic evaluation of the processes used to consult with educators and parents, particularly since educators and parents can have different views, while also having great potential to influence children. Based on information gained through the iterative process of the PCSIM, the intervention might be used as a method of primary prevention by extending it to younger students.[15] Further, research is needed to examine the range of ways that this intervention may need to be modified to address the characteristics of other bullies and their unique cultural and ecological circumstances. Such modifications might include multiple sessions per week, meeting with members of the target student's peer group, and a greater focus on behavior management strategies.

POLICY AND PRACTICE IMPLICATIONS

This case study has important implications for practice in the context of public policy. While the ideas discussed in this paper may have the potential to create meaningful change in some bullies, it requires intense levels of data collection and analysis to address the acceptability, integrity and efficacy of this type of intervention. This requires a public commitment to the expense needed to carry out such intervention effectively. It also may require research based on public health models that seek less expensive methods of intervention and that

emphasize a full range of preventive interventions, including primary prevention.[4] In this context, it is noted that policies in place within a school, school district and/or community may play a role in strengthening intervention efforts.[4] For example, the intervention described in this paper was implemented in the context of school policies that did not tolerate bullying and that had clear guidelines for school responses to bullying. Also, schools policies of service delivery referred to as response to intervention that include a simultaneous focus on a range of services including primary prevention, risk reduction, secondary prevention and tertiary prevention.[34] Research is needed to develop an understanding about the impact of such policies on the efficacy of individualized interventions such as this.

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Dyadic Characteristics and Intimate Partner Violence among Men Who Have Sex with Men

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Objective: Although the research community has begun to recognize intimate partner violence (IPV) as an important issue in same-sex relationships, there has been a lack of attention to characteristics of these relationships that may be associated with IPV. In particular, there has been a lack of attention paid to the associations between dyadic characteristics and IPV in same-sex relationships. This paper examined associations between dyadic characteristics, including relationship satisfaction, communal coping and efficacy, and perpetrating and experiencing IPV among a sample of United States men who have sex with men (MSM).

Methods: We collected data via an online survey with 528 MSM, who were greater than 18 years of age and reported at least one male sex partner in the last 12 months. The analysis examined dyadic factors associated with reporting of experiencing and perpetrating emotional violence, physical violence, and sexual violence.

Results: The prevalence of violence in the sample ranged from nine percent reporting perpetrating sexual violence to 33% of men reporting experiencing emotional violence. MSM who reported greater satisfaction with their relationship or who reported a higher degree of concordance with their partner on lifestyle choices were less likely to report experiencing or perpetrating emotional violence. MSM who perceived a stigma to being in a male same-sex couple were less likely to report experiencing or perpetrating sexual violence.

Conclusion: The results presented here demonstrate high levels of IPV among MSM and that dyadic characteristics are associated with the occurrence of IPV. Understanding relationship characteristics associated with increased IPV among same-sex male couples can contribute to the development of more accurate IPV screening tools, and more sensitively and appropriately designed intervention messages. [West J Emerg Med. 2011;12(3):324-332.]

INTRODUCTION

In the scientific literature, the most common depiction of intimate partner violence (IPV) involves a male batterer and a female victim. However, IPV is not a problem exclusive to heterosexual relationships. A growing body of literature suggests that IPV occurs within same-sex relationships and that the members of lesbian, gay, bisexual and transgender (LGBT) communities face a number of unique challenges in accessing IPV-related services.[1,2] Based on Unites States (U.S.) census data, approximately 700,000 same-sex couples cohabit in the U.S. as of 2004.[3] Same-sex intimate partners may be defined as two persons of gay, lesbian or bisexual sexual orientation who currently share an important affective interpersonal relationship, typically characterized by romantic, emotional or sexual connections.[4] In many states, same-sex partnerships are not recognized legally, and thus couples may have limited or no access to traditional IPV safeguards (e.g. civil protective orders).[5,6] Additionally, a number of methodological issues have hampered research into IPV among LGBT individuals.[7] These include a tendency to focus

Table 1. Definition and distributions of scales used in analyses.

Scale	Definition	Mean	Range
Communal coping strategies	To what extent do the respondent and his male partner make decisions together on issues to ensure safer sexual activity within the couple *(high values mean more decisions made together)*	22.0	(0, 28)
Couple efficacy	The confidence that the respondent has that he and his male partner can make decisions together on issues to ensure safer sexual activity *(high calues mean more confidence)*	25.6	(0, 28)
Perceived local stigma - individual	The respondent's perceived local stigma of gay/bisexual men compared to heterosexual men *(high values mean more stigma)*	9.9	(0, 28)
Perceived local stigma - couple	The respondent's perceived local stigma of his relationship with a male partner compared to heterosexual couples *(high values mean more stigma)*	13.6	(0, 24)
Couple outcome preferences - general	To what extent are the respondent and his male partner concordant when it comes to general lifestyle topics *(high values mean more concordance)*	17.2	(0, 24)
Couple outcome preferences - sexual	To what extent are the respondent and his male partner concordant when it comes to sexual health topics *(high values mean more concordance)*	24.8	(0, 28)
Relationship satisfaction	To what extent the respondent is satisfied with his current relationship *(high values mean more satisfaction)*	23.3	(0, 28)

on lesbians, often to the exclusion of gay and bisexual men, a focus on child abuse and hate crimes to the exclusion of IPV and a failure to use representative samples. The latter is due to the problems researchers have faced in recruiting representative samples, and many researchers have thus relied upon convenience samples recruited through LGBT publications, events and organizations.[8,9] Moreover, statistics regarding same-sex IPV from service providers may not be comprehensive. Victims of same-sex IPV may be hesitant to seek help, due to internalized or institutionalized homophobia, the nature of the abuse itself, or a perceived lack of useful resources resulting in underreporting of abuse.[10-13] The current research examines the prevalence of IPV among an internet-based sample of men who have sex with men (MSM) in the U.S. and explores the associations between dyadic factors and the reporting of sexual, physical and emotional violence. An understanding of how dyadic characteristics shape the reporting of violence not only adds significantly to the small body of literature on same-sex IPV, but also provides valuable information to inform the development of more accurate and perhaps culturally sensitive screening tools and prevention messages for IPV in same-sex couples.

The existing evidence suggests that IPV affects approximately one-quarter to one-half of all same-sex relationships.[2,9,10,14] These rates are similar to estimates of abuse in heterosexual relationships.[10] The National Coalition of Anti-Violence Programs, reported 6,523 cases of IPV in LGBT relationships in 2003, with most cases (83%) occurring in gay and lesbian relationships.[15] Physical abuse seems to occur in a significant portion of abusive same-sex relationships. Elliot[16] and De Vidas[17] suggest that between 22-46% of lesbians have been in relationships in which physical violence has occurred. McClennen et al.,[1] using a sample of 63 gay men, found that participants were often physically struck by their partners and coerced into substance abuse. Greenwood et al.,[18] reported that 22% of a sample of men who had sex with men had been subjected to physical abuse from an intimate partner. Research also indicates that sexual abuse is common in IPV-afflicted same-sex relationships. Walder-Haugrud and Gratch[19] reported that 52% of their sample of gay men experienced one or more incidents of sexual abuse. Similarly, Toro-Alfonso and Rodriques-Madera[20] found that approximately 25% of a sample of Puerto Rican gay males had experienced sexual coercion. Clearly, a large number

of same-sex relationships experience IPV, and the levels experienced appear to be similar, if not higher, than those seen in heterosexual couples.[16]

IPV in same-sex couples shares much in common with IPV in heterosexual couples.[21,22] For example, both may involve similar reasons for the victim remaining in an abusive relationship (e.g. fear of further abuse, financial dependency), and the use of alcohol as a precipitant to aggressive acts.[23] Blosnich[24] reports that gay men report experiencing more sexual and verbal violence than heterosexual men, and gay men also tend to report more victimization in casual relationships than is experienced by heterosexual men. However, researchers have yet to establish the extent to which the dynamics of violent same-sex relationships are similar to those found in violent heterosexual relationships.[25]

Bartholomew and Cobb[26] developed a dyadic model of partner violence, which describes how individual and dyadic factors, both individually and jointly, shape the risk of violence in heterosexual couples. The model has four sets of factors: background/depositions (family background, personality and psychopathology), relationship context (power imbalance, relationship discord), situational context (dyadic interaction, inhibition of aggression) and pattern of partner violence (severity, mutuality). The model argues that regardless of individual dispositions towards violence, partners in mutually satisfying relationships, characterized by trust and constructive communication, would not be at risk for IPV. However, although it seems plausible to suggest that the same may hold true for same-sex relationships, studies to date have not examined how dyadic characteristics are associated with the reporting of IPV in same-sex couples.

Using data from an internet-recruited sample of MSM in the U.S., this paper examined the dyadic characteristics associated with experiencing and perpetrating emotional, physical and sexual IPV among male same-sex couples. The analysis focused on the associations between relationship satisfaction, perceived couple-level efficacy, communal coping to prevent Human Immunodeficiency Virus (HIV), and perceived relationship support and experiencing or perpetrating IPV. Understanding the dyadic characteristics associated with experiencing or perpetrating IPV has the potential to significantly inform the design and development of interventions and messages aimed at reducing IPV in the LGBT population.

METHODS

We collected data from internet-using MSM through selective placement of banner advertisements on Facebook.com in May and July, 2010. Advertisements were displayed to Facebook members based on self-reported demographic profile information (male sex and reported interest in men). Exposures were made to the profiles of men greater than or equal to18 years of age logging into Facebook, whose profiles indicated residence in the U.S., reported being in a relationship and having an interest in men. Participants who clicked through the banner advertisements were taken to an internet-based survey where they were first screened for eligibility. Participants were eligible to complete the survey if they were male, greater than18 years of age, reported at least one male sex partner in the last 12 months, and currently had a main male sex partner. Eligible participants were provided informed consent documents and consenting participants were given access to the online survey. In the survey, participants were asked about demographic information (age, education, occupation, race and ethnicity) and recent sexual behaviors (including number and gender of partners and condom use). We included several dyadic constructs derived from both interdependence theory and communal coping perspectives: frequency of using communal coping strategies, couple efficacy, perceived stigma around their relationship, and current relationship satisfaction.[27] We created seven scales to measure these dyadic characteristics (Table 1). Scale items were informed by qualitative data collected with gay men in Atlanta, Chicago and Pittsburgh. We conducted six focus group discussions where men were asked about their current relationships, how they determined relationship satisfaction, their perceived support for their relationships within their community, the methods used by men in same-sex relationships to cope with health or financial threats, their decision-making process with their partner, and their degree of confidence that they could work with their partner towards a shared goal.

We used the Conflict Tactics Scale Revised to assess both perpetration and experience of IPV.[28] Experiencing emotional IPV was assessed with four of the Psychological Abuse subscale items: he "called me fat or ugly;" "destroyed something belonging to me;" "accused me of being a lousy lover;" or "threatened to hit or throw something at me." Experiencing physical IPV was assessed with six items: he "threw something at me that could hurt;" "pushed or shoved me;" "punched or hit me with something that could hurt;" "slammed me against a wall;" "beat me up;" or "kicked me." Experiencing sexual IPV was assessed with three items: he "made me have sex without a condom;" "used force (like hitting, holding down, or using a weapon) to make me have oral or anal sex;" or "used threats to make me have oral or anal sex." Men were also asked if they had perpetrated any of these forms of IPV against their current male partner, using the same definitions. We create six binary variables to capture prevalence of experiencing and perpetrating each form of IPV (emotional, physical and sexual).

Of the 2,570 men who responded to the advertisements, 1,927 completed screening. Of those, 1,387 were eligible, 1,376 (99%) consented to participate. As is typical of lengthy online surveys, only about half (664) of those who consented completed the survey; of those, 656 (99%) answered the questions on IPV and 528 (80%) completed questions for all covariates of interest; thus, our final sample size used for

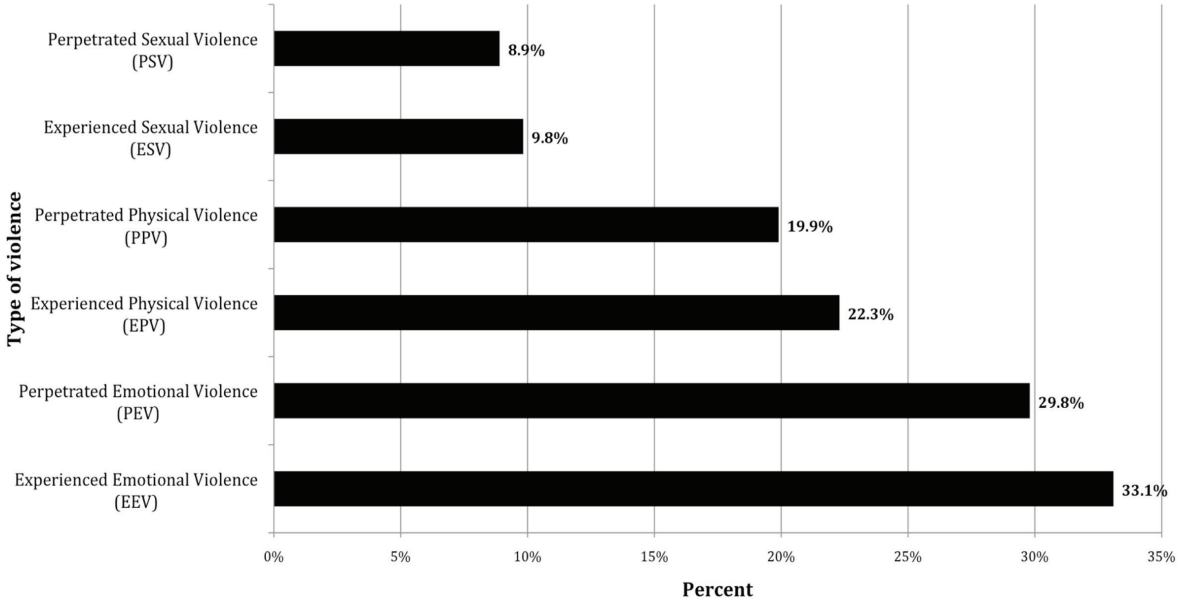

Figure. Reported percentages of men experiencing or perpetrating intimate partner violence (IPV) by type of violence (n=665).

analyses was 528. We performed two-sided Wilcoxon rank-sum tests and chi-square (χ^2) tests to examine differences in dyadic characteristics between those who reported IPV and those who did not report IPV (Table 2).

Separate logistic models were fitted for each of the binary IPV variables. The six outcomes were experiencing or perpetrating emotional violence (EEV or PEV), experiencing or perpetrating physical violence (EPV or PPV) and experiencing or perpetrating sexual violence (ESV or PSV). The key covariates of interest in each of the models were the seven scales measuring the dyadic characteristics: regression models also controlled for demographic variables, such as age, partner's age, race, education level and HIV status. We conducted co-linearity assessments to verify the stability of the regression models. The research was approved by Emory University's institutional review board. We conducted analyses with SAS 9.2, Cary, NC.

RESULTS

Respondents were mostly white (84%), HIV-negative (90%) and had at least some college education (82%). Reported ages ranged from 18 to 71-years-old, with a median age of 27. Most men (64%) reported that their male partner's age was within five years of their own. Figure 1 shows the prevalence of the six types of IPV within the sample: 33% of men reported experiencing emotional violence from a male partner, 23% reported experiencing physical violence, and 10% reported experiencing sexual violence. The prevalence of reported perpetration of violence was lower than the reported experience of violence, with 30% reported perpetrating emotional violence towards a male partner, 20% reported perpetrating physical violence, and nine percent reporting perpetrating sexual violence.

Table 2 shows the differences in dyadic characteristic between men who did and did not report IPV. With the exception of perceived local stigma – individual, all scale values were lower among men who reported IPV. Men who reported experiencing emotional, physical or sexual violence had significantly lower levels of reporting of communal coping strategies, couple efficacy, couple outcome preferences and relationship satisfaction than men who did not experience violence. Men who reported experiencing sexual violence also had significantly higher values on the scale measuring perceived local stigma around their relationship. Men who reported perpetrating emotional or physical violence had lower reported levels of communal coping, couple efficacy, couple outcome preferences and relationship satisfaction than men who did not perpetrate these types of violence. In addition, men who reported perpetrating sexual violence had lower communal coping scores and higher perceived local stigma around their relationship than men who did not report perpetrating sexual violence.

Table 3 shows the results of the modeling of the IPV outcomes. There were no significant associations between age or partner age difference and any of the six IPV outcomes. Men who reported they were HIV-positive were significantly more likely to report perpetrating physical IPV (OR 2.25 95%CI 1.13, 4.48) and to report experiencing sexual violence (OR 2.44, 95%CI 1.05, 5.69). Men with college education were less likely than men with only high school education to report experiencing emotional violence (OR 0.46, 95%CI 0.24, 0.86), perpetrating emotional violence (OR 0.33, 95%CI

Table 2. Differences of scale values between men who did report violence vs. men who did not report violence by type of experienced or perpetrated violence; the mean and standard deviation (SD) are recorded.

	Emotional Violence		Physical Violence		Sexual Violence	
Scale [mean(SD)]	**Experienced**	**Did Not Experience**	**Experienced**	**Did Not Experience**	**Experienced**	**Did Not Experience**
Communal coping strategies	21.9 (7.2)	23.3 (7.0)**	22.1 (7.1)	23.1 (7.1)*	20.4 (8.0)	23.1 (7.0)**
Couple efficacy	24.4 (6.2)	26.1 (4.3)**	24.6 (6.1)	25.9 (4.6)*	23.8 (6.5)	25.8 (4.8)*
Perceived local stigma - individual	10.5 (6.2)	9.9 (6.6)	10.9 (6.3)	9.9 (6.5)	11.4 (7.0)	10.0 (6.4)
Perceived local stigma - couple	13.8 (4.5)	13.9 (4.2)	13.7 (4.5)	13.9 (4.3)	12.6 (5.5)	14.0 (4.1)*
Couple outcome preferences - general	15.5 (4.6)	18.0 (3.6)**	16.1 (4.6)	17.4 (3.9)*	15.6 (5.7)	17.3 (3.9)*
Couple outcome preferences - sexual	23.5 (5.5)	25.4 (3.9)**	23.8 (5.4)	25.0 (4.3)*	21.9 (7.2)	25.1 (4.1)*
Relationship satisfaction	20.8 (6.0)	24.5 (3.9)**	21.2 (5.8)	23.8 (4.6)**	21.3 (6.6)	23.5 (4.7)*

	Emotional Violence		Physical Violence		Sexual Violence	
Scale [mean(SD)]	**Experienced**	**Did Not Experience**	**Experienced**	**Did Not Experience**	**Experienced**	**Did Not Experience**
Communal coping strategies	22.0 (7.3)	23.2 (7.0)*	22.1 (7.0)	23.0 (7.2)*	20.5 (8.0)	23.1 (7.0)*
Couple efficacy	24.7 (6.1)	25.9 (4.5)*	24.8 (5.5)	25.8 (4.9)*	24.8 (5.9)	25.6 (4.9)
Perceived local stigma - individual	10.3 (6.7)	10.0 (6.4)	10.7 (6.4)	10.0 (6.5)	11.3 (7.0)	10.0 (6.4)
Perceived local stigma - couple	13.7 (4.5)	13.9 (4.2)	13.8 (4.6)	13.9 (4.2)	12.3 (5.1)	14.0 (4.2)*
Couple outcome preferences - general	15.7 (4.7)	17.8 (3.7)**	16.1 (4.4)	17.4 (4.0)*	16.4 (5.0)	17.2 (4.0)
Couple outcome preferences - sexual	23.7 (5.5)	25.2 (4.1)**	23.6 (5.3)	25.0 (4.4)**	23.7 (5.7)	24.9 (4.5)
Relationship satisfaction	21.2 (5.7)	24.1 (4.4)**	21.3 (5.6)	23.7 (4.7)**	22.5 (5.6)	23.3 (4.9)

Wilcoxon two-sided t-tests: *p < 0.05; **p < 0.001

0.17, 061), experience sexual violence (OR0.34, 95%CI 0.13, 0.85) and to report perpetrating sexual violence (OR0.30, 95%CI0.12, 0.73). Respondents reporting a racial identity other than white were more likely (OR2.01, 95%CI1.11, 3.67) to report experiencing physical violence than white respondents.

Respondents who reported higher levels of relationship satisfaction were less likely to report experiencing emotional violence (OR 0.90, 95%CI 0.85, 0.95), perpetrating emotional violence (OR 0.92, 95%CI 0.88, 0.97), and to report experiencing physical violence (OR0.93, 95%CI 0.88, 0.98). Respondents who scored high on the couple outcome preferences-general scale, and thus felt they had a high degree of concordance with their partner on lifestyle topics, were less likely to report experiencing emotional violence (OR 0.94, 95%CI 0.88, 1.00) and to report perpetrating emotional violence (OR 0.92, 95%CI 0.87, 0.98). Men who scored high on the perceived local stigma-couple score, and thus reported a perception of more stigma around being in a same-sex couple, were less likely to report experiencing (OR 0.91, 95%CI 0.85, 0.99) or perpetrating sexual violence (OR 0.90, 95%CI 0.83, 0.98). Conversely, men who scored high on the perceived local stigma-individual scale, and thus reported a perception of more stigma around being a gay/bisexual man,

Table 3. Odds ratio (OR) and 95% confidence intervals (CI) of multivariate logistic regression models by type of experienced or perpetrated violence (n=528).

Covariate OR (95% CI)	Outcome of Model					
	Experiencing emotional violence	**Perpetrating emotional violence**	**Experiencing physical violence**	**Perpetrating physical violence**	**Experiencing sexual violence**	**Perpetrating sexual violence**
Scales						
Communal coping strategies	1.01 (0.98, 1.04)	1.01 (0.97, 1.04)	1.02 (0.98, 1.05)	1.00 (0.97, 1.04)	0.99 (0.94, 1.03)	0.96 (0.92, 1.01)
Couple efficacy	1.02 (0.96, 1.08)	1.03 (0.97, 1.09)	0.99 (0.93, 1.05)	1.03 (0.97, 1.10)	1.02 (0.94, 1.10)	1.01 (0.93, 1.09)
Perceived local stigma - individual	1.01 (0.93, 1.04)	1.00 (0.96, 1.03)	1.03 (1.00, 1.07)	1.02 (0.98, 1.06)	1.04 (0.99, 1.09)	1.04 (0.99, 1.09)
Perceived local stigma - couple	0.98 (0.93, 1.04)	0.98 (0.93, 1.04)	0.97 (0.91, 1.03)	0.98 (0.92, 1.05)	*0.91 (0.85, 0.99)*	*0.90 (0.83, 0.98)*
Couple outcome preferences - general	*0.94 (0.88, 1.00)*	*0.92 (0.87, 0.98)*	0.98 (0.92, 1.05)	0.98 (0.88, 1.01)	1.00 (0.92, 1.10)	1.03 (0.94, 1.14)
Couple outcome preferences - sexual	0.94 (0.88, 1.01)	0.95 (0.89, 1.01)	0.97 (0.91, 1.04)	0.94 (0.88, 1.01)	0.95 (0.87, 1.03)	1.03 (0.94, 1.14)
Relationship satisfaction	*0.90 (0.85, 0.95)*	*0.92 (0.88, 0.97)*	*0.93 (0.88, 0.98)*	0.95 (0.89, 1.00)	0.96 (0.89, 1.03)	0.96 (0.89, 1.04)
Age	1.00 (0.98, 1.02)	1.00 (0.98, 1.02)	0.99 (0.97, 1.02)	0.99 (0.96, 1.01)	0.97 (0.94, 1.01)	0.98 (0.95, 1.01)
Age Difference						
Partner is > 5 years younger	1.10 (0.59, 1.00)	0.69 (0.36, 1.34)	1.20 (0.61, 2.34)	1.38 (0.68, 2.80)	0.66 (0.22, 1.95)	0.78 (0.28, 2.20)
Partner is ± 5 years	1.00	1.00	1.00	1.00	1.00	1.00
Partner is > 5 years older	0.79 (0.47, 1.31)	1.04 (0.64, 1.71)	0.93 (0.53, 1.60)	1.18 (0.68, 2.06)	0.78 (0.37, 1.64)	0.86 (0.40, 1.84)
Race						
Non-White	1.66 (0.93, 2.97)	1.66 (0.93, 2.95)	*2.01 (1.11, 3.67)*	1.64 (0.88, 3.06)	0.84 (0.34, 2.03)	0.56 (0.20, 1.53)
White	1.00	1.00	1.00	1.00	1.00	1.00
Education Level						
College	*0.46 (0.24, 0.86)*	*0.33 (0.17, 0.61)*	0.64 (0.32, 1.25)	0.68 (0.34, 1.36)	*0.34 (0.13, 0.85)*	*0.30 (0.12, 0.73)*
Some College	0.94 (0.53, 1.69)	0.72 (0.41, 1.28)	1.01 (0.54, 1.88)	0.90 (0.47, 1.71)	0.76 (0.36, 1.61)	0.56 (0.27, 1.20)
High School	1.00	1.00	1.00	1.00	1.00	1.00
HIV Status						
Positive	1.58 (0.82, 3.05)	0.97 (0.48, 1.94)	1.47 (0.74, 2.94)	*2.25 (1.13, 4.48)*	*2.44 (1.05, 5.69)*	0.85 (0.30, 2.45)
Negative	1.00	1.00	1.00	1.00	1.00	1.00

Italicized OR and CI's are significant at p < 0.05
HIV, Human Immunodeficiency Virus

were more likely to report experiencing physical violence (OR1.03, 95%CI 1.00, 1.07).

DISCUSSION

From the relatively small number of studies that have examined IPV in male same-sex relationships, the rates of male-to-male IPV range between 11% and 44%.[29] This variability reflects different definitions of partner abuse across studies and makes cross-study comparisons very difficult. Few studies have examined multiple forms of IPV, with most focusing on one specific form of violence in isolation. The majority of studies have focused on sexual or physical violence, with a dearth of studies that have examined emotional IPV among MSM. The results presented here find slightly lower levels of both physical and sexual IPV than have been shown in some previous studies, yet show relatively high levels of reporting of the experience of emotional IPV, which has often been overlooked in previous studies of IPV in same-sex relationships. Of particular surprise here are the high levels of reporting of perpetration of IPV, with over one-third of men reporting that they have perpetrated emotional violence against a partner, one-fifth reporting perpetrating physical violence and nine percent reporting perpetration of sexual violence.

Previous studies of IPV among gay and bisexual men, using a similar method of recruiting participants for a survey via ads placed on social network sites, found less than four percent of men reported perpetrating physical violence and less than one percent reported perpetrating sexual violence.[30] The difference between the two studies lies in differences in how experiencing or perpetrating violence was measured. In the current study, we used the Conflict Tactics Scale Revised, which uses multiple questions for each type of violence. [28] For example, to measure physical violence, participants were asked if they had experienced/ perpetrated kicking, shoving, being beaten-up etc. However, in the previous study, which produced much lower rates of perpetration of IPV, participants were asked a single question for each type of violence, for example "has your partner ever tried to hurt you, this includes pushing, holding you down, hitting you with his fist, kicking, attempting to strangle, attacking with a knife, gun or other weapon?" Covering a range of behaviors that constitute emotional, physical and sexual violence is more sensitive in capturing the reporting of both the experience and perpetration of violence among MSM.

Many previous studies have relied on convenience samples of clinic-based populations. The recruitment of LGBT individuals into studies of IPV has posed a challenge to researchers, due primarily to perceived difficulties in disclosing sexual orientation; as such, many previous studies have used convenience samples recruited through LGBT venues and publications.[7] The results presented here demonstrate the feasibility of collecting IPV data through surveys administered through social networking sites, providing a new opportunity to reach currently overlooked populations in IPV research. A significant contribution of this work is in the demonstration of the feasibility of using internet-based surveys to collect IPV data from marginalized groups in the U.S. The study was completed relatively quickly and inexpensively using a methodology that can be implemented in future research to gather data from hard-to- reach population groups on a range of topics. Data are often needed to inform new policy directions that may impact understudied and potentially marginalized groups for which researchers and policymakers have little available information.

The factors significantly associated with the reporting of IPV point to the role of minority stress in shaping the risk of experience or perpetration of violence. MSM respondents with lower levels of education, who identified as a racial minority, or who self-reported as HIV-positive, were all more likely to report increased experience or perpetration of IPV. Lower levels of education may be associated with lower levels of income and a lack of access to social capital and resources, and thus creating an economic stress that manifests as perpetration of or vulnerability to IPV. MSM who identify as a racial minority may face stress through exposure to racism, both in the MSM community and beyond, or through increased levels of homophobia known to exist in communities of color in the U.S.[31,32] However, the sample for this study was predominantly white, with too few numbers in each of the ethnic and racial groups to allow a deeper investigation other than white versus other of the racial differences in IPV among MSM. Finally, MSM who identify as HIV-positive may experience stress through living with HIV, the need for consistent access to care, or through discrimination arising from the stigma often associated with being HIV-positive. This may explain the finding that HIV-positive men are more likely to report perpetrating physical violence. Heintz and Melendez[33] report that gay men in abusive relationships are at a greater risk of HIV infection due to a lack of ability to negotiate for safer sex with their partner, and through coerced sexual activity. The result found here, that HIV-positive MSM are more likely to report experiencing sexual violence, may reflect the unsafe sexual activities experienced by MSM in abusive relationships, and the resultant increased risk of HIV infection. This finding also has important policy implications for efforts that seek to reduce spread of HIV and other sexually transmitted infections in hard to reach populations.

Interestingly, MSM who perceived more stigma to being in a male same-sex couple were less likely to report sexual violence. MSM who perceive their relationship to be stigmatized may be less likely to report sexual violence due to a perceived lack of resources or support. Unique to this study is the inclusion of scales to measure dyadic characteristics in the modeling of IPV. MSM who reported greater satisfaction with their relationship were less likely to report violence, which although not surprising, points to the fact that MSM see a satisfying relationship as one that does not include violence. MSM who reported a higher degree of concordance with their partner on lifestyle choices were also less likely to report violence: again, this shows the role of stress in creating the risk of IPV. Couples who disagree on lifestyle choices

may face stress through arguments that lead to violence: alternatively, the experience of violence may reduce the ability of one member of the couple to negotiate for and agree upon concordance around lifestyle choices. These results largely mirror the dyadic model of partner violence (Bartholomew and Cobb[26]), which states that couples in more mutually satisfying relationships, with high levels of trust and strong communication, are less likely to experience IPV. A second contribution of this research is the demonstration that dyadic models of IPV originally developed for heterosexual couples may be equally applicable to same-sex couples. This finding also underscores the need for policy and legislative initiatives to more deliberately include experiences of sexual minorities, in particular, same-sex couples.

LIMITATIONS

The key limitations to the present results are a small sample size and possible selection bias in both the decision to complete the questionnaire and the decision to answer the questions on IPV. Kaschak[12] refers to the "*double closet*" that surrounds IPV in same-sex relationships; the dual burden of shame and silence surrounding both the discussion of IPV and the discussion of sexuality, hence it is possible that IPV may be under-reported. Additionally, the cross-sectional nature of the data means that only associations between dyadic characteristics and the reporting of IPV can be drawn; there are no causal relationships identified here. In many of the associations identified the relationship could work two ways: for example, HIV-positive status could lead to IPV, or IPV could lead to HIV infection. Further work, using longitudinal data, is required to further understand the relationships between dyadic characteristics and IPV among MSM.

CONCLUSION

The results presented here demonstrate high levels of IPV among MSM, and illustrate how an online survey coupled with social networking sites can be used to collect data on sensitive public health issues such as IPV for marginalized groups such as MSM. The results also demonstrate similarities in the dyadic factors shaping IPV in heterosexual and homosexual relationships, an area that has been largely overlooked in the existing literature. There is clearly a need for further research into issues surrounding IPV in same-sex male relationships, who are a population vulnerable to high levels of IPV, and to understand the complex relationships that exist between IPV and dyadic characteristics. Such information is vital for the development of effective interventions to reduce IPV and improve health, in particular sexual health, among MSM in the U.S. The results presented here may help to inform the development of IPV screening tools for MSM, and add to the creation of more sensitized and culturally appropriate prevention messages aimed at MSM couples, who have to date been largely missing from prevention efforts.

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Rape Victimization and High Risk Sexual Behaviors: Longitudinal Study of African-American Adolescent Females

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Objectives: African-American women are affected by disproportionately high rates of violence and sexually transmitted infections (STI)/human immunodeficiency virus (HIV) infection. It is imperative to address the intersection of these two urgent public health issues, particularly as these affect African-American adolescent girls. This study assessed the prevalence of rape victimization (RV) among a sample of African-American adolescent females and examined the extent to which participants with a history of RV engage in STI/HIV associated risk behaviors over a 12-month time period.

Methods: Three hundred sixty-seven African-American adolescent females ages 15-21, seeking sexual health services at three local teenager-oriented community health agencies in an urban area of the Southeastern United States, participated in this study. Participants were asked to complete an audio computer-assisted self-interview (ACASI) at baseline, 6- and 12-month follow-up. We assessed sociodemographics, history of RV and sexual practices. At baseline, participants indicating they had experienced forced sex were classified as having a history of RV.

Results: Twenty-five percent of participants reported a history of RV at baseline. At 6- and 12-months, victims of RV had significantly lower proportions of condom-protected sex (p=.008), higher frequency of sex while intoxicated (p=.005), more inconsistent condom use (p=.008), less condom use at last sex (p=.017), and more sex partners (p=.0001) than non-RV victims. Over the 12-month follow-up period, of those who did not report RV at baseline, 9.5% reported that they too had experienced RV at some point during the 12-month time frame.

Conclusion: African-American adolescent females who experience RV are engaging in more risky sexual behaviors over time than non-RV girls, thereby placing themselves at higher risk for contracting STIs. In light of the results from this unique longitudinal study, we discuss considerations for policies and guidelines targeting healthcare, law enforcement and educational and community settings. The complexities of RV screening in healthcare settings are examined as is the need for tighter collaboration between healthcare providers and law enforcement. Finally, we consider the role of prevention and intervention programs in increasing awareness about RV as well as serving as an additional safe environment for screening and referral. [West J Emerg Med. 2011;12(3):333-342.]

INTRODUCTION

Due to jeopardized health of adult and adolescent women, the intersection of gender-based violence and increased risk for acquiring sexually transmitted infections (STIs), including human immunodeficiency virus (HIV), has received increased attention in public health research.[1] The United Nations Declaration on Violence Against Women provides a broad basis for defining gender-based violence, which includes but is not limited to physical, sexual, and psychological violence, sexual abuse of female children, marital rape, non-spousal violence, sexual harassment, trafficking in women and forced prostitution. Globally, girls and women face systematic discrimination, leaving them highly vulnerable to being harmed physically, psychologically and moreover sexually by the men in their families and communities.[2]

In the United States (U.S.), women experience high rates of sexual violence. According to results from the National Violence Against Women Survey (NVAWS), nearly one in six women surveyed reported having been raped in their lifetime, a prevalence of 17.6%.[3] Furthermore, research suggests that in nearly two-thirds of cases, rape victimization (RV) was perpetrated by someone the victim knew (e.g. friends, acquaintances, or intimate partners) with over 50% of victims reporting that the rape occurred before age 18.[3,4] While RV rates are alarming, data also indicate that only one in five women reported their rape to authorities, suggesting that available data on RV represent a severe underestimate.[3]

Retrospective studies in the U.S. examining physical and/or sexual victimization have shown that women's experiences of victimization during childhood and/or adolescence are associated with high-risk sexual practices in adulthood and the acquisition of STIs, including HIV.[5-13] Among African-American adult women specifically, experiences of SV in childhood and/or adolescence are associated with increased risk for abortion, re-experiencing abuse as an adult, acquiring an STI, earlier sexual debut, a greater number of lifetime sexual partners, and sex trading.[7,8,14-16]

Among adolescent females, studies examining the association between RV and STI/HIV-associated risk behaviors suggest a similar pattern of associations as those described for adult women. Studies based on representative samples of adolescent females report that approximately one in five girls has experienced some form of victimization.[17,18] Among sexually active adolescent girls, this rate increases to approximately one in three girls with African-American adolescent females reporting higher rates of physical or sexual victimization compared to other ethnic groups.[19-23] Many adverse psychological and physical health outcomes have been found to be associated with early experiences of RV, including eating disorders, decreased self-esteem and poor health-related quality of life.[17,24-27] Adolescent females with a history of RV also report engaging in high risk sexual practices including having multiple sexual partners, earlier sexual debut, not using birth control at last intercourse, substance abuse, and exchanging sex for money or drugs.[16,20,28-39] Moreover, studies have reported a link between RV and self-reported STIs, whereas one recent study with female detained adolescents showed that victimization was related both directly and indirectly to biologically-confirmed chlamydia.[18,19,32,40] Indirectly, physical or sexual victimization was related to chlamydia through condom failures and having sex while intoxicated.

Among adolescents, African-American females continue to represent a vulnerable group bearing the disproportionate burden of STI/HIV infection.[41-44] Specifically, the prevalence of chlamydia and gonorrhea is substantially higher among same-age African-American adolescent females compared to females from other ethnic groups.[45,46] Furthermore, previous studies have observed that among African-American females, even after adjusting for diverse behavioral and sociodemographic risk indices, the reinfection rate was threefold that among white peers.[42,47-50] This could be due to a combination of factors including lack of adoption of STI/HIV-preventive strategies, such as using condoms consistently or limiting number of sex partners and/or selecting partners from high risk sexual networks.[46,51,52]

Taken together, these studies suggest that examining the intersection of RV and sexual risk taking among African-American females at high risk for STI/HIV acquisition is not only timely but also necessary given the scarce body of prospective research in this area. For purposes of this study, RV is defined as non-consensual sex during childhood or adolescence. RV is a particularly harmful type of gender-based violence associated with the most enduring health consequences, such as STI/HIV acquisition and associated risk behaviors.[5,7,17,33,53,54] The purpose of this study was to describe the prevalence of RV in a population of African-American adolescent females seeking STI services, and to longitudinally assess the extent to which African-American adolescent females with a history of RV engage in STI/HIV associated risk behaviors over a 12-month time period.

METHODS

Participants

Participants in this study were part of a randomized controlled trial evaluating a sexual risk reduction intervention for young African-American females in an urban area of the Southeastern U.S. From March 2002 through August 2004, recruiters screened self-identified young African-American females seeking reproductive and sexual health services at three local teenager-oriented community health agencies. Eligibility criteria included being African-American, female, 15 to 21 years of age, and sexually active (reporting vaginal intercourse in the previous 60 days). The local institutional review board approved the study protocol before implementation.

Of 1,558 screened, 874 females met eligibility criteria. Of those who met eligibility criteria, 82% (n=715) agreed to

participate, provided written informed consent, and completed a baseline assessment. Of those who agreed to participate, 348 (48.7%) were randomly assigned to the sexual risk reduction intervention condition while 367 (51.3%) were randomly assigned to a standard-of-care comparison condition. Analyses reported in this study addressed data from participants who were randomized to the standard-of-care comparison condition only to eliminate any effects of the intervention on high risk sexual behaviors. We obtained high retention rates (86%) at both 6- and 12-month follow ups for this sample.

Procedures

Data collection consisted of a 40-minute survey administered via audio computer-assisted self-interviewing (ACASI) technology at baseline, 6-month and 12-month follow-up time periods. Questions assessed sociodemographic information, history of RV, condom use behaviors and other variables describing participants' sexual history. Participants were compensated $50 for their participation at each assessment time point.

Measures

History of Rape Victimization

History of RV was conceptualized as an index comprising two severe forms of abuse—forced vaginal intercourse or forced anal intercourse—and was assessed by asking two questions: "Has anyone ever forced you to have vaginal sex when you didn't want to?" and "Has anyone ever forced you to have anal sex when you didn't want to?" Response choices were yes (1) and no (0). Participants who endorsed either of these two questions were categorized as having a history of rape victimization. Participants who did not endorse either of these two questions were categorized as having no history of rape victimization.

Sociodemographic and Background Measures

We assessed highest grade completed in school by a single question, "What was the last grade that you completed in school?" Participants were also asked if they were currently attending school. Receiving federal assistance for living expenses was assessed by four yes-or-no questions. We summed responses to each question to create an index of family aid. Participants were also asked with whom they were living at the time of assessment (i.e. family members, boyfriend, other friends). We also assessed age at first willing vaginal sex.

Condom Use

We assessed several measures of condom use. First, condom use during the last episode of vaginal intercourse with a sex partner was assessed. Condom use at last intercourse provides an assessment of recent condom use that may be less susceptible to recall bias.[55] Participants were asked the question "Did you use a condom the last time you had vaginal sex with your boyfriend or steady partner?" Response choices were yes or no. Second, we assessed consistent condom use by asking participants the question "How many times did you have vaginal sex in the past 60 days?" Participants were then asked "How many of these times did you use a condom?" Based on these two questions we computed a continuous measure, proportion of condom use in the last 60 days, with possible values ranging from 0 to 100% condom use. Furthermore, we subsequently computed a dichotomous measure. Participants who indicated using condoms during every episode of vaginal intercourse in the past 60 days (100%) were defined as consistent condom users. Participants who indicated not using condoms during every episode of vaginal intercourse (0-99%) were defined as inconsistent condom users.

Unprotected Vaginal Sex

We assessed unprotected vaginal sex by subtracting the number of times a participant used condoms in the past 60 days from the number of times they reported having vaginal sex in the past 60 days.

Number of Sexual Partners

We assessed number of sexual partners by asking participants: "In the past 60 days, how many guys have you had vaginal sex with?" This measure was then dichotomized into participants who reported one sexual partner in the past 60 days and participants who reported two or more sexual partners.

Sex Under the Influence of Drugs or Alcohol

We assessed number of vaginal sex episodes while the participant and their sex partner were intoxicated by the following two questions: "In the past 60 days, how many times did you have sex while high on alcohol or drugs?" and "In the past 60 days, how many times did you have sex while your partner was high on alcohol or drugs?"

Statistical Methods

First, we used descriptive statistics to summarize sociodemographic variables, prevalence of sexual violence and high risk sexual behaviors. Subsequently, we conducted bivariate analyses consisting of Chi-square and independent Student's t-tests to examine associations between RV and potential confounding variables. Finally, we estimated multivariable population-averaged generalized estimating equation (GEE) models to examine the longitudinal relationship between RV and high risk sexual behaviors.[56] We used the exchangeable correlation structure for the working correlation matrix based on an evaluation of the quasi-likelihood information criterion. A separate GEE model was constructed for each high risk sexual behavior considered.

Fitted GEE regression coefficients parameters can be interpreted as the odds or odds ratios (in logistic models analyzing dichotomous outcome variables) and means or mean differences (in linear regression models analyzing continuous

outcome variables) over the entire 12-month period for an "average" participant. We computed the 95% confidence intervals around the adjusted odds ratios and adjusted mean differences and the corresponding P-value. To obtain adjusted means and mean differences, we repeatedly re-estimated models from bootstrap samples where samples were drawn with replacement at the level of the participant. For each model, we calculated adjusted means and standard errors from the collection of bootstrap results.[57,58] We computed percent relative difference for continuous variables as the difference (D) between the adjusted means for victimized participants divided by the adjusted mean for non-victimized participants. Percent relative difference provides a common metric for measuring the magnitude of the difference across the various measures relative to the baseline measure. We performed analyses using Stata statistical software, version 10.

RESULTS

Descriptive and Bivariate Analyses

Three hundred sixty-seven participants between the ages of 15 and 21 participated in this study and provided baseline data (Table 1). The mean age of the participants was 17.8 (standard deviation [SD] =1.7) years. Most (67.9%) had not yet graduated from high school while the remaining 32% had completed high school and/or technical school. A total of 35.4% no longer attended school at the time of baseline assessment. Among this sample 53.4% reported that their family received some form of public assistance (i.e. welfare, Section 8 housing, food stamps). Most participants (82.3%) reported being in a current relationship with the average length of the relationship 15.11 months (SD=16.0). Ninety-two (25.1%) participants reported a history of RV at baseline. Of the participants who reported no RV at baseline, 26 (9.5%) reported RV incidence over the 12-month follow-up period. Of the participants who reported RV at baseline, 55 (59.8%) reported being re-victimized over the following 12-month period. Specifically, 14 (15.2%) reported being re-victimized at the 6-month follow up; eight (8.7%) reported being re-victimized at the 12-month follow up; and 33 (35.9%) reported being re-victimized at both the 6- and 12-month follow up.

Table 1. Comparability of rape victimization (RV) and non-RV participants at baseline.

VARIABLES	RV (n=92)		Non-RV (n=275)		
	Mean (SD)	Percent (n)	Mean (SD)	Percent (n)	P
Age	17.98 (1.68)		17.71 (1.75)		0.20*
Age at first vaginal sex	14.23 (1.64)		14.68 (1.62)		0.02*
Less than high school		62.0% (57)		70.0% (191)	0.15*
Public assistance		56.5% (52)		52.4% (144)	0.49
Holding a paying job		29.3% (27)		28.0% (77)	0.80
Not living with family		30.8% (28)		19.8% (54)	0.03*
Currently in a relationship		82.6% (76)		82.2% (226)	0.93
Testing positive for an STI		23.9% (22)		27.3% (75)	0.53
Ever used marijuana		87.0% (80)		78.2% (215)	0.07*
Ever used alcohol		91.3% (84)		86.5% (238)	0.23
Number of days used alcohol	6.02 (10.71)		3.95 (8.75)		0.11*

*Covariates used in generalized estimating equation (GEE) models
SD, standard deviation; *STI,* sexual transmitted infection.

We present descriptive statistics and bivariate associations between the predictor variable, history of RV, and demographic, as well as other potential confounding variables, in Table 1. We included only variables associated with history of RV at p≤.20 in bivariate analyses in the multivariate GEE models as confounders.[59] Furthermore, we present bivariate comparisons between RV history and sexual risk taking at each of the three time points (baseline, 6-months and 12-months) in Table 2.

Multivariate Analyses

We present results of GEE models constructed for continuous and dichotomous measures of sexual behaviors over the entire 12-month time period in Table 3. Analyses of continuous behavioral outcomes suggest that over the entire time period participants with a history of RV compared to participant without a history of RV reported significantly lower proportion condom use in the past 60 days (adjusted mean 21.45 vs. 31.57; p=.008), greater frequency of having sex while they were intoxicated (adjusted mean 2.30 vs. 1.30; p=.005) and greater frequency of having sex while their partner was intoxicated (adjusted mean 3.25 vs. 1.95; p=.005). Frequency of unprotected vaginal sex in the past 60 days was only marginally significant (p=.088).

Analyses of dichotomous behavioral outcomes suggest that over the entire 12-month time period, participants with a history of RV compared to participant without a history of RV were 1.7 times more likely to report using condoms inconsistently (95%CI =1.15, 2.60; p=.008), 1.5 times more likely to report using no condoms at last sex (95%CI = 1.08, 2.11; p=.017), and 3.94 times more likely to report having multiple partners (95%CI = 2.96, 5.26; p=.0001).

DISCUSSION

In this sample of sexually active African-American adolescents one in four females reported a history of RV. These findings corroborate rates of RV reported in prior research with African-American adolescent females.[18,60,61] Furthermore, results of this study show that African-American adolescent females seeking services at local STI clinics and who have a history of RV report an earlier age of consensual sex and are engaging in more risky sexual behaviors as they age than their counterparts who do not report a history of RV, thereby placing themselves at increased risk for contracting STIs, including HIV. These findings extend prior cross-sectional research reporting similar findings by underscoring the enduring adverse effects of RV on victims' sexual risk taking over time.[18,20,31,38,40, 60,61] Specifically, in this sample, African-American adolescent females with a history of RV reported less condom use with their sex partner, more frequent substance use during sexual intercourse, and multiple sex partners over a 12-month period. While we found no association in this sample between history of RV and testing positive for an STI, all of the risk behaviors aforementioned have been previously identified as antecedents to STI acquisition among African-American adolescent females.[18]

Understanding the relation between history of RV and risk behaviors has been hindered in previous research due to the cross-sectional nature of the study designs. As a result, two general explanations of this association have been offered in the literature: 1) following experiences of RV, women are more likely to engage in a pattern of risk behaviors and 2) engaging in risk behaviors may increase women's risk of experiencing RV.[62] Although both explanations have received some support in the literature with regard to the association between RV and substance use behaviors, less is known about the temporal association between RV and sexual risk taking.[63-65] The longitudinal nature of our analyses, although not allowing for cause-effect conclusions to be drawn, lend some support to the explanation that experiences of RV are associated with a pattern of high risk sexual behaviors over time. This pathway is also consistent with a model designed to explain violence-related health problems which states that violent assaults, including sexual assaults, can lead to various adverse health outcomes, including acute physical injury, increased stress, psychological and emotional problems and subsequently high risk health behaviors.[66] For victims of RV particularly, studies have shown that the psychological sequelae may include low self-esteem, passivity, depression, post-traumatic stress disorder and feelings of powerlessness and helplessness.[67-70]

Taken together, these psychological problems, if unresolved through professional counseling, are likely to contribute to victims' participation in high risk sexual behaviors, such as being less likely to communicate about sex and negotiate safer sex practices which may subsequently lead

Table 2. Bivariate comparisons between rape victimization (RV) and non-RV participants and sexual risk taking at baseline, six and 12-month follow-up periods.

VARIABLES	RV (n=92)		Non-RV (n=275)		
	Mean (SD)	Percent (n)	Mean (SD)	Percent (n)	P
Baseline					
Sex frequency while intoxicated	3.00 (6.82)		1.63 (4.18)		0.07
Sex frequency partner intoxicated	4.15 (7.90)		2.36 (4.90)		0.04
% condom use	40.0 (38.51)		56.3 (40.61)		0.002
Unprotected vaginal sex	10.2 (14.48)		5.2 (8.24)		0.006
Multiple sex partners		42.4% (39)		33.5% (92)	0.12
Inconsistent condom use		83.8% (67)		69.1% (163)	0.01
No condom use last sex		67.4% (62)		55.3 % (152)	0.04
Six-Month Follow-up					
Sex frequency while intoxicated	1.68 (3.50)		1.21 (4.29)		0.33
Sex frequency partner intoxicated	2.91 (4.68)		1.68 (6.11)		0.07
% condom use	38.6 (39.41)		54.1 (42.59)		0.009
Unprotected vaginal sex	8.7 (11.15)		6.5 (10.60)		0.15
Multiple sex partners		39.5% (30)		24.8% (59)	0.01
Inconsistent condom use		84.3% (59)		66.2% (129)	0.004
No condom use last sex		69.7% (53)		51.7 % (122)	0.006
12- Month Follow-up					
Sex frequency while intoxicated	2.22 (5.91)		0.65 (2.07)		0.02
Sex frequency partner intoxicated	3.34 (7.61)		1.11 (2.54)		0.01
% condom use	40.9 (39.54)		55.2 (43.13)		0.011
Unprotected vaginal sex	10.1 (14.55)		5.9 (12.64)		0.03
Multiple sex partners		38.8% (31)		20.8% (49)	0.001
Inconsistent condom use		79.5% (58)		65.3% (126)	0.03
No condom use last sex		66.2% (53)		54.3 % (127)	0.06

SD, standard deviation

Table 3. Generalized estimating equation (GEE) results for behavioral outcomes.

	GEE Models: Baseline – 12 Months					
	Adjusted Mean[a] SV	Adjusted Mean[a] Not SV	Difference[b] (95% CI)	% Rel Difference[c] (95% CI)	AOR[d] (95% CI)	P
Continuous Behavioral Outcomes						
% Condom use past 60 days	21.5	31.6	-10.1 (-17.0;-3.7)	13.2 (13.2; 51.8)	n/a	0.008
Unprotected vaginal sex past 60 days	8.00	6.45	1.55 (-0.6; 3.4)	24.09 (-7.2; 55.6)	n/a	0.088
Frequency of sex while intoxicated	2.30	1.30	1.00 (0.25; 1.9)	77.90 (0.06; 162.9)	n/a	0.005
Frequency of sex while partner intoxicated	3.25	1.95	1.30 (0.40; 2.3)	66.69 (15.06; 124.2)	n/a	0.005
Dichotomous Behavioral Outcomes						
Inconsistent condom use past 60 days			n/a		1.73 (1.2; 2.6)	0.008
No condom use at last sex			n/a		1.51 (1.1; 2.1)	0.017
Multiple sex partners			n/a		3.94 (3.0; 5.3)	0.0001

[a] Adjusted means for rape victimization (RV) and non-RV groups; means adjusted by participant age, age at first consensual sex, education, living arrangement, ever used marijuana and number of days alcohol use past 60 days.
[b] Adjusted mean difference between RV and non-RV groups reported for continuous outcomes
[c] Relative difference reported for continuous outcomes = adjusted mean difference/adjusted non-RV group mean x 100%.
[d] Adjusted odds ratios (OR) reported for dichotomous outcomes; adjusted by participant age, age at first consensual sex, education, living arrangement, ever used marijuana and number of days alcohol use past 60 days. Non-RV group is the referent for computing the OR.

to inconsistent condom use out of fear that such assertiveness may provoke aggression and possibly repeat victimization.[31,71] Moreover, following experiences of RV, sexual activity may become less pleasurable.[72] It is reasonable to assume that for victims of RV who view sexual activity as aversive, substance use may become a coping mechanism, allowing them to engage in sexual intercourse while alleviating negative emotions associated with RV.[18,62] Unfortunately, this negative coping mechanism of using substances during sex may further exacerbate adolescent females' risk for contracting an STI including HIV, as using substances during sex has been related to an increased risk of condom failures.[39] Condom failures, such as breakage and slippage, may be more important than other risk behaviors such as unprotected vaginal sex when examining predictors of STI acquisition. Findings from a recent study showed that biologically-confirmed STIs were not related to unprotected vaginal sex among a sample of adolescent females; however, after adjusting the measure of unprotected vaginal sex to account for imperfect condom use (i.e., controlling for breakage, leaking, and slippage), the association was significant.[73] In the present study, we did not find a relation between victimization and STIs; however, it may be possible that other factors could account for an indirect relation. Future research should examine more complex models that include indirect effects and measures of condom failures to account for STI outcomes. This line of research could help shed light on the complex relations among experiences of RV, sexual risk behaviors and STI/HIV outcomes.

Lastly, consistent with prior findings, our study suggests that victims of RV are more likely to report multiple sex partners than those without a history of RV.[18,74,75] It is possible that because victims of RV initiate sexual activity earlier than non-victims, this may lead to exploring sexual behavior with a greater number of sexual partners during the course of adolescence. Additionally, several studies have found an association between history of RV and prostitution among 13-18-year-old predominantly African-American adolescents.[76] Thus, transactional sex experiences may contribute to the higher number of sex partners reported by victims of RV in this sample.

LIMITATIONS

This study has several noteworthy limitations. First, the conceptualization of RV used in this study is rather limited in scope, including only severe sexual violence (i.e. forced vaginal and anal intercourse) and not other forms of sexual violence, such as attempted rape, digital penetration or penetration with a foreign object. Therefore, it is possible that participants categorized as "not victimized" included some

who may have experienced types of RV other than those assessed by this measure. Future studies should broaden this definition to assess the effects of a full range of RV on sexual risk taking over time. Second, this study did not assess the victim-perpetrator relationship; therefore, no comparisons could be made between RV perpetrated by a sexual partner vs. RV perpetrated by a family member or a stranger. Moreover, no data were available regarding the frequency, severity or chronology of victimization. Finally, although this study adds to the literature by assessing RV and risk behavior longitudinally, no cause-effect conclusions can be drawn from these findings.

CONCLUSION

It is critically important to identify and intervene with girls who have experienced RV in an attempt to avoid a trajectory of sexual risk-taking and further re-victimization. To that end, policies and guidelines should be considered at several critical structural levels including: 1) healthcare, 2) law enforcement and 3) community education.

First, healthcare agencies, especially those serving adolescent female populations, should adopt screening guidelines for providers as standard practice. Having said that, it should be acknowledged that screening for RV, although a logical recommendation, could be complex in its implementation, especially among adolescent populations. For example, adolescent females may be accompanied to the clinic by the perpetrator in cases where RV or other types of violence are ongoing. In such cases, screening a victim may be ineffective at best and dangerous at worst. Furthermore, in the absence of being fully autonomous, adolescents' ability to take advantage of available services targeting RV may be dependent on family members, who may or may not know about the victimization, and their level of support. However, despite its complexities, when implemented with caution, screening remains one of the best methods to protect adolescent females from ongoing RV and/or the sequelae of having experienced RV in the past. Agencies may consider implementing an overall health screening protocol that is conducted in private with only the patient and healthcare provider(s) in the consulting room. A thorough health screen would incorporate questions about both sexual risk behaviors, focusing particularly on condom use practices, frequency of sex while under the influence of substances and number of sex partners, as well as history of RV. Drawing on clinical judgment, providers may follow up with questions about current RV, should patients' answers to previous inquiries be affirmative. Policies and guidelines must also be considered in the training of healthcare providers and their support staff. Resources should be readily available to make referrals; however, health agencies should consider implementing policies that place the adolescent female victim in a collaborative relationship with in-house staff who actively seek to connect her to targeted services for victims of RV in an effort to increase the likelihood of safe follow through. Additionally, training providers and staff to establish rapport with victims and adhere to strict confidentiality standards is a crucial consideration likely to impact both the probability of eliciting truthful responses as well as the safety of the patient. Finally, healthcare providers should also be linked to and collaborate with law enforcement agencies in instances where victims decide to report the victimization.

Second, policies and guidelines should address the needs of law enforcement agencies in an effort to expand services offered to victims of RV. Additional resources would allow enhanced training of law enforcement staff to work closely and collaboratively with healthcare agencies toward establishing sex crime reporting procedures designed to assure young women that they will be met with respect, sensitivity and timely consideration in reporting their experience(s) of victimization.

Third, policies and guidelines should be implemented in community educational settings to raise awareness of RV and associated consequences for adolescent females. Specifically, the implementation of existing sexual risk reduction and pregnancy prevention programs should incorporate sexual assault awareness into their protocols and offer treatment referrals to participants. Similarly, intervention programs for victims targeting the enduring effects of RV on sexual risk taking and the risk for re-victimization are needed and should be implemented within existing treatment plans addressing the needs of RV victims. As such, well designed intervention programs can serve a dual purpose: first, to raise awareness among both female and male adolescents in an attempt to prevent RV; and second, to serve as an additional safe environment where victims can feel comfortable reporting their experiences of RV. For many adolescent female victims of RV, such a setting may represent the first step toward prevention of increased sexual risk taking as well as possible re-victimization.

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Intimate Partner Violence and Sexual Risk-taking among Men Who Have Sex with Men in South Africa

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Objective: A growing body of literature suggests that men who have sex with men (MSM) represent a high risk group for human immunodeficiency virus (HIV) infection in Africa, but are often overlooked in the development of HIV interventions and programming. Little attention has been paid to the presence of intimate partner violence (IPV) among MSM in African settings. This paper examines reporting of IPV among a sample of predominantly white, gay internet-recruited MSM in South Africa and examines associations between IPV and sexual risk-taking.

Methods: Internet-using MSM were recruited through selective placement of banner advertisements on Facebook.com. Eligibility criteria were over 18-years-old, residence in South Africa and self-reporting of recent male-male sexual behavior. There were 777 eligible respondents, of which 521 MSM with complete data are included in the final analysis. Ninety percent of the sample reported a White/ European race, and 96% self-identified as gay.

Results: The prevalence of IPV, both experienced and perpetrated, was relatively high, with 8% of men reporting having experienced recent physical IPV and 4.5% of men reporting recent experiences of sexual IPV. Approximately 4.5% of MSM reported recently perpetrating physical IPV, while the reporting of perpetration of recent sexual IPV was much lower at 0.45%. Reporting of experiencing and perpetration of physical IPV was significantly associated with race, level of education and reporting recent unprotected anal sex. Reporting of experiencing recent sexual IPV was significantly associated with reported experiences of homophobia.

Conclusion: There is a limited amount of data on IPV within same-sex relationships in South Africa, and the results presented here suggest that the prevalence of IPV within this White/European and gay population is cause for concern. Collection of IPV data through surveys administered via social networking sites is feasible and represents a way of reaching otherwise marginalized population groups in IPV research; although in this instance Black Africans and MSM who did not identify as gay were severely under-represented. [West J Emerg Med. 2011;12(3):343-347.]

INTRODUCTION

South Africa is unique within the African context as the human immunodeficiency virus (HIV) epidemic was first identified among primarily white men who self-identified as gay in the 1980s, with the emergence of a second independent heterosexual epidemic in the early 1990s among the black population.[1,2] Despite South Africa's constitution and supportive legal framework, homosexuality is still highly stigmatized and considered to be "*un-African.*"[1] In South Africa, HIV prevalence rates among men who have sex with men (MSM) have been reported to be approximately 15.3% (with a range of estimates between 12.4% to 18.3%), which is higher than the national adult prevalence rate.[3] In South Africa, intimate partner violence (IPV) has been shown to be an important risk factor for disease and injury, and women who experience IPV have been shown to be at

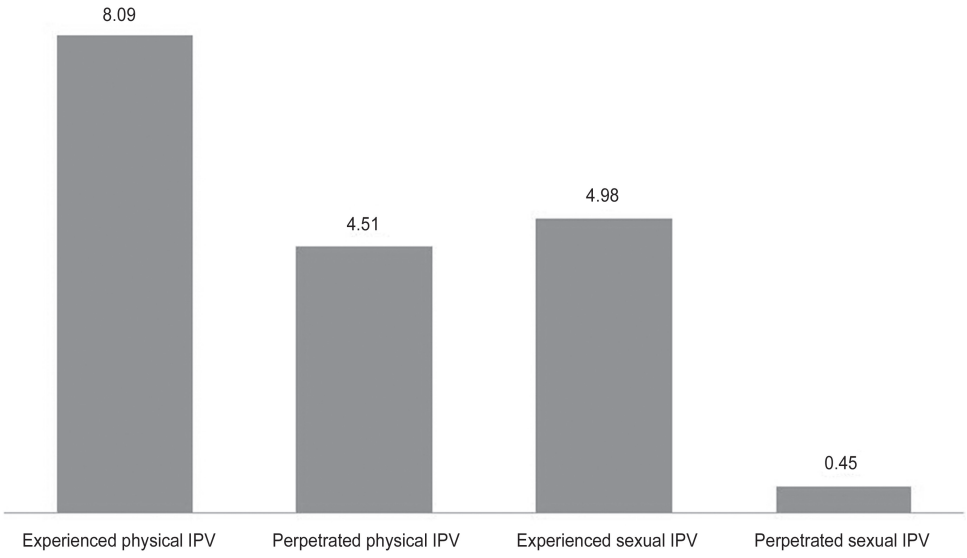

Figure 1. Reporting of experience and perpetration by percent of physical and sexual imtimate partner violence (IPV) among men who have sex with men (n=521).

an increased risk of HIV infection.[4-5] However, we find no previous research that has examined the prevalence of IPV among MSM in South Africa or has examined associations between IPV and sexual risk-taking among MSM. This paper uses data collected via surveys administered through a social network site to examine the prevalence of IPV among a sample of predominantly White/European gay-identifying MSM in South Africa and to examine the associations between reporting of IPV and reporting of sexual risk-taking. A secondary aim of this paper is to examine the feasibility of using an online questionnaire, which is marketed using a popular social networking site, to collect data on reports of both experiences as well as perpetration of intimate partner violence and sexual risk-taking behavior among MSM in South Africa.

METHODS

Internet-using MSM were recruited through selective placement of banner advertisements on Facebook.com. The banner ads included a range of images, including groups of men, individual men of a range of ethnic and racial backgrounds, and rainbow-themed images. Participants who clicked on the banner advertisements were taken to an internet-based survey. Eligibility criteria for the survey were over 18-years-old, residence in South Africa and self-report of sex with a man in the previous six months. The survey collected information on the participant's demographic and socioeconomic characteristics (age, race, education and employment), the number of friends, colleagues or acquaintances who they felt identified as gay or bisexual, their knowledge of the routes of HIV transmission and their HIV testing behavior and sero-status. In addition, participants were asked if they had experienced or perpetrated physical IPV or sexual IPV in the 12 months prior to the survey. Men were asked if they had ever been physically hurt by their current male partner ("*In the last 12 months has any partner been physically violent to you? This includes pushing, holding you down, hitting you with his fist, kicking, attempting to strangle, attacking with a knife, gun or other weapon*?"), and if their current male partner had ever used physical force to coerce them to have sex when they did not want to ("*In the last 12 months has any partner ever forced you to have sex when you were unwilling?*). Men were also asked if they had perpetrated either physical or sexual violence against any male partner. Participants also responded to the shortened version of the Gay Identity Scale, a scale developed to measure the six stages of gay identity formation and validated with MSM in the United States (U.S.).[6] Finally, respondents answered 13 questions on their experience of homophobia: the responses are summed to create a scale (0-13), with a higher score representing a greater perceived experience of homophobia. The questionnaire was reviewed by South African residents for language and cultural appropriateness. All surveys were conducted in English. Using logistic regression the reporting of experiencing physical or sexual IPV; perpetrating physical or sexual IPV and recent unprotected anal sex were modeled as outcomes. The analysis examines the likelihood of reporting either the experience or perpetration of physical and/or sexual IPV and the likelihood of reporting recent (last 12 months) unprotected anal sex as a function of a number of background characteristics, including experiences of homophobia, score on the gay identity scale, race, age, level of education, employment status and HIV serostatus.

RESULTS

Eight hundred twenty-four individuals responded to the

Table 1. Background characteristics and prevalence of intimate partner violence (IPV) among a sample of 521 internet recruited men who have sex with other men.

	%	% reporting experiencing physical IPV	% reporting experiencing sexual IPV	% reporting perpetrating physical IPV	% reporting perpetrating sexual IPV
Age					
16-24	28.76	9.76	7.38	3.25	0.82
25-34	39.96	8.33	5.00	7.26	0
35-44	20.08	6.98	2.35	4.76	1.18
45+	11.20	3.77	0	0	0
Race					
Black African	4.62	22.22	22.22	5.56	0
White/ European/African	90.19	6.65	3.71	4.46	0.25
Colored	3.27	23.08	7.69	16.67	7.69
Asian	0.77	50.00	0	50.00	0
Other	1.15	20.00	0	0	0
Education					
≤ 12 years	58.27	5.98	4.02	3.59	0.40
> 12 years	41.73	11.29	5.38	7.10	0.54
Sexual orientation					
Homosexual/gay	95.39	8.43	4.47	5.18	0.47
Bisexual	3.84	0	6.67	0	0
Unsure	0.38	0	0	0	0
Other	0.38	0	0	0	0
Human Immunodeficiency Virus Status					
Negative	88.52	7.05	4.34	4.64	0.54
Positive	5.85	16.00	4.17	8.00	0
Didn't get results	3.04	16.67	9.09	8.33	0
Prefer not to answer	2.34	20	10.00	10.00	0
Last unprotected anal sex					
Yes	62.21	7.41	5.19	2.24	0.75
No	37.79	8.28	3.59	8.33	0

advertisement, of which 521 had complete data (answered all questions relevant to this analysis) and were included in the sample for data analysis. We excluded respondents from data analysis if their sex was female (n=8) or missing (n=28), if their sexual orientation was heterosexual (n=50) and if their country of residence was not South Africa (n=161) or missing (n=65).

The final sample used for analysis was predominantly white (90.2%) and young (25-34 yrs) with 12 or fewer years of education. The vast majority self-identified as homosexual (95.4%) and reported to be HIV negative, although a high percentage of men reported not using a condom the last time they had anal sex. Figure 1 shows the prevalence of IPV reported among the men; 8.09% reported that they experienced physical IPV, while 4.51% reported experiencing sexual IPV. When we looked at the reporting of the IPV perpetration, 4.98% reported perpetrating physical IPV, while 0.45% reported perpetrating sexual IPV.

MSM who reported lower levels of education were less likely to report experiencing physical IPV (Table 2). MSM who reported a higher score on the scale measuring the experience of homophobia were significantly more likely to report experiencing sexual IPV. MSM who reported recent unprotected anal sex were more likely to report the experience and perpetration of physical IPV. MSM who reported that they had recently perpetrated physical IPV were more than six times more likely to also report a recent episode of unprotected anal sex.

DISCUSSION

The results presented here suggest that the prevalence of IPV among white, gay MSM in South Africa is similar to that

Table 2. Regression models for reporting of experience and perpetration of intimate partner violence (IPV) and recent unprotected anal sex among a sample of 521 internet recruited men who have sex with other men.

	Reporting experience of physical IPV	Reporting experience of sexual IPV	Reporting perpetration of physical IPV	Reporting recent unprotected anal sex
Experiences of homophobia	1.11 (0.91-1.35)	*1.35 (1.03-1.78)**	1.05 (0.83-1.33)	0.96 (0.87-1.05)
Gay identity scale	1.00 (0.96-1.04)	1.03 (0.99-1.07)	0.97 (0.92-1.03)	0.99 (0.97-1.00)
Non-white race	*5.64(1.56-20.43)**	1.60 (0.31-8.27)	*9.90 (1.98-49.57)**	0.62 (0.25-1.53)
Age 25-34 years old	0.80 (0.24-2.68)	0.69(0.19-2.51)	1.80 (0.38-8.58)	0.66 (0.37-1.15)
Age 35-44 years old	0.62 (0.15-2.57)	-	-	0.52 (0.26-1.01)
Age 45+ years old	0.61 (0.10-3.87)	-	-	*0.25 (0.11-0.55)**
Age 35+ years old		0.21 (0.03-1.34)	0.73 (0.11-4.94)	-
≤12 years of schooling	*0.40 (0.16-0.98)**	0.64 (0.22-1.89)	0.48 (0.16-1.43)	1.21 (0.78-1.90)
Unemployed	1.92 (0.46-7.94)	0.47 (0.07-3.07)	0.99 (0.09-10.71)	0.93 (0.46-1.90)
Number of friends who self-identify as gay	1.01 (1.00-1.03)	1.0 (0.98-1.02)	1.01 (0.99-1.02)	1.00 (0.99-1.00)
Positive HIV status	1.50 (0.34-6.63)	-	0.63 (0.07-5.99)	-
Indeterminant/ unknown HIV status	1.15 (0.12-11.29)	-	0.84 (0.07-10.64)	-
Use of lubricant at last anal sex with male partner	7.58 (0.81-71.38)	1.14 (0.29-4.49)	0.32 (0.24-7.35)	1.07 (0.61-1.88)
Sex with other male partners besides main partner	-	1.12 (0.34-3.66)	1.26 (0.50-3.20)	1.03 (0.64-1.68)
Had sex with only women or both men and women in entire life	-	0.71 (0.21-2.46)	2.17 (0.67-6.99)	1.50 (0.93-2.45)
Reporting recent unprotected anal sex	*3.48 (1.29-9.36)**	3.32 (0.98-11.21)	*8.26 (1.75-39.03)**	-
Reporting experience of physical IPV	-	-	-	1.71 (0.57-5.16)
Reporting experience of sexual IPV	-	-	-	2.17 (0.56-8.46)
Reporting perpetration of physical IPV	-	-	-	*6.33 (1.19-33.66)**
Reporting perpetration of sexual IPV	-	-	-	0.23 (0.01-4.75)

*p-value < 0.05
HIV; Human Immunodeficiency Virus

among MSM in the U.S. [7] However, the prevalence of violence here is significantly lower than has been reported among heterosexual females in South Africa, with estimates of intimate partner violence up to 55%.[8] In this cohort of men 8.09% reported experiencing physical IPV and 4.98% reported experiencing sexual IPV which is lower than 11.75% and 7.32% reported among MSM in the U.S.[7] This sample of men were predominantly white (90.2%); however, despite the small number of non-white men we still see a statistically significant positive association with report of physical IPV and race. Further investigation is required to understand the intersection between race and IPV among MSM in South Africa, as the results here are based on a small, predominantly white sample, and should be treated with caution.

The results identified a strong association between IPV and unprotected anal sex, although with cross-sectional data it is impossible to identify the nature of the relationship. Studies of IPV among heterosexual populations have identified similar relationships, and it has been argued that men who perpetrate violence may be more likely to participate in other risk-taking behavior, which may include sexual risk-taking.[9] This has been hypothesized to be a pathway between violence and poor sexual health. However, further work is needed with this population to understand the nature of the relationship between IPV and sexual risk-taking.

MSM who reported experiencing homophobia were also more likely to report sexual IPV. MSM who perceive themselves to experience homophobia may be more socially isolated and have less access to social support systems, including friends, family and formal resources. This social isolation, or fear of revealing their sexual orientation, may make these MSM more vulnerable to sexual violence if potential perpetrators know that they have limited support systems. Alternatively, MSM may have experienced sexual IPV as part of a homophobic attack, and thus may also be more likely to report perceived homophobia.

The results demonstrate feasibility of using an online survey to collect data on IPV and sexual risk-taking behavior, although given the demographic biases in the sample, this method seems to be more appropriate for White, gay-identifying MSM. This method provides an alternative way of reaching White, gay-identifying MSM, since it is discreet and

poses no threat for discrimination due to sexual orientation. The survey was conducted via Facebook, and in the future, online surveys must consider other websites commonly used by MSM in South Africa, which may yield a more diverse sample.

LIMITATIONS

The key limitations to the present results are a small sample size and selection bias by using an internet-based questionnaire. This has resulted in a predominantly White, gay-identifying sample, which is not representative of the South African MSM population.

CONCLUSION

The results presented here suggest that the prevalence of IPV among White, gay-identifying MSM in South Africa is a public health concern and is related to sexual risk-taking behavior, although levels of IPV are lower than have been reported in the female heterosexual population.[8] It also suggests that online-based surveys are a feasible way of obtaining sensitive public health information from White, gay-identifying MSM, but other data collection mechanisms may need to be explored to reach Black Africa, and non-gay identifying MSM. There seems to be a complex interaction between the experience and perpetration of IPV, sexual risk-taking behavior and experiences of homophobia that warrants further research. More substantial surveillance and data is required within the South African MSM population in order to develop effective public health interventions.

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Treatment, Services and Follow-up for Victims of Family Violence in Health Clinics in Maputo, Mozambique

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Background: Family violence (FV) is a global health problem that not only impacts the victim, but the family unit, local community and society at large.

Objective: To quantitatively and qualitatively evaluate the treatment and follow up provided to victims of violence amongst immediate and extended family units who presented to three health centers in Mozambique for care following violence.

Methods: We conducted a verbally-administered survey to self-disclosed victims of FV who presented to one of three health units, each at a different level of service, in Mozambique for treatment of their injuries. Data were entered into SPSS (SPSS, version 13.0) and analyzed for frequencies. Qualitative short answer data were transcribed during the interview, coded and analyzed prior to translation by the principal investigator.

Results: One thousand two hundred and six assault victims presented for care during the eight-week study period, of which 216 disclosed the relationship of the assailant, including 92 who were victims of FV. Almost all patients (90%) waited less than one hour to be seen, with most patients (67%) waiting less than 30 minutes. Most patients did not require laboratory or radiographic diagnostics at the primary (70%) and secondary (93%) health facilities, while 44% of patients received a radiograph at the tertiary care center. Among all three hospitals, only 10% were transferred to a higher level of care, 14% were not given any form of follow up or referral information, while 13% required a specialist evaluation. No victims were referred for psychological follow-up or support. Qualitative data revealed that some patients did not disclose violence as the etiology, because they believed the physician was unable to address or treat the violence-related issues and/or had limited time to discuss.

Conclusion: Healthcare services for treating the physical injuries of victims of FV were timely and rarely required advanced levels of medical care, but there were no psychological services or follow-up referrals for violence victims. The healthcare environment at all three surveyed health centers in Mozambique does not encourage disclosure or self-report of FV. Policies and strategies need to be implemented to encourage patient disclosure of FV and provide more health system-initiated victim resources. [West J Emerg Med. 2011;12(3):348-353.]

INTRODUCTION

Family violence (FV) is a common problem worldwide that affects people of all socioeconomic backgrounds, educational levels and gender, yet is invisible to most healthcare providers.[1,2] FV includes intimate partner violence (IPV), child maltreatment, elder abuse and assault by extended family members. As the family model in Mozambique includes extensive family units (children, parents, in-laws, grandparents, aunts and uncles and cousins), FV in the larger sense can include extended family members as assailants. It not only negatively impacts the victims, but also the victims' families, including children and adolescents and the community at large.

FV, as defined by this study, is any act or conduct that causes death, injury or physical, sexual or psychological suffering between members of a given household or community united by family ties.[3] In IPV, over half the time physical abuse is accompanied by psychological abuse and sexual assault.[4] IPV and sexual violence can lead to a wide array of long-term physical, mental and sexual health problems, as well as unwanted pregnancy or sexually transmitted diseases including the Human Immunodeficiency Virus infection.[5-8] IPV has been associated with higher rates of suicide, drug abuse and alcohol and psychological distress.[8] Child maltreatment, in 2002, caused an estimated 31,000 deaths attributed to child homicide among children less than 15-years-old.[9] Global estimates of child homicide suggest that infants and very young children are at the greatest risk; the 0–4 year age group has a rate more than double those for 5 to14-year-olds.[9] Elder abuse, which can take many forms - including physical, psychological and sexual abuse, financial exploitation, neglect and self-neglect, medication abuse or abandonment - is a topic of growing concern, as the global population of older people is predicted to triple by 2050.[10, 11]

In different parts of the world, many victims of violence perceive their abuse as a cultural or religious norm that is reinforced by prejudice and discrimination.[12] One study found 70% of men and 90% of women believed that beating of a woman to be justified in certain circumstances.[13] Many times women cannot seek healthcare without the knowledge or permission of their spouses or male relatives.[14] FV victims are often subject to strict controls on their mobility and their ability to seek care. Violence occurs in cycles, repetitively progressing until victims require outpatient and hospital services.[15] Despite requiring frequent care, FV is difficult to diagnose as many patients do not routinely disclose violence and may have sequelae from long-term abuse. For many victims of FV, health services constitute the only place to seek support.[16] It is common for victims of sexual violence to seek medical assistance, without having made a complaint to the police,[17, 18] although many do not seek medical care either. Therefore, healthcare professionals play a key role in detecting and treating FV victims and in preventing further episodes of violence.[14] After a victim seeks help from a health institution, his or her reception there is crucial; an indifferent or hostile reaction increases the feeling of isolation, and the victim would be unlikely to bring up the topic again. A lack of confidentiality can be particularly devastating, especially since violence disclosure is rare without direct questioning.

Quality of care is the degree to which the needs, expectations and standards of care of patients have been met. This can be evaluated through efficiency, effectiveness and appropriate supportive relationship between professionals and health system users.[19] Actions that threaten the effectiveness of healthcare include: delay to care, inappropriate treatment, intimidation, verbal abuse, threats and perceived non-treatment.[20] Difficulty in diagnostics, treatment and follow up can lead victims to be non-compliant with recommendations, thus possibly causing permanent physical and psychological sequelae with concomitant socioeconomic implications that could be avoided or reduced.[21]

The objective of this study is to quantitatively evaluate the treatments (diagnostic testing, therapies and acute interventions), and follow up provided to patients presenting with FV-related injuries. In addition, we sought to qualitatively evaluate barriers to victim self-disclosure of FV of those who presented to three health centers in Mozambique. In evaluating the care of FV victims, we studied three indicators: time to treatment, diagnostic testing and treatment provided, and the follow up recommended, all of which were reported by patient survey participants. We qualitatively asked these victims about their experience in seeking care at the health facilities.

METHODS

This survey study of a convenience sample was performed during August and September 2007, at three health centers in Mozambique. If a patient self-disclosed as the etiology of an injury, research personnel were informed and approached the possible participant regardless of the victim's age, sex and type of injury. Study staff were present to enroll patients and collect data at each of the three participating hospital emergency departments 24 hours a day, seven days a week during August and September 2007. The international collaborator's institutional review board and the local ethics review committee both approved this study prior to data collection.

Setting

Mozambique is located on the southern portion of the eastern coast of Africa. It has over 22 million inhabitants, of whom 48% are male and 37% live in urban areas.[22] Portuguese is the national language, yet is spoken by only 27% of the population and often coexists with various tribal languages.[22] Mozambique has a young population with 44% under the age of 15, and a life expectancy of 46.7 years.[23,24] Maputo, the capitol, is located in Maputo province with approximately two million inhabitants.[25] We chose three hospitals representing

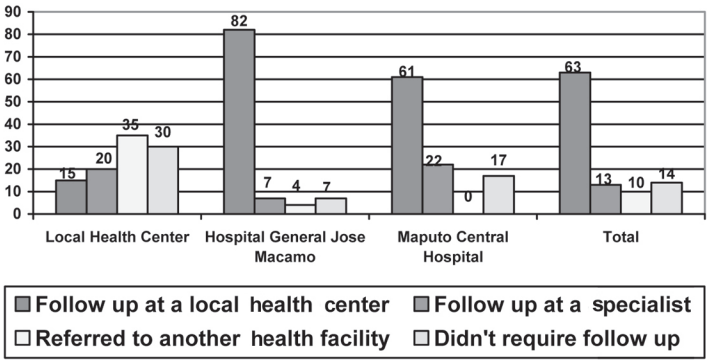

Figure 1. Distribution of follow up for patients seen at each level of health facility and overall

different levels of capacity within Maputo Province. Hospital Central de Maputo (HCM), a national quaternary referral hospital, Hospital General Jose Macamo (HGJM), a secondary referral center, and the Center for Health Maxaquene (CH), a primary care health center were chosen as a representative sampling of the main three levels of health centers within the city of Maputo.

Preparation

The principal investigator (PI) chose nurses and health workers who worked at each of the three study sites for further training. Each potential interviewer underwent four hours of initial research and interviewing training, had introductory sessions on the survey instrument, and then gained experience with the survey instrument during pilot testing at a separate healthcare facility under the PI's supervision. We made final improvements to the survey questionnaire and chose final interviewers from those trained, based on interview ability, hospital staffing needs and internal validity on these trial interviews.

Instrument

The two-page survey questionnaire by the PI included multiple choice, yes/no and short answers format questions (available from authors on request). Demographic information, information on the perpetrator and diagnostic and treatment information, including estimate on the time to evaluation, types of treatment required, diagnostics, final diagnoses and follow-up recommendations were collected.

Procedure

Upon identification of a potential participant after self-disclosure of violence to the triage nurse, research personnel approached the victim after medical stabilization to offer participation in the study. The researcher informed the patient of the study protocol and risks and benefits of participation. Each patient signed an informed consent, or verbally assented with guardian consent if the patient was under 18-years-old. The questionnaire was verbally administered in a quiet, secluded and safe location once the patient agreed to participate. Qualitative short answer questions responses were transcribed during the interview then coded and translated. Data was entered into SPSS (SPSS, version 13.0) and analyzed for frequencies and percentages. All data were free of patient identifiers and were kept in a secure location to ensure subject confidentiality.

RESULTS

During the study time period 1,206 individuals presented for treatment of assault at the three study facilities, of whom only 216 disclosed the perpetrator of the violence. Of these 216, 92 (42.6%) were injured by members of the same household, fulfilling inclusion criteria. Most FV victims were women (63%), with primary school or less education (84%), who were students or jobless (69%) and mostly between 15 and 34 years of age (76%), while most reported aggressors were the patient's spouse (50%) or parent (12%).

Most patients waited less than 30 minutes (67%) with almost all patients waiting less than one hour (90%). With regard to diagnostic tests, most patients presenting to CH and HGJM did not receive any laboratory or radiograph diagnostics. In contrast, of patients presenting to HCM, 44% received radiographs. In the local Health Center, approximately half of victims did not receive any specific treatment, while at HCM and HGJM only 4% and 17% respectively did not receive any treatment. As displayed in Figure 1, of the total victims of violence involved in this study approximately 14% were not given further referral or follow up. At the local Health Center, 35% were given a referral and 30% were told they didn't require follow up or referral. In total, almost 10% were transferred to a higher level of care, and 13% received a specialist evaluation. No patients reported referral for psychological care or follow up.

The qualitative survey questions followed three main themes. First, there was a common patient belief that patient reluctance to self-disclose violence could be due to perceptions of lack of physician or health system capacity to assist.

> "I don't know what changes in my treatment if I were to tell everything about what happened. I got this wound on my arm because my aunt hit me with a belt because I did not set the house... What I need is to be treated quickly to not have to tell my friends that I was beaten. The waiting room here fills quickly and the doctor has no time to hear everyone's story." –A victim at HCM

A second theme surrounded the actual or apparent time pressures in the emergency clinic that limited the ability of the physician to inquire about violence.

> "I took a beating from my husband who is out there. We went to the police and now we came here because of this wound in the head. To treat the wound it isn't necessary to say what happened. ...at this hospital you can not waste time with stories of each one... there are

people that arrive early in the morning because of malaria, diarrhea and are here in the queue for treatment. My problem is not the wound. I'm tired of being beat. I want the police to help me. I stay with my children to show this man who I am ... " -A victim at CH

"Many people come to HCM to be rapidly treated by a doctor who is very hurried… However eventually many patients are waiting to be seen, and the doctor can not waste time searching for other diseases than those that the person says he has…. So if the patient does not say he was beaten at home nobody will try to guess anything about it. " –A victim at HCM

The third theme surrounds legal issues and concerns that self-reporting would require a police intervention. The patient perception that the only assistance a hospital could have would be to document wounds to provide to the police.

"... Only those who want to solve the problem with the police and need to have need hospital document... I want the one who hit me to apologize...I am not here to solve the problem in the hospital because the doctor has nothing to do with this, [what's] more I want to make him scared….things can't be like this every day ... well, it's true that if a person could be certain that he could count on the hospital and not be brought to the station maybe other people can say that they were beaten by their husbands." –A victim at HGJM

DISCUSSION

We found that time to treatment for almost all FV patients is less than one hour. Since our data was self-reported by patients, we do not know the accuracy of the reported time, but believe this represents an overall satisfaction with the efficiency of care. In most cases in the primary and secondary hospitals no diagnostic tests were performed. Radiographs and laboratory work was performed most commonly by general physicians who most often saw patients at the tertiary hospital MCH.

Of particular concern, not a single patient from our study, after suffering from FV was referred for psychological counseling, social support, or to police for follow up. Many victims of FV and other forms of violence suffer from not only physical injuries but are at high risk for psychological disorders, such as anxiety, depression, antisocial behavior and suicide attempts, especially in female victims. Respondents in our study, regardless of the location of their treatment, indicated that the healthcare professional did not express concern or support that extended beyond physical damage to psychological impact of their victimization.

Perhaps just as concerning was the unanimous patient belief that due to patient volume, physicians focused on physical injuries and not the causes for these injuries. This perceived or actual time pressure leads to under-reporting of FV that can lead to a perceived uncompassionate interaction, and therefore inappropriate follow up and safety or prevention education.

In one study, female victims of IPV identified health professionals as the least able to help in case of aggression by the partner.[21] Yet commonly, patients aren't aware of treatment, referral and support options. To increase reporting, more than three-quarters of the victims suggested that routine questions about violence be incorporated into in the clinical evaluation.[21] There are resources in Mozambique for FV victims, so a missed diagnosis not only perpetuates under-reporting but harms the potential future wellness of victims.

A recent qualitative study in neighboring Tanzania found comparable results when surveying healthcare workers' ability to care for FV victims. Their qualitative discussions found four themes on treatment of victims (of which the two that addressed the barriers to identifying violence in the clinical realm closely align with our own), along with the frustration of being caught between encouraging disclosure and lack of support and time pressures associated with large workload and few resources.[26] While this study and ours were done from opposite sides of the patient-provider perspective, these two themes of barrier to diagnostics and care persist.

In some countries, health professionals may refuse to screen for female victims of sexual violence in an attempt to avoid having to testify in court.[14] Moreover, at times existing legislation prevents doctors from seeing women who were raped or beaten without authorization from the courts or police. In Zimbabwe, a woman who has been raped may have to wait three or more days for a government medical official, as the authorized physician, to document cases of sexual violence or other aggression, at which point, evidence of a crime might be gone.[14] Policies such as these need to be reexamined, as they cause more harm to the victim and do not benefit the community.

To assist in disclosure and use of support services in Mozambique, this nation has implemented 16 "Women and Children" offices where women can file complaints and obtain services. In conjunction with these facilities, legal assistance agencies have developed, reporting locations where women can request police assistance without their aggressors present.[27] While a significant step forward in protecting victims, these centers suffer from the same insufficient resources that plague the care environment.[27] Other developing countries should consider adopting similar polices, and all countries need to ensure adequate resources for these services.

Ultimately, our study has found that while the treatment of FV victims is timely, the ability of the health system to adequately identify, provide an environment for disclosure and to provide psychological support and follow up is poor. This data will be used to increase education of both healthcare professionals and the population to increase self-referral, disclosure and direct questioning in order to initiate appropriate care. Further studies delineating types and

severities of injuries and the benefits of screening versus self-reporting in this setting are warranted.

LIMITATIONS

Our study was based on patients who self-referred for FV. This might have significantly decreased our overall percentage of patients who suffered violence and excluded those who were too severely injured to self-refer. Further selection bias might be seen if those who are likely to self-report are victims with an extensive history of abuse or who desire assistance in leaving the abusive situation. Given limited resources, strict tape-recording and transcribing of qualitative short-answer questions was not logistically possible. Researchers were trained to transcribe what the victims stated and were available for conference during the coding and data analysis portion.

CONCLUSION

While treatment of injuries sustained during FV occurs in a timely manner at health units in Mozambique, the environment for the self-reporting FVand lack of referral suggest a very limited capacity for the health system to address the needs of these victims. Mozambique and other developing health systems would benefit from policies that increase identification, treatment, services and prevention of family violence.

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Elder Financial Exploitation: Implications for Future Policy and Research in Elder Mistreatment

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Recent advances in the understanding of elder mistreatment have demonstrated that financial exploitation tends to be one of the most common forms of mistreatment affecting older populations. Agencies such as the World Bank and World Health Organization show significant concern regarding financial exploitation and its connection to physical and emotional injury to victims. The World Bank uses the term "financial violence" as a means of generally describing the harm caused to an individual as a result of financial exploitation or abuse. The proportion of financial exploitation in relation to other forms of elder mistreatment is defined in our research. We discuss the potential impact of elder financial exploitation on victims as well as explore the implications for future research and policy development focused on financial aspects of elder mistreatment and call for further study in the concept of financial exploitation as a violent act. [West J Emerg Med. 2011;12(3):354-356.]

INTRODUCTION

The study of elder mistreatment has come quite far in the 35 years since the medical community first described its impact on older adults. From the first reporting of "granny battering" by a physician in a letter to the *British Medical Journal*, this field of study has grown remarkably over the last few decades.[1] Known as "elder abuse" in the past, the condition involving exploitation, neglect and abuse, is now more commonly identified as "elder mistreatment" in recognition of its syndrome-like construction.

With a greater understanding of the subtypes of elder mistreatment, we enter a new decade with a focused agenda for identifying, treating, and preventing all of its subtypes. In 2010, the United States (U.S.) Congress passed the Elder Justice Act (EJA) as part of healthcare reform, defining mistreatment as entities of abuse, exploitation, neglect, self-neglect, serious bodily injury and criminal sexual abuse (Table).[3,4] The EJA definitions concur with the World Health Organization's (WHO) recognized entities of sexual abuse, neglect, and bodily injury (physical abuse), and the WHO further defined exploitation as "financial or material abuse."[5] In the same report, the WHO further defines violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group… that results in or has a high likelihood of or resulting in injury, death, psychological harm, maldevelopment, or deprivation." The idea that elder mistreatment is a violent act has been widely publicized, but under the WHO definition, the concept of deprivation emphasizes that acts of omission, or neglect, are just as violent as acts of commission (including physical, sexual, and verbal abuse). In a 2009 study on domestic violence, the World Bank went further to restate financial exploitation as financial violence. The more active term "violence" helps reinforce the perpetrator/victim dynamic as negative and implies that this is a forceful act. Financial violence is defined as "denying a victim access to or control over material goods, basic resources, and assets," establishing the use of force in the creation of a harmful environment for the victim.[6] This definition reappears in the EJA, supporting a more global view of financial exploitation by denial as a violent crime.

FINANCIAL EXPLOITATION

Current research demonstrates that financial exploitation occurs in a majority of elder mistreatment cases. In the past, many studies had not significantly identified financial exploitation as part of elder abuse leading to the assumption that it was a relatively minor form of mistreatment.[7] Newer

Table. Mistreatment categories in the United States Elder Justice Act of 2009. Summarized from the Elder Justice Act of 2009, S.795, US 111th Congress, 2010 and Patient Protection and Affordable Care Act of 2010, HR. 3590, Title VI, Subtitle H-Elder Justice Act.

Category	Definition
Abuse	The knowing infliction of physical or psychological harm, or the knowing deprivation of goods or services necessary to meet essential needs or avoid physical or psychological harm.
Exploitation	The knowing infliction of physical or psychological harm, or the knowing deprivation of goods or services necessary to meet essential needs or avoid physical or psychological harm.
Neglect	Failure of a caregiver or responsible party to provide goods or services necessary to maintain the health and safety of an elder.
Self-neglect	An adult's inability to perform essential self-care tasks including basic, medical, and financial activities.
Serious Bodily Injury	An injury involving extreme physical pain, risk of death, protracted loss or impairment of function, or requiring medical intervention.
Criminal sexual abuse	Use or threat of force to engage in a sexual act with an elder, or conducting such an act with an elder incapable of declining or understanding the sexual act.

prevalence studies in the U.S. and Europe reveal that financial exploitation is one of the more common forms of elder mistreatment. In 2008, data published by the National Social Life, Health and Aging Project identified a 3.5% prevalence of financial mistreatment in the U.S., ranking it the second most common form of elder mistreatment after verbal abuse.[8] The United Kingdom (U.K.) National Prevalence Study, published in 2009, also identified financial exploitation as the second most common form of abuse (after neglect).[9] A year later, data from the U.S. National Elder Mistreatment Study identified a prevalence of 5.2% for financial mistreatment, outranking emotional, physical or sexual mistreatment.[10] Most recently, the New York State Elder Abuse Prevalence Study demonstrated a 4.1% prevalence for major financial exploitation, making it the most common form of elder mistreatment in that study as well.[11]

Individual cases demonstrating a link between financial exploitation and harm can be found worldwide. A recent case in Georgia featured a disabled older woman denied potentially life-saving medical attention after a serious fall as the caregiver withdrew large sums of cash from the victim's bank using a forged power of attorney document.[12] A formerly independent elderly couple in Ireland found their finances drained as their son withheld food, clothing and medications from them over a six month period.[13] As an abuser restricts access to financial resources, the victim may become unable to afford medications, basic utilities, shelter, and even food, possibly contributing to the compromise of chronic medical illness or the development of new conditions such as malnutrition. At this point, research has not demonstrated a true causal relationship between financial exploitation and worse health outcomes, presenting one of the greatest challenges in this field.

Researchers Karch and Nunn[14] recently described one potential method to study the link between financial exploitation and health outcomes. They used the U.S. National Violent Death Reporting System and identified 68 cases of death due to elder mistreatment. Seventeen of those deaths were due to neglect by a caregiver; two of those cases were motivated by financial gain. In the 21 cases of physical injury, at least one had a motive of financial gain. However, since financial mistreatment is currently not defined as a violent crime it was not listed as the cause of death in those cases. Karch and Nunn[14] were also unable to state specific identifiers of financial exploitation, another hurdle facing further research.

DISCUSSION

Financial exploitation is now recognized as a major subtype of elder mistreatment. This realization creates several new questions. Is financial exploitation a violent crime – financial violence – per se? Some organizations seem to be making that connection. Since the passage of the Elder Justice Act, we now have legal description of it as an act of violence. What is the relationship of financial exploitation to physical forms of abuse? It is possible that financial exploitation could be an early warning sign of potential physical abuse, and may present a point of action for secondary prevention of elder mistreatment? Finally, does elder financial exploitation lead to worse health outcomes? While it is possible that financial exploitation might predict physical abuse, there are many cases where financial exploitation does not lead to identified physical, sexual, or verbal abuse. However, in those cases, we may find evidence of harm when compared to non-exploited elders. A connection of direct harm would support the medical description of financial exploitation as a violent act.

The possibility that financial exploitation may precede physical harm presents an opportunity to intervene at an early stage of the abuse cycle. Current proposed screening tools to detect elder mistreatment are significantly limited in efficacy.[15] Yet, a detection program within our banking system, focusing on a specific pattern of financial activity, could detect elder mistreatment at an earlier stage if the theory is proven.

CONCLUSION

Research has identified financial exploitation as one of the most common forms of elder mistreatment. With a prevalence of more than double that of physical abuse, financial exploitation might be an essential early warning sign appropriate for use in screening. Catching financial exploitation early (potentially by using systems similar to current financial fraud detection) presents an opportunity for intervention, protecting the financial assets of the victim and possibly preventing physical harm and loss of independence.[16] A better understanding of financial exploitation from a public health perspective, including definition, is needed. Future studies must also assess if worse health outcomes are associated with financial exploitation itself. If so, then financial exploitation might truly be a violent crime and validate the term financial violence in more than just the legal perspective.

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A Survey of Georgia Adult Protective Service Staff: Implications for Older Adult Injury Prevention and Policy

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Background: The aging population is a rapidly growing demographic. Isolation and limited autonomy render many of the elderly vulnerable to abuse, neglect and exploitation. As the population grows, so does the need for Adult Protective Services (APS). This study was conducted to examine current knowledge of older adult protection laws in Georgia among APS staff and to identify training opportunities to better prepare the APS workforce in case detection and intervention.

Methods: The Georgia State University Institute of Public Health faculty developed a primary survey in partnership with the Georgia Division of Aging Services' leadership to identify key training priority issues for APS caseworkers and investigators. A 47-item electronic questionnaire was delivered to all APS employees via work-issued email accounts. We conducted descriptive analyses, t-tests and chi-square analyses to determine APS employees' baseline knowledge of Georgia's elder abuse policies, laws and practices, as well as examine associations of age, ethnicity, and educational attainment with knowledge. We used a p-value of 0.05 and 95% confidence intervals to determine statistical significance of analyses performed.

Result: Ninety-two out of 175 APS staff responded to the survey (53% response rate). The majority of respondents were Caucasian (56%) women (92%). For over half the survey items, paired sample t-tests revealed significant differences between what APS staff reported as known and what APS staff members indicated they needed to know more about in terms of elder abuse and current policies. Chi-square tests revealed that non-Caucasians significantly preferred video conferencing as a training format (44% compared to 18%), [$\chi 2(1) = 7.102$, $p < .008$], whereas Caucasians preferred asynchronous online learning formats (55% compared to 28%) [$\chi 2(1) = 5.951$, $p < .015$].

Conclusion: Results from this study provide the Georgia Division of Aging with insight into specific policy areas that are not well understood by APS staff. Soliciting input from intended trainees allows public health educators to tailor and improve training sessions. Trainee input may result in optimization of policy implementation, which may result in greater injury prevention and protection of older adults vulnerable to abuse, neglect and exploitation. [West J Emerg Med. 2011;12(3):357-364.]

INTRODUCTION

The aging population in America is a rapidly growing demographic. In 2010, an estimated 40 million Americans, or 13%, were age 65 and older.[1] Projections speculate that by year 2050, the aged population will more than double to 88.5 million people or approximately 20% of the population.[1] This

growth can be attributed to the aging of the large "baby-boomer" generation and improvements in medical technology that have contributed to extended average lifespan.[2,3] As the elderly population increases, so will the number of people living with chronic illnesses and other risk factors for preventable injury, resulting in a greater need for Adult Protective Services (APS). APS was created through federally mandated policies. They are state-administered agencies that intervene on behalf of abused, neglected and exploited adults.[4] To date, APS has already noted an increased reliance on its services. Recent publications by Teaster et al.[5] and Park et al.[6] found that during a four-year period, there was a 16% increase in the reporting of abuse, neglect and exploitation (ANE) to APS nationally. Complementary to these findings, Jogerst et al.[7] found that states with mandatory reporting policies of elder abuse receive significantly more reports to APS than states that do not mandate reporting.

Research continues to advance understanding of the magnitude and nature of ANE in the United States. Elder abuse, in all its forms, affects between two and five million American adults over the age of 65.[8-11] The spectrum of ANE has been defined by the National Research Council as "intentional actions that cause harm or create a serious risk of harm (whether or not harm is intended) to a vulnerable elder by a caregiver or other person who stands in a trusting relationship to the elder; or failure of a caregiver to satisfy the elder's basic needs or protect the elder from harm."[10] The dramatic increase in longevity among Americans demands unwavering vigilance against preventable abuses of this vulnerable segment of the population.

Elder abuse is complex, and therefore professionals from diverse disciplines of study can play a role in its identification and resolution. Professions that may potentially be involved in ANE cases include: policy makers, criminal justice and law enforcement, financial/banking industries, law, social services, dentistry and medicine.[12-14] However, the responsibility for recognizing, identifying, and responding to ANE of older adults most commonly falls on healthcare professionals. A recent study involving family practice physicians found that roughly half of the respondents had identified cases of elder abuse within the last year.[15] The study also noted that Iowa, the state where the survey was administered, is one of a very few states that requires continuing education on elder abuse reporting for designated reporters as mandated by law. Furthermore, the majority of existing elder abuse screening and assessment tools are designed to be administered by healthcare professionals within clinical settings.[16] However, it is plausible to assume that less aggressive abuse may be detectable before it escalates to necessitate medical intervention. The early detection of abuse relies heavily on professionals who typically serve as first responders to calls or complaints of domestic abuse situations, such as law enforcement and APS staff.

A call to APS does not guarantee that ANE cases involving older adults will be opened unless there is sufficient evidence to warrant continued attention. Research reveals that rates of investigation are highly dependent on the infrastructure in place to deal with ANE.[17-18] At the state level, higher investigation rates have been associated with a mandatory reporting policy and penalties for failure to report.[17] Substantiation-to-investigation ratios are higher in states that have more abuse definitions in policies, regulations, and laws, as well as those that have separate caseworkers for child and elder abuse investigations.[17] At the county level, the location of APS and county government resources are related to both rates of investigations and rates of substantiations.[18] Unfortunately, it is difficult to determine the percentage of reports that are being investigated. According to a survey study conducted by Jogerst et al.,[19] 34 of the participating states kept no records on the total number of reports of ANE in light of substantiated cases. The true burden of ANE is likely grossly underreported.

One of the greatest challenges of quantifying the burden of ANE cases are the methods of evaluation used. Jones et al.[20] determined that victim complaints account for less than 30% of ANE reports and that the majority of cases are detected by clinicians during urgent care visits. The complexities of evaluating cases of abuse are often confounded by natural aging processes, such as compromised skin integrity or bruising that may be attributed to medication.[21-23] Consequently, in some clinical settings expert abuse teams have been formed to initiate comprehensive assessments in suspicious cases.[24] Since even clinicians may miss elder abuse among older adults, professionals on the frontline of initial case reporting must receive adequate training to improve identification of potential ANE.

Studies Calling For Increased Professional Training

Current research in the field of ANE recommends increased professional training in a variety of fields, including medical professionals, policy makers, public health officials, medical examiners/coroners and APS staff.[15,20,25-30] The National Adult Protective Service Association, in partnership with the National Center on Elder Abuse, specifically state that comprehensive training for new and experienced APS employees and their supervisors is essential.[30] Additionally, the National Institute of Justice, the research, development and evaluation branch of the United States Department of Justice recently published a report emphasizing the multidisciplinary need for training in all professions that can potentially detect cases of ANE, including the APS workforce.[31]

Theoretical Context of Study

Older adults who experience abuse suffer decreased quality of life and functional status. Dong[32] found that elderly victims of abuse report poorer functional status and

increasing dependency, greater social isolation, poorer health, and increased reports of helplessness and stress, as well as psychological deterioration. Abuse and neglect have also been identified as independent predictors for higher mortality as found in Lachs et al.[33] and Dong et al.[34]. This trend has important implications for public health professionals who can provide enhanced training, education and response systems for all professionals involved in elder abuse cases. APS staff members play an integral role in identifying ANE. They can be trained to enhance their ability to detect indicators of elder abuse, such as emaciation, bruising, broken bones and burns. This can be vital in early intervention for victims and timely prosecution of abusers. APS staff members' enhanced ability to identify abuse and recognize Georgia ANE laws may lead to greater levels of case substantiation, and subsequently, more accurate insights into the true scope and breadth of the ANE burden throughout the state would be gained. The purpose of this study is to understand APS staff knowledge of ANE policies laws, practices for case substantiation, and preferences for future training so that the prevention of ANE can be maximized.

METHODS

Researchers received the E-mail directory of all 175 APS staff members located throughout the state of Georgia from the state Division of Aging Services. Researchers invited all APS staff members to complete the survey if they provided an indication of consent. Authors developed survey questions based upon a review of the literature and current ANE policies and procedures pertaining to APS operations in Georgia. Senior leadership at the Georgia Division of Aging Services drafted and reviewed survey items so face validity and clarity of the instrument could be ensured. Three non-APS staff members completed a pilot of the survey and provided feedback on the ease of survey administration, time for completion and organization of items. Researchers examined 39 survey items for this descriptive baseline study.

The first section of the survey asked APS staff 26 knowledge-related items. These items were designed to establish a proxy understanding of individual knowledge and content-specific training needs. The survey asked APS staff members to indicate the level of knowledge they think their colleagues currently **have** about each aspect of ANE and to indicate how much knowledge they think their colleagues **need to have** about each item in order to be effective in their job. Response options were '1-almost none,' '2-a little,' '3-some,' and '4-a lot' (Table 1).

The next set of survey items focused on training practices and policies at APS. The survey asked, "How would you describe the minimum standards for training currently in place for all APS staff?" Response categories included: no policy/not applicable; staff is encouraged to seek training; some staff required to attend training depending upon the topic; all staff is required to attend training. A follow-up question asked respondents about minimum training standards currently in place for new APS staff. The response options included: there is formal on-the-job training, but no instructor-led training; there is informal training provided by my supervisor or a peer; there is instructor-led training; or I am not aware of new staff training policies. The next item asked how frequent required training should be offered. Options included quarterly, annually, as needed or a free response option.

The final section of the questionnaire gathered demographic information as well as preferred training methods. The survey asked participants to identify their race, age, gender, number of years working with APS, urbanicity of practice area, as well as preferred methods of training. Respondents could select multiple training methods from the following choices: video conferences, video tapes, web-based-asynchronous, web-based-live, classroom led/instructor lead workshops, self-study workbooks and other with a field for elaboration.

Table 1. Abuse, neglect and exploitation (ANE) knowledge items

The basic dynamics of ANE
Signs or indicators of ANE
Obtaining medical care for victim
Communicating with agencies in cases
Characteristics of abuse victims
Mandatory reporting laws
Developing a safety plan for victims
Developing rapport with individuals/families
Awareness of Adult Protective Services (APS) policy and evidence-based practice
Documenting abuse
Working with courts to assist abuse victims
Obtaining protective orders
Availability of local resources (including those for special needs)
Accessing resources for victims (including those for special needs)
Testifying in court
Gathering evidence in abuse cases
Georgia laws and legal options related to abuse
Photographing locations and individuals
Distinguishing physical abuse from aging
Interviewing possible perpetrators
Working with individuals with mental health disorders
Screening individuals for substance abuse
Identifying domestic violence indicators
Interviewing individuals with mental health disorders
Interviewing individuals with cognitive impairment/dementia
Coping skills for case managers

Table 2. Adult Protective Services (APS) staff demographic profile.

Age in years (mean, range)	32.8 (30-62)
Gender (n,%)	
Female	83 (92.2)
Male	7 (7.8)
Race (n,%)	
African-American	36 (41.9)
Caucasian	49 (57.0)
Hispanic	1 (1.1)
Education	
High school	3 (5.7)
Some college	6 (11.3)
2+ years of college	44 (83.0)
Tenure at APS in years (mean, range)	11.5 (1-15)
Service Area	
Urban	34 (38.6)
Rural	19 (21.6)
Suburban	35 (39.8)

RESULTS

Ninety-two out of 175 APS staff responded to the survey (53% response rate) following three rounds of invitations. An overwhelming majority of participating APS employees were women (92%) with college (50%) or graduate school (30%) education. Over half of APS staff self-identified as Caucasian (56%), followed by African-American (41%). The majority of respondents have worked for APS between one and 15 years (mean 11.5 years of service). The mean age of Georgia APS staff was 32.8 years (SD=10) with ages ranging from 30-years-old to 62-years-old. According to respondents, APS employees deliver services equally in rural (39.8%) and urban (38.6%) areas and less so in suburban areas (21.6%), [Table 2].

In terms of knowledge possessed and knowledge needed by APS staff, we identified significant differences in 18 out of the 26 items (Figure 1). Items where knowledge needed was statistically different from current knowledge possessed are presented in Table 3.

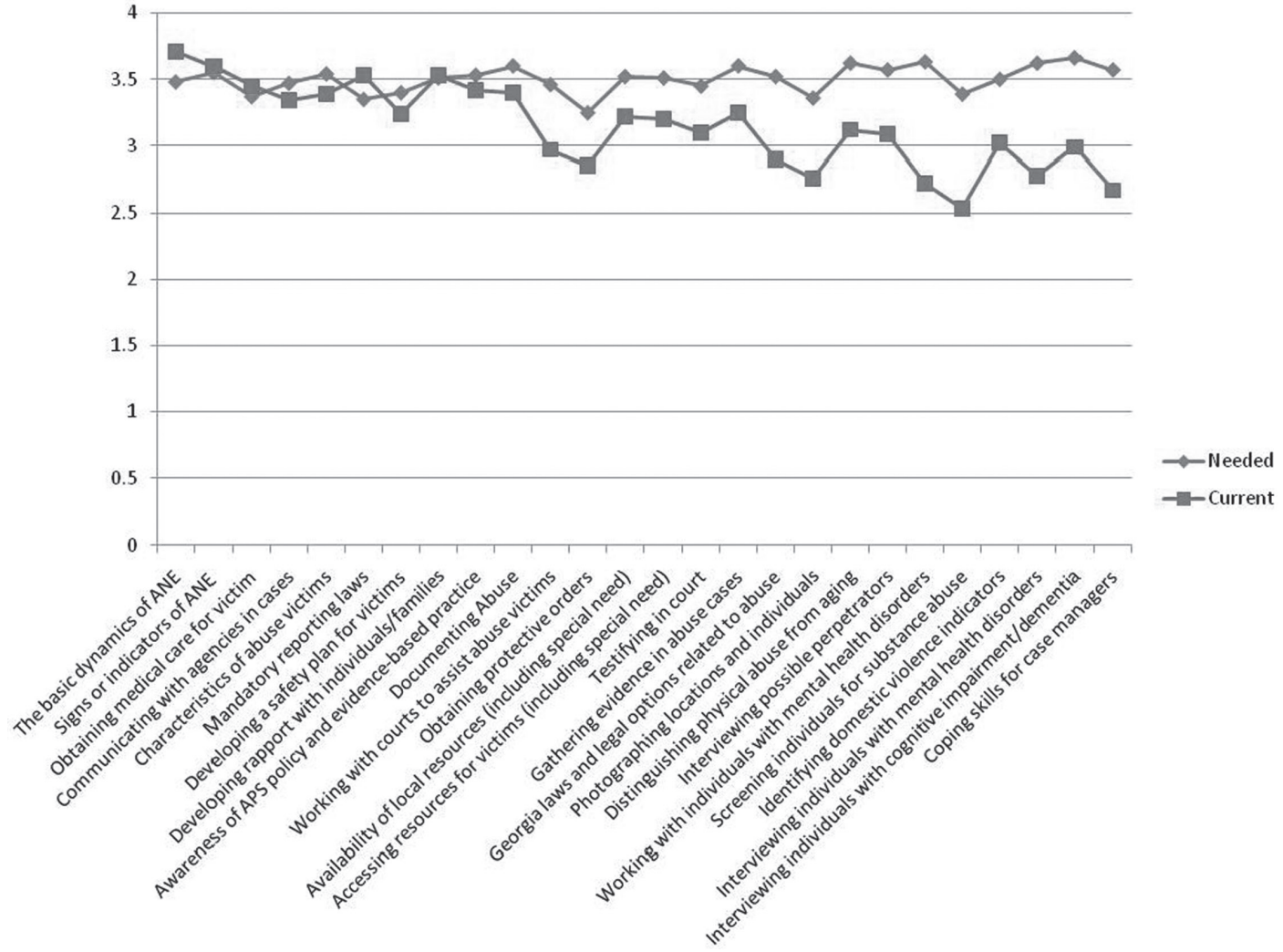

Figure 1. Adult Protective Serive (APS) staff member current versus needed knowledge on abuse, neglect, exploitation (ANE) policies and practices.

Table 3. Significant paired t-test items for current versus needed knowledge among Adult Protective Services (APS) staff.

Area of Knowledge	Current Mean Knowledge (SD)	Needed Mean Knowledge (SD)	t.	Sig.
The basic dynamics of abuse, neglect and exploitation	3.71 (.53)	3.48 (.92)	2.126	.036
Documenting abuse in records	3.40 (.63)	3.60 (.69)	-2.232	.028
Georgia laws and legal options related to abuse	2.90 (.75)	3.52 (.69)	-6.583	.000
Gathering evidence in abuse cases	3.25 (.79)	3.55 (.71)	-2.701	.008
Photographing locations and individuals	2.76 (.83)	3.36 (.82)	-5.132	.000
Distinguishing signs of physical abuse from signs of aging	3.12 (.70)	3.62 (.63)	-4.946	.000
Interviewing possible perpetrators	3.09 (.76)	3.57 (.62)	-4.359	.000
Working with individuals with mental health disabilities	2.75 (.74)	3.63 (.57)	-8.691	.000
Screen for substance abuse	2.53 (1.00)	3.39 (.76)	-6.921	.000
Identifying domestic violence indicators	3.02 (.77)	3.49 (.69)	-4.785	.000
Interviewing individuals with mental health disabilities	2.78 (.86)	3.62 (.59)	-7.870	.000
Interviewing individuals with cognitive impairment (i.e. dementia)	2.99 (.76)	3.66 (.60)	-6.607	.000
Working with courts to assist victims	2.97 (.76)	3.46 (.72)	-4.767	.000
Obtaining protective orders	2.85 (.86)	3.25 (.78)	-3.496	.001
Availability of local resources (including resources for individuals with special needs)	3.22 (.69)	3.52 (.73)	-3.042	.003
Accessing resources for victims (including resources for individuals with special needs)	3.20 (.66)	3.51 (.77)	-2.987	.004
Testifying in court	3.10 (.72)	3.45 (.75)	-3.079	.003
Coping skills for case managers (to avoid burn-out and/or vicarious victimization)	2.67 (.77)	3.57 (.64)	-8.780	.000

SD, standard deviation

For the section that asked APS staff to describe the minimum training standards currently in place, 59% of respondents indicated that all staff were required to attend training, 18.5% indicated that some staff were required to attend training depending on the topic, 12% responded that staff was encouraged to seek training, and finally, 11% indicated that no policy existed or it was not applicable. Over half the sample (53%) indicated that the frequency of ANE training should be offered on an as-needed basis. Furthermore, 22% of respondents were not aware of policies for training new APS employees.

This study also sought to discern the preferred method of training as reported by survey participants. Table 4 presents the preferred training modalities in order. We also examined tests of association between preferred training methods and demographic characteristics. Chi-square tests revealed that non-Caucasians significantly preferred video conferencing as a training format (44% compared to 18%), [$\chi^2(1) = 5.900$ $p \leq .015$], whereas Caucasians preferred asynchronous online learning formats (55% compared to 28%), [$\chi^2(1) = 4.936$, $p \leq .026$]. We also found significant associations between training preferences and educational attainment. Staff members with graduate level education were more likely than those with four year college education to choose self-study workbooks as a viable training option (34.6% compared to 11.4%), [$\chi^2(1) = 4.165$, $p \leq .041$]. Staff members with graduate level education were also more likely to choose video conferences (46.2% compared to 18.2%), [χ^2 (1) = 4.970, $p \leq .026$] than employees with four year college education.

DISCUSSION

This exploratory study is important because little research has focused on APS staff and their knowledge of elder abuse policies and case investigation procedures. There is a critical window of opportunity for APS staff in terms of early detection, intervention and potential prevention of further

Table 4. Rank of preferred training modalities by Adult Protective Services staff.

Modality	N	Percentage
Regional classroom-led workshops	72	80.0
Web-based live sessions	52	57.8
Web-based-asynchronous	39	43.3
Video conferences	27	30
Self-study workbooks	17	18.9
Video tapes	14	15.6

elder victimization. This study highlights specific educational topics and training insights for public health professionals and researchers to consider. The impact of premature death, violence and suffering at the end of life is an urgent matter that warrants increased focus and attention. Including APS staff in future scientific inquiry, research and training is paramount to advancing the ANE agenda.

Knowledge of ANE policies and case investigations may be associated with other demographic factors, such as age, gender and race. These patterns were not examined in this initial study. In further research, analysis of the diversity of the sample and the role of education (80% of sample had a college education and higher) in a regression model would be worthwhile to further reveal potential avenues for more appropriately staged training development.

Of the 18 statistically-significant paired samples t-tests between the perceived levels of knowledge attained and needed only one measure, the basic dynamics of ANE, showed that the APS staff members' current knowledge (M = 3.71, SD = .53) exceed needed knowledge (M = 3.4831, SD = .92) [$t(88) = 2.13$, $p < 0.05$ (two tailed)]. For the remaining 17 knowledge areas, APS staff members knew significantly less than what was needed pertaining to service delivery. These 17 significant items can be condensed into four more general categories.

APS staff indicated the greatest knowledge needs are in areas of evidence collection, legal procedures, cross training and serving clients with mental health disabilities. Each of these four categories contains at least two items reported as areas of needed knowledge. The need for knowledge on the collection of evidence and relevant legal procedures are closely aligned. The more clearly and concretely APS staff can prove abuse, the more effectively the legal system can uphold policies in place to protect vulnerable adults. Gaps or mistakes in evidence collection may slow and even undermine advocacy of elderly individuals within the court system. Since most courts have limited resources and deal with a wide variety of cases, improvements in specialized legal knowledge could draw greater judicial attention and resources to elder abuse.

Likewise, deficiencies in knowledge regarding cognitive impairment and cross training underline the unique vulnerabilities of the population served by APS agencies. Elderly people suffer illness and injury in ways unlike individuals in younger life stages. If APS staff members recognize this problem, yet are unable to fully address it, this may impact APS staff members' job satisfaction and the ability to fulfill their role in cases where vulnerable individuals are being victimized.

These results substantiate previous research that calls for increased education and professional training in all fields that may be able to identify EM.[25,27,35] In a study by Lindbloom et al[35] substantial knowledge deficit in the field of ANE case investigation was revealed. They found that the majority of APS staff did not know how to distinguish evidence of physical abuse and neglect from the normal course of chronic disease and physical decline. This is a critical skill in ANE case identification.[35] Similarly, in our study, APS staff felt they needed significantly more training in the area of distinguishing abuse from signs of aging compared to what they perceive themselves as currently knowing.

In consideration of the minimum training standards questions, the reality is that no standardized mandatory training is specified within the Georgia standard operating policies for the APS workforce. Only 11% of the sample correctly acknowledged this. The Division of Aging Services leadership has acknowledged the need to specify a mandated training policy which would delineate minimum requirements by type and frequency of training for the APS workforce. This is currently being negotiated but has yet to be implemented.

The final results specify training preferences among the APS staff sample. Eighty percent preferred classroom or instructor-led ANE training sessions. However, web-based modalities were the next highest favored, with web-based live training selected by 52 respondents (58%), followed by web-based asynchronous training (43%). These preferences are helpful to those planning further ANE education and training. Combined with the results of the t-tests, these survey findings reveal specific opportunities for enhancing training aimed at APS staff who play a critical role in identifying and addressing elder abuse.

LIMITATIONS

This study was based on a small and homogenous sample. It is also limited by the voluntary nature of the survey. The answers provided by the respondents may not be indicative of the non-respondents. It also would have been helpful for training development to understand the ways that APS staff came to possess the domains of knowledge that were assessed in this survey. Additionally, policies, regulations, responsibilities, and qualifications of APS are determined by individual states and/or local municipalities. Due to the varied range of APS requirements and roles across the county, the generalizability of these study results is limited to locales that follow Georgia's APS structure and scope of work.

CONCLUSION

This study demonstrates an awareness of differences not yet adequately addressed by educational methods currently available to APS staff members. Low levels of training for the prevention of elder abuse are failing to meet high levels of need. The result is that many older adults are at unacceptable risk for subjection to violence and injury. Enhancements to the way APS staff are trained can begin to narrow the gap, which could translate into improved standards of living and prevention of abuse for many vulnerable elderly adults. Survey responses indicate that effective training for APS employees is the linchpin of effective delivery of services.

Without appropriate training, the overarching purpose of APS is compromised. Empowering those who serve the elderly is critical to ensuring the health, wellbeing, and safety of millions of older Americans.

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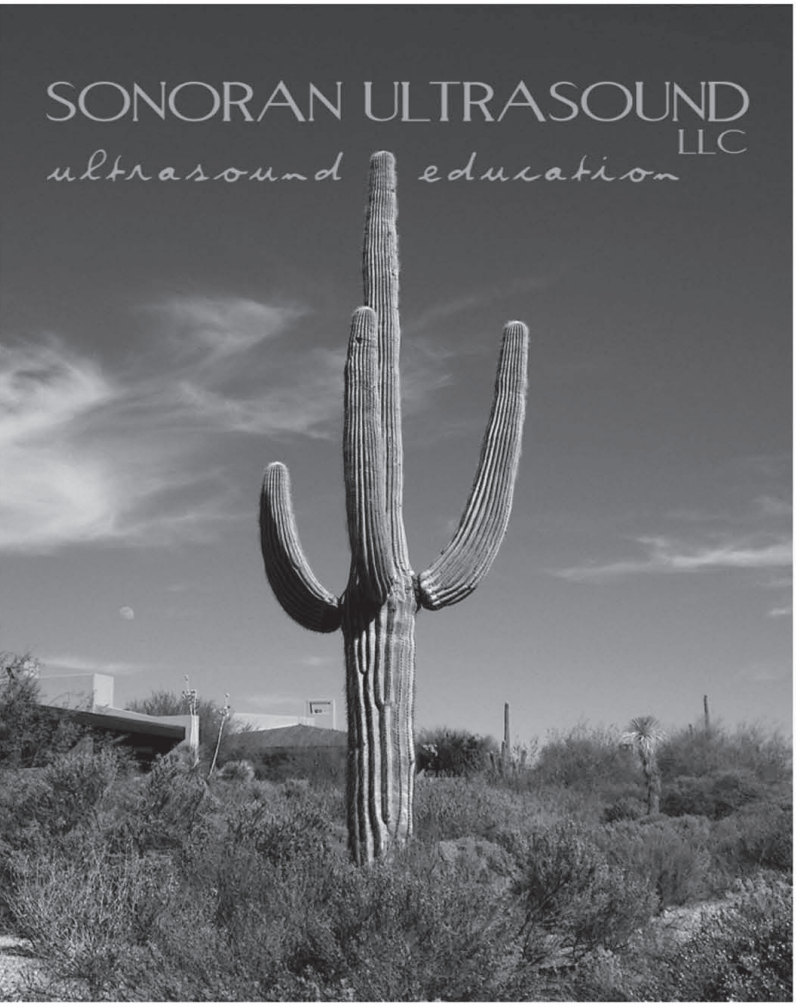

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