



Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/chiabuneg

Research article

A fatal review: Exploring how children's deaths are reported in the United States

Brianna M. Posey^{a,*}, Melanie-Angela Neuilly^b^a Washington State University, Department of Criminal Justice and Criminology, Washington State University, Johnson Tower 706, Pullman, WA 99164-4872, United States^b Washington State University, Department of Criminal Justice and Criminology, Washington State University, Johnson Tower 721, Pullman, WA 99164-4872, United States

ARTICLE INFO

Keywords:

Child death
 Death reporting
 Medico-Legal system
 Child fatality
 Coroner
 Medical examiner

ABSTRACT

Child death reports are the leading data source used to orchestrate child fatality prevention policy. Therefore, the way in which child death is reported is crucial to how we sustain life. We sought to assess the systematic ways in which death is reported for children. Based on a qualitative analysis of medico-legal investigation reports collected from a medical examiner's office and a coroner's office, we examined several indicators of data completeness, quality, site organizational structure, and consistency. We found stark differences between the two sites, as well as issues regarding death diagnosis certainty, and a general lack in consistency in the reports' content, as well as procedures performed post-mortem. We conclude that there are some flaws in our death reporting system for child populations, which have the potential to hinder reliability and accuracy of these death reports, as well as thwart their overall usefulness in prevention policies.

1. Introduction

Despite the inevitability of death (Becker, 2007), our society, with the rise of public health and modern medicine, puts a great deal of effort in finding ways to prolong life (Kastenbaum, 2000), notably through the study of death. In recent decades, child death in particular has become of popular interest. Each year, more than 20,000 children and youth under age 20 die unexpectedly in the United States (WHO, 2010). This includes both intentional and unintentional deaths. Despite a dramatic drop in child fatalities throughout the mid- to late-1990s, child death remains a significant concern among the public, policymakers, and researchers. Violent child death is more likely to affect minority youth in inner cities, whereas white youth are at risk for suicide (Balis & Postolache, 2008). Additionally, with the recent string of mass school shootings there has been an increasing interest in violent child death (Alvarez & Bachman, 2016).

Since all deaths in the United States must officially be documented, death reports have been used for a wide variety of prevention efforts. These prevention efforts typically include one of three methods: First, reports of death are used to compile mortality statistics at the local, national (Centers for Disease Control), and international (World Health Organization) levels. Second, these aggregated reports of death are used for theory development and testing in our goal to better understand death in order to prolong life. Such theories tend to focus on identifying factors causally linked to specific types of preventable deaths in populations. Third, based on these theories, the statistics are also used to create public health policies that strive to prevent untimely deaths from occurring.

* Corresponding author.

E-mail addresses: brianna.posey@wsu.edu (B.M. Posey), m.neuilly@wsu.edu (M.-A. Neuilly).

While the utilization of death reports is a sound approach to prevention efforts, one fundamental issue is that not enough is known about how death is reported. Previous literature has outlined the overall process of death reporting. However, the process itself is complicated by numerous institutional factors pertaining to variations between jurisdictions, as well as individual decedent factors such as gender, race, age, and manner or cause of death. Thus, without more complete knowledge of how child death is reported, previous and current discussions may be lacking crucial insight needed to produce effective death prevention policy.

We propose an in-depth exploration of the characteristics of child death reports in the United States. We do so through a qualitative analysis of the details and components of a small sample of medico-legal child death reports, in order to provide a level of depth and context often missing in the analysis of medico-legal processes. More specifically our analysis focuses on the organizational characteristics, quality, completeness, and consistency of the information presented in deaths reports. We will first provide an overview of the extant literature in order to frame our research, then describe our methodological approach. Finally, after outlining our results, we will discuss their relevance within the field. Furthermore, the strategies and recommendations presented in this article should be viewed as starting points, not solutions. Hopefully, with more knowledge of how child death is reported in the United States, policymakers and the public will begin to think broadly and creatively about how to reduce the death and injury among children and youth.

2. Literature review

2.1. Brief history of death reporting in the United States

Mandated death reporting did not begin in the United States until 1837. Prior to that, following the European tradition, major life events were mainly reported in church records. This was problematic because not all churches maintained such records and not all individuals attended church (Hanzlick, 1997). As many states began to recognize this, the responsibility of death reporting was transferred to the courts. Then in 1844, school teacher and politician Lemuel Shattuck founded of American Vital Records System to house all records of death in this country. This system required all states to submit reports of death annually. These records required a signature either from families, midwives, physicians, or in some jurisdictions, police officers. This was a drastic improvement; however, these records were not standardized (Hanzlick, 2006). It was not until 1910 that a standard death certificate was implemented. The new document included not only the surname, forename, date of birth, sex, place of birth, parent(s)' names, their address, and occupations at the time, but also the immediate, intermediate, and underlying causes of death (Kircher & Anderson, 1987). This new system of death reporting began to play a profound role in death investigations.

Death reporting today has come a long way since 1910. As far as the process for reporting death, states can offer their own variations; however, most comply with the U.S. Standard Death Certificate, which is issued by the Centers for Disease Control's (CDC) National Center for Health Statistics (NCHS). California, Idaho, New York City and State, and Montana were the first to use this form for death reporting. Since then, 27 other states have adopted this same system. The agency last revised its form in 2003 (US Department of Health and Human Services, 2006).

3. Death reporting practices

3.1. Cause of death

One of the most crucial elements of reporting death is listing the cause of death. The cause of death is the disease or injury responsible for the lethal sequence of events (Mokdad, Marks, Stroup, & Gerberding, 2004). These factors are sometimes determined by a specialized dissection procedure known as *autopsy* (Lauer, Blackstone, Young, & Topol, 1999). Additional testing, such as micro-pathology and toxicology analyses, can be ran, and medical records, psychiatric reports, and statements from next of kin may also be gathered to aid the process (Rao, Lopez, & Hemed, 2006).

3.2. Manner of death

The manner of death differs from the cause of death as it legally classifies the death according to the presence or absence of pathological attributes, as well as the source of a lethal intent (Mokdad et al., 2004). There are four manners of death: natural, homicidal, suicidal, and accidental. *Natural deaths* are characterized by the body ceasing function of its own accord, often because of some form of illness. *Homicide* is described as death which results from one human taking another's life. *Suicide* is the deliberate taking of one's own life. Finally, *accidental death* implies that the death was neither natural, nor intended (either by the decedent or another) (Goodin & Hanzlick, 1997).

Two additional manners of death have been added for legal purposes. In the United States death may be classified as *undetermined*, if there is not enough evidence to determine the type of death (Davis, 1997), or *unclassified*, if the circumstances surrounding the death are too complex to classify (Davis, 1997). This is used in incidents where there is evidence to suggest that multiple events may have contributed to the death.

3.3. What is an autopsy?

In efforts to understand factors that may have contributed to or caused death, an autopsy may be performed. Autopsies

(sometimes referred to as a post-mortem examinations or necropsies) are the examination of the body of a deceased person by a medical professional specializing in pathology. Autopsies can be performed in a clinical or forensic setting in order to determine the physiological cause of death, and, when in the latter setting, the manner of death (Sinard et al., 2014).

An autopsy report is the result of the compilation of autopsy findings. Such reports primarily include the cause of death, manner of death, diseases that the deceased may have had, and other medical details of the autopsy. In addition, autopsy reports have legal implications if the cause of death is found to be related to foul play (Hill & Anderson, 1988). Autopsy reports do not constitute public information, and are thus only available to a limited number of people or institutions as defined by regulation (Siebert, 2009).

3.4. Who reports death?

Today two systems currently govern medico-legal death reporting in the United States: The medical examiner system and the coroner system. Both have similar duties in regard to death reporting. For example, both the coroner and medical examiner are responsible for investigating and certifying specific types of death. However, both professions have stark and unignorable differences.

The coroner system is the eldest of the two. The coroner system dates back to 11th century England. A coroner is an elected government official. In the U.S., the requirements for a coroner position are usually limited to being a resident of the area and being of voting age (Hanzlick & Combs, 1998). Currently a coroner's job is to probe an expected or violent death due to suicide, homicide, or accident. The inquest of a coroner is also a requisite in cases where the cause of death is related to a public health threatening disease, when an individual dies while in the custody of a state or federal run institution (i.e.) jail, prison, or in cases where a death occurs under suspicious circumstances (Neuilly, 2013).

In contrast, the medical examiner system is the more contemporary system. The medical examiner system was born in the late 1800's. One of the main differences between medical examiners and coroners is education attainment. A medical examiner is a licensed physician. Further, Schraeder, Delin, McClelland, and So (2006) found that on average medical examiners have 6.7 more years of education than coroners. However, it should be noted that medical examiners operating in the U.S. may not be required to have special training in forensic pathology.

Other differences are geographical. Recent studies have shown that medical examiners serve 67% of the United States national population (Weinberg, Weedn, Weinberg, & Fowler, 2013). This is likely due to the regional prevalence of medical examiners in more urban areas, whereas coroners, who represent more counties, are more likely to be located in more rural areas (Hanzlick & Parrish, 1996). In addition, medical examiners may operate in a collaborative effort with law enforcement, or individual medical examiners may operate independently and work when solicited (Johnson, 1994).

Whether a death is investigated by a medical examiner or a coroner is governed by state law. Information regarding the deceased is collected in different ways in each state, depending on the system in place. For example, a state may have a medical examiner system, a coroner system, or a mixed system. Further, the system may be centralized (controlled by one state office) or decentralized (controlled by county or regional offices) (Neuilly, 2013).

In addition, the differences between coroner and medical examiner systems vary by jurisdiction. For instance, in most jurisdictions, coroners are not permitted to perform procedures such as autopsies (Jentzen, 2010). When investigating death, if an autopsy is needed, a coroner will frequently consult with a pathologist or forensic pathologist. As medical examiners are medical doctors, they can perform autopsies on their own.

Death reporting systems are social artifacts, as they speak to social standards which are subject to change over time. Moreover, death reporting systems are a political function, as they are governed by law. While death reporting systems are subject to change, as each state has modified their laws to adapt to advances in the medico-legal system in the U.S., for the most part, they read as they were originally written and reflect these guidelines.

4. Issues in death reporting

As death reports offer permanent documentation of death, they are crucial in assessing and measuring mortality. The information that is presented in death reports reflects the death certifier's opinion, which is based on their training, knowledge of pathology and medicine, availability of relevant information such as access to medical records, interviews with family, friends, and witnesses, and availability of resources such as forensic and anthropological tests. Further certifiers' moral, ethical, and political interests, or even their demographic characteristics can influence how death is reported (Hsieh & Neuilly, 2016). These factors influencing death reporting question its validity and reliability (Herrett, Thomas, Smeeth, 2011; Sorlie, Rogot, & Johnson, 1992; Ravakhah, 2006).

Some scholars have criticized the ambiguity of death reports because of the use of words such as "probable" or "presumed" (Sehdev & Hutchins; 2001). Others have linked shorter post mortem examinations to poorer quality death reports (Mathers, Ma Fat, Inoue, Rao, & Lopez, 2005). The lack of mental health assessment when establishing immediate and underlying causes of death has been seen a public health failure as many neuro-psychologists have emphasized the physiological repercussions of psychological troubles, which could be some routinely overlooked underlying causes of death (Berman, Josselson, & Jobes, 1986; Miller, Paschall & Svendsen, 2008).

Coroners' and medical examiners' practices have thus been consistently criticized. Some of the strongest criticism, though, has coalesced around the impact of decedents' characteristics, particularly regarding gender, race, and age. While the influence of these characteristics on the death certification outcome has been studied extensively (Platt, Backett, & Kreitman, 1988; Rockett et al., 2010; Sorenson & Haikang, 1997; Stanistreet et al., 2001), another wing of the literature has focused on their influence on the reporting process itself.

4.1. Women and death reporting

Of particular interest, with regards to the reporting of women's death, is the underreporting of maternal mortality. Specifically, Horon (2005) found that physicians completing death certificates failed to report that the woman was pregnant or had a recent pregnancy in 50% or more of these cases. Because the pregnancy was not recorded in the report, these deaths were not included in the calculation of maternal mortality rates. Ring-Cassidy & Gentles (2002) explain that a possible reason for this may be that some medical examiners and coroners do not consider pregnancy to be a true cause of death and thus fail to report it. Another reason for the underreporting of maternal death is in instance of a recent abortion. Some studies have claimed that medical personnel may underreport so that abortion will continue to be seen as a safe procedure (Atrash, Alexander, & Berg, 1995).

4.2. African americans and death reporting

African Americans have been found to be disadvantaged when it comes to the quality of death reports compared to whites (Preston, Elo, Rosenwaike, & Hill, 1996). Much of that disadvantage has been linked to the combined impact of poverty on health and early death as well as on resources available to medical examiners and coroners in lower income areas. Elo & Preston (1997) concluded that this may in turn distort the mortality data as the data quality for Whites is better than the data quality for Blacks.

4.3. Children and death reporting

Literature on death reporting practices suggests that there are distinct differences between children and adults biasing the death reporting of children. Three forms of such potential bias have been identified as the following.

Visibility Bias, sometimes referred to as *Exposure Bias*, was a term coined by Drake & Zuravin (1998) to explain the fact that poor families are more visible due to their frequent use of public service. Looking at six Mississippi zip codes with 1000 families and children, Drake & Zuravin (1998) found that 49.17% of death reports for maltreatment were from mandated sources. Further, 44.41% of overall autopsies were from mandated sources. Drake & Zuravin concluded that due to this there actually may be an over-representation of children living in poverty in the national figures for child death, as these cases stand out and are more likely to be extensive due to mandated policies.

The second type of bias is *Labeling Bias*, which is the idea that coroners or medical examiners are likely to focus on some factors, while excluding others when investigating death. This has been found to be influenced by a range of characteristics of the deceased, but especially age. Most medical examiners of coroners have preconceived notions about what to look for when examining the death of infants, children, teenagers, adults, and the elderly. In the case of children, suicide provides a good example. It is a social assumption, within the United States, that suicide among children is rare, and therefore it is not something for which coroners or medical examiners are likely to look. As a result, deaths of younger individuals are more likely to be misclassified, particularly when it comes to suicide (Schapira, Linsley, Linsley, Kelly & Kay, 2001; Platt, Backett, & Kreitman, 1988; Taylor, 1982), or classified as undetermined (Sorenson, Shen, & Kraus, 1997).

The last type of bias is simply known as *Reporting Bias*, which pertains to both intentional and unintentional failure to report certain causes of death and/or factors that contributed to the cause of death. Intentionally, we see this in cases of abuse, where maltreatment can sometimes be suspected by professionals or family members but never followed up on during the death reporting process. Zellman (1992) found that death investigators were less likely to examine for physical and sexual abuse among middle class children when reporting death. Zellman elaborated that this was most likely because the middle-class families were less likely to have a history of CPS intervention. Unintentionally, we see this in cases of Sudden and Unexpected Infant Death (SUID) as the cause of death. Literature has indicated that cases of SUID are often misclassified because of the complexity surrounding the diagnosis. Some researchers have proclaimed that it takes a very skilled and experienced pediatric pathologist to detect SUID (Byard & Krous, 2003; Moon et al., 2007). Additionally, SUID shares many similar symptoms with Shaken Baby Syndrome and Infant Botulism, and is therefore often under-diagnosed (Byard & Krous, 2003).

In sum, there does lie the potential for numerous shortcomings and biases in the death reports of children. Further, some of these biases may overlap and intersect; for example, reporting bias may be the result of labeling bias. Previous literature has alleged that children may be vulnerable to the death reporting process due to social, physical, and biological factors that are age specific (see Crume et al., 2002; D'amico et al., 1999; Lahti & Penttilä, 2001). While there is empirical evidence for differences in death reporting for children, this literature is limited (see Lahti & Penttilä, 2001; Mathers et al., 2005; Ravakhah, 2006). Therefore, we propose a more in depth and unique approach to studying the death reporting practices of children specifically, to further enhance and comprehensively integrate our understanding.

5. Research question

Accurate mortality statistics and effective child fatality prevention efforts rest on data gathered from death reports. Because such data can be produced by two different death reporting systems in the United States, coroner and medical examiner, it is possible that the two systems report death of children differently (Black, Morris, & Bryce, 2003; Liu et al., 2012; Patton et al., 2009). Therefore, we propose to investigate the medico-legal practices in one coroner's office and one medical examiner's office in hopes of providing an illustration and more in-depth understanding of child death reporting processes.

The World Health Organization (WHO) has identified four attributes when assessing mortality data (2008). These four attributes

include the quality, completeness, organization, and consistency of the data. Our research goal is thus to explore each of the four attributes in a population of child deaths in order to improve knowledge about child death reports and improve their usage as a death prevention tool.

6. Methods data

Data for this study come from a larger primary data set collected by the second author, which includes autopsy and investigation reports from four medico-legal sites, two located in the United States and two located in France. For research purposes, this study is limited to the two U.S. locations: one coroner's office located in the intermountain west region and one medical examiner's office located in the northeast region. This dataset includes ethnographic field notes for all four locations, decedents' and death scenes' characteristics, medico-legal investigation, autopsy, and other post-mortem examinations reports. These data were collected on site, over a period of ten years. As part of the data sharing agreement all personal identifiers have been removed. For purposes of this study, all child death reports for the two U.S. sites were extracted from the larger dataset. Following the World Health Organization's criterion, a child is considered as an individual under the age of 19 (World Health Organization, 2010). This led to a sample of 36 cases.

7. Design and measurement

To assess each of the four WHO assessment dimensions, we conducted a content analysis of the sample of child death reports. Each dimension was evaluated as follows:

7.1. Organization characteristics

Death reporting is a complex process in which more than a medical examiner or a coroner are involved. We are interested in who such additional personnel are, what types of cases they appear in, and how they differ between the two sites. To assess this, we first compiled a list of all individuals who are mentioned in each of the case files from both sites. Then we sought to identify what their role was in the death reporting process. This process allowed us to assess organizational similarities and differences between the medical examiner's and the coroner's offices.

7.2. Quality

The quality of a death report is considered as the degree to which death is readily and confidently stated, and consistent with current professional knowledge. To assess quality, we looked specifically at the narratives in the death reports. Due to the two different medico-legal systems, these narratives are often difficult to aggregate or analyze. Therefore, we determined that the best way to analyze quality was through a multi-stage process known as *critical discourse*. Linguist Norman Fairclough developed this method. Following this method, the text was analyzed in three different stages: (1) *Text*, this would be the genres of text; (2) *Interaction*, this would be the meanings and descriptions; (3) and *Context*, this would be the socio-cultural implications of the text (Fairclough, 2001).

7.3. Completeness

Completeness addresses whether all information and procedures pertinent to death certification have been included. When dealing with mortality reports, the Office of Civil Registration and Vital Statistics (CRVS) at the World Health Organization (WHO) recommends that proper identification of age, gender, race, place of death, cause of death, and manner of death be included in death reports (World Health Organization, 2010). Consistent with CRVS recommendations, we examined the extent to which these variables were included in the death reports.

For cases where there were missing CRVS variables, we looked to the investigative reports to assess whether an explanation could be found. Categories identifying the rationale for information missingness were created. These categories are: Individual was never identified, remains were too decomposed to determine, no reason given.

7.4. Consistency

Consistency is considered as the even application of medico-legal practices across populations. To assess consistency, we looked to the examinations and procedures described in the reports. As previously mentioned, death reporting methods often differ between states or even counties. This has led some scholars to claim that the way in which death is reported is inconsistent depending on geographical location (Hanzlick, 2007; Hanzlick & Combs, 1998; Kung et al., 2001). Additionally, as explained in the literature review, other scholars have alleged that there may be inconsistencies in examinations and procedures depending on sex, race, socioeconomic status, and age of decedents (Deaton & Lubotsky, 2003; Horan, 2005; Elo & Preston, 1997), as well as characteristics of medico-legal professionals (Hsieh & Neuilly, 2016).

Therefore, to assess consistency, we created a manifest coding schema to examine themes within the death reports. Two different analyses were performed for examining the post-mortem examinations. First, the *type of autopsy* performed was measured on a

Table 1
Demographics of Child Death Reports (N = 36).

| Variable | Range | Mean (SD) or% |
|---------------------------|--------|---------------|
| Coroner's Office | | 25.0 |
| Medical Examiner's Office | | 75.0 |
| Age | 0 – 19 | 9.5 (7.8) |
| Gender | | |
| Male | | 66.7 |
| Female | | 33.3 |
| Race | | |
| White | | 44.4 |
| Black | | 27.8 |
| Hispanic | | 22.2 |
| Asian | | 2.8 |
| Other | | 2.8 |
| Manner of Death | | |
| Natural | | 30.6 |
| Accident | | 38.9 |
| Suicide | | 5.6 |
| Homicide | | 25.0 |

nominal scale: 1 = Full; 2 = Partial; 3 = View; 4 = None. Second, in better efforts to analyze the amount of detail in the reports, the length of autopsy report, was measured continuously in number of words.

Additionally, according to Oppewal & Meyboom-De Jong (2001), information that is included in death reports is largely dependent on narratives from family members. Therefore, we assessed how consistently families were mentioned in the death reports using a thematic content analysis. This led to the identification of two themes: (1) mention of family and (2) mention of family contact. This in turn allowed us to ascertain whether certain types of death are likely to have more family involvement than others.

8. Results

Table 1 presents the descriptive characteristics of the sample. There was a total of 36 cases within the sample that met the age selection criterion (the decedent had to be age 19 and younger). Most of the cases came from the medical examiner's office (75%).

Regarding the demographic characteristics of the decedents, ages were widely spread from 2 months to 19 years, with a mean of 9.56. Within the sample 24 were male and 12 were female, 16 were White, 10 Black, 8 Hispanic, 1 Asian, and 1 case was classified as Other race. Additionally, 11 cases were classified as natural deaths, 14 as accidents, 9 as homicides, and 2 as suicides.

8.1. Organization characteristics

Figs. 1 and 2 shows a flow chart of the different parties involved in the death reporting process between the two sites.

There were numerous similarities between both medical examiner and coroner sites. First, both sites utilized physicians. Across both sites, these individuals were licensed physicians who specialized in forensic pathology and performed internal and external examinations of the body. Additionally, both sites utilized medico-legal investigators, in short, medico-legal death investigator are

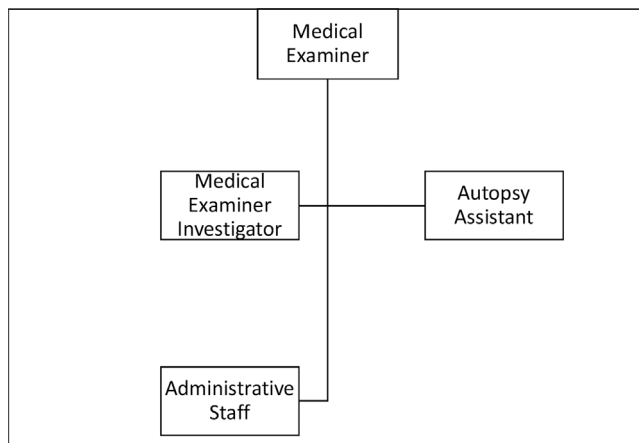


Fig. 1. Medical Examiner's Office Organization Hierarchy.

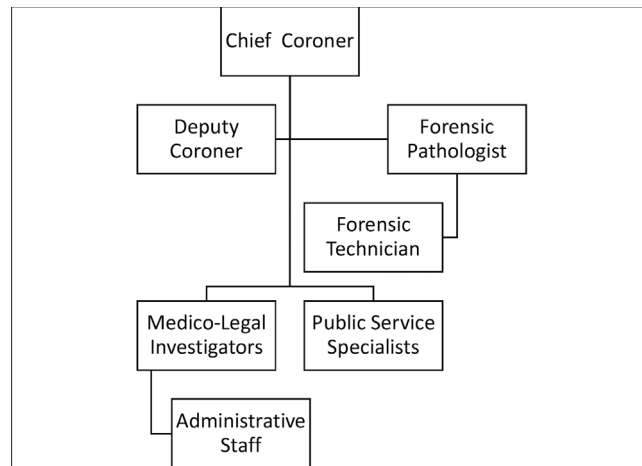


Fig. 2. Coroner's Office Organization Hierarchy.

tasked with investigating any suspicious, violent, unexplained, and unexpected deaths. Medico-legal death investigators perform scene investigations emphasizing information developed from the deceased and determine the extent to which further investigation is necessary. While both sites did employ medico-legal death investigators, it should be noted that both sites have different hiring criteria and practices (Dolinak, Matshes, & Lew, 2005).

Despite some similarities, there are stark differences. The biggest difference appears to be the number of individuals involved between sites. For the Coroner's office, it appeared that the death reporting process involved a wider series of personnel, including individuals inside and outside of the office. These parties included the chief coroner, deputy coroner, forensic pathologists, forensic autopsy technicians, medico-legal investigators, public service specialists, and administrative and support staff. The chief coroner mentioned was the elected coroner for the county. The coroner oversaw inspecting the body of the deceased person to identify cause and manner of death, call upon the appropriate forensic experts to conduct forensic examinations, and sign the completed death certificate. Additionally, in three cases public service specialists were mentioned. These were external personnel who were typically called in for assistance. It appeared that these individuals assisted in interpreting and clarifying environmental factors such as abuse and neglect. Further these individuals were only contacted in cases of violent death. This was an organizational trait that was absent from the medical examiners site.

For the medical examiner's office, it appears that most parties involved were from within the institution. The death reports revealed four main type of professionals involved in the reporting process. These included medical examiners, medical examiner investigators, autopsy assistants, and administrative support staff. Autopsy assistants were specific to medical examiner sites. The autopsy assistants mentioned were technicians who helped the medical examiners with a few tasks including assisting with the autopsy examination, collecting, weighing, fixing, and storing tissue samples, restoration of the remains following the autopsy, as well as room preparation and cleanup. One specialized assistant oversaw forensic photography of the postmortem examinations.

8.2. Quality

Following Fairclough (2001) model of critical discourse methodology, for the first stage, *Text*, the cases were divided into three separate genres: *tentative*, *definitive*, and *conditional* cases. As each case used different language, we had a broad spectrum of dialect that fell within each category. For example: 1) Tentative language, "it appears," "it suggests," "it is unlikely that"; 2) Definitive language, "clearly," "decidedly," and "indeed"; 3) Conditional language, "if," "would," "should." After coding it was discovered that most of the cases (20) used definitive language. Eleven of the cases used tentative language. Only five of the cases used conditional language.

For the second stage, *Interaction*, to make better sense of the intrinsic meaning of the text, we looked at the production of text which detailed the causes of death. One case from the coroner's office used definitive language. This case involved an eight-year-old victim and unequivocally states the cause of death, which was organ damage due to a gunshot wound.

This decedent died of a gunshot wound of the chest. Microscopic examination revealed a penetrating gunshot wound of the chest, which damaged the heart and resulted in internal bleeding. The bullet was recovered in two pieces from the spine and from the back

The manner of death in this case was reported as homicide. The linguistics used appear to describe the cause of death as matter of fact. Based on the production of text we gather that this death report leaves no questions open surrounding the cause of death.

Another case that arose from the coroner's office used tentative language. This specific case belonged to a twenty-five-week-old female.

Examination found a normal 25-week-old with no dysmorphic features, respiratory problems, and a normal internal anatomy.

Microscopic examination reveals no evidence of medical diseases. A metabolic screen from Pediatrx screening is negative for tested metabolic abnormalities. The cause of death in this case is presumed to be Sudden Unexpected Infant Death (SUID)

The death report details relative facts of the child's history of respiratory illness and other diseases. Then; however, when describing the cause of death, the word "presumed" is used. Linguistically, this shows some indication that this conclusion is probable, but there is some degree of uncertainty. Even with a small scale of uncertainty, the manner of death in this case was reported as natural.

In addition, a case that used conditional language arose from the medical examiner's office. This case involved a three-year-old boy who died of complications from a birth defect.

Neuropathological findings were complex. The autopsy revealed atresia of the common hepatic duct at approximately 1.0 cm from the portohepatis, severe cholestasis and hemorrhagic infarction of the liver, chronic inflammation and hemorrhagic necrosis of the pancreas, hemorrhagic enterocolitis of the small and large bowel, acute tubular necrosis, and medullary hemorrhage of the kidneys. In contrast, the cerebellar internal granular layer reveals severe apoptotic neuronal change. If the constellation of changes was prominent, change is likely due to abnormal organic acid or amino acid metabolism. The cause of death is concluded as liver failure secondary to extrabiliary atresia complicated by disseminated intravascular coagulation and subsequent multi-organ hemorrhagic and ischemic infarctions.

The death report presents very detailed pathological evidence. The text then goes onto set up the conclusion as hypothetical in an "if, then" statement. This is a linguistic tactic known as 'deductive reasoning', in which the medical examiner is basing their conclusion around the concordance of multiple premises that they assume to be true. Thus, we interpret the conclusions drawn in this case to be an educated guess, but nonetheless, a guess.

For the third stage, *Context*, this discovery does have some bigger picture implications. Based on the text transcripts from above, the narratives for medical examiners and coroners seem to be very different. More specifically, there seems to be a relationship between dialect and social practices between the two sites. It appears as though medico-legal differences in discourse strategies have created different expectations and norms in child death reports.

8.3. Completeness

Completeness of demographic variables and other decedent characteristics was assessed. We found that age, gender, race, cause of death, and manner of death were identified in 100% of cases. This is consistent with CRVS recommendations ([World Health Organization, 2010](#)).

There was; however, an area of incompleteness. Specifically, place of death was missing in two cases. In one of those cases it was acknowledged that the place of death was missing because it could not be determined. The two cases with missing information were both homicides, which leads us to ponder whether completeness may be dependent on manner of death.

8.4. Consistency

While most cases (30) included a full autopsy (complete external and internal examinations), our sample included the full range of possible post-mortem examinations. In two of the cases the post-mortem examination was a partial autopsy (dissection of only specific parts of the body, such as the head or chest). Both cases were classified as natural deaths, and both came from the coroner's site. In four of the cases, the post-mortem examination was an external examination or view, including bodily fluid sampling for toxicology testing. All such four cases were classified as accidents and came from the medical examiner site. In addition, all four cases involved blunt force trauma as a cause of death.

When assessing length of the autopsy reports, we found inconsistencies. It was found that younger children, regardless of manner of death, had lengthier autopsy reports including more extensive examinations such as neuropathology reports and genetics screening reports. These cases were all young children who died natural deaths due to health complications such as seizures and cardiovascular-related illnesses. These autopsy reports were made longer because these children generally had large ante-mortem medical records extensively summarized in the autopsy reports.

In addition, there was mention of family in all the autopsy reports. In twenty-four of the cases, family contact that went beyond notification of kin was mentioned. This contact typically regarded the release of records or samples. Further this contact typically was generally done over the phone as it pertained to release or obtain records or samples. Twenty of these twenty-four cases came from the medical examiner site. For example, the following is an excerpt from the case of a one-year-old boy whose death was classified as natural.

The mother was contacted regarding retaining the brain and she gave verbal permission by phone and agreed to sign a faxed release to the funeral home

There did not appear to be any trends in coroner or medical examiner site, cause of death, or manner of death when it came to extended communication. Communication with family for these purposes seemed to be conducted on an individual basis.

Further in four of the cases it was noted that the family contacted the medical examiner for a specific neurological exam (*brain autopsy*). In all four cases, it appears the family had arranged for the neurological exam to be performed. These cases were from violent deaths that involved blunt force trauma to the head.

In addition, while we were not examining the cases for information regarding vaccines, there were three cases where the child's history of immunizations was mentioned. This was peculiar because in these cases it was not indicated that a specific disease was the cause of death. This will be interesting to follow in the future as the country continues to move toward a heated debate of the moral, ethical, and health issues involved in child vaccinations.

9. Discussion

As of 2014, children make up an estimated 26% of the United States population, an all-time high ([The Children's Defense Fund, 2015](#)). As a result, there has been a push for policies, public-health priorities, planning, and practices that address preserving the health and quality of life for children. Mortality data play a large role in such efforts. These mortality data; however, have one major limitation: they can only be effective in child survival efforts if they are based on reasonably accurate information. It is therefore crucial that we have a complete understanding of the way that we report the death of children in the United States.

The incidence and epidemiology of various diseases and causes of death in children have been studied extensively ([Black, Morris, & Bryce, 2003](#); [Black et al., 2010](#); [Bryce et al., 2005](#); [Fraser et al., 2014](#); [Vane & Shackford, 1995](#)); however, there has been little investigation of the ways in which death is reported. No doubt this is due to the relative confidentiality of medico-legal files and autopsy reports. In that respect, our research sought to shed light on the ways in which children's death in the United States are reported by medico-legal professionals, using autopsy reports and investigation narratives from a medical examiner's office in the Eastern U.S., and a coroner's office in the Western U.S.

9.1. Practical implications

The overall results of this study do seem to display differences in the quality, structure, completeness, and consistency of child death reports between our two study sites, as well as within sites, between cases. First, when examining quality, we discovered variation in the certainty with which death investigation findings are formulated. This may be a testament to the complexity of death diagnosis. Some causes of death are more obvious than others. As highlighted in the previous excerpt from the gun-shot decedent, causes of death that results from trauma and physical injury may be more apparent and thus easier to diagnosis.

The cause of death information is drawn from one's best medical opinion. A condition can be listed as "probable" even if it has not been definitively diagnosed. This can be complicated by age. Particularly when the decedent is still in infancy. Neonatal and perinatal examinations require highly specialized skills, and even with such skills, the potential for error still exists due to size of internal organs and underdeveloped bodies. As concluded in previous literature, this often leads to misdiagnosis and sometimes misclassification ([Breiding & Wiersema, 2006](#); [D'Amico et al., 1999](#); [Rockett et al., 2006](#)). When a coroner or medical examiner uses tentative language such as "presumed" and "probably," it could potentially mean that certain circumstances regarding the etiology are not clear. [Ebrahimi \(1996\)](#) claims that uncertainty can lead to reporting bias and or under or over-estimation of certain types of death. Over-estimation occurs when a large quantity of deaths are incorrectly attributed to similar or identical causes and under-estimation occurs when a large quantity of deaths are occurring on a large scale from the same cause and are not being reported as such.

Second, when assessing organization, it became clear that both medical examiners and coroners follow very different organizational models. Individuals involved in the death reporting process from the medical examiners cite tended to be internal or from within the institution, whereas the coroner's office, on occasion, would reach outside of the institution. We saw evidence of this with the coroner's office conversing with public health specialists in select cases. This may be because of both historic and organizational differences between the two systems. Historically, coroners were political candidates who did interact with the community ([Hanzlick, 1997](#)). Therefore, many of their job duties may require a more community-centric approach.

Other factors for differences in death reporting personnel may be based on legislative, political, geographical, and resource distribution factors. On a legislative level, some states restrict the duties of medico-legal personnel. For example, coroners cannot legally perform autopsies. They must have a physician on staff or hire one to perform the procedure. On a geographic level, some areas simply do not have the resources or manpower for large organization structures and therefore limit the individuals involved in the death reporting process to conserve the resources that they do have. This is important to recognize because if the organizations involved have conflicting agendas this can affect the way that deaths are reported.

Third, previous studies have found that mortality data have a large variability in completeness for children under the age of 19 ([Hill and Rosenwaike, 2001](#)). For the most part, our data appeared to be complete concerning information on age, gender, race, cause of death, and manner of death, thus in compliance with CRVS standards. We did find that two cases were incomplete when it came to identifying place of death. Both were violent deaths cases. Identifying the place of death in fatality cases can be crucial as: 1) the place of death may influence the accuracy of the recorded cause of death (see [Sohn et al., 2006](#)); and 2) prevention efforts of violent deaths are generally dependent on identifying where these deaths are most likely to occur.

Lastly, we identified a lack of consistency in the type of examinations and content of the death reports. First, regarding the type of examination, while full autopsies were performed in most cases, the coroner's office conducted some partial autopsies for natural deaths, and external examinations were performed in some accidental death cases at the medical examiner's office. Partial autopsies and external examinations are not always bad alternatives to full autopsies. Some have argued against full autopsies because of the religious and cultural sensitivities of the relatives of the deceased, economic costs, and public health issues such as exposure to infectious diseases during the autopsy procedure ([Jason, Preisser, Lantz, 1997](#); [Smith, 2013](#)). In addition, some have argued that autopsies frequently add nothing to the knowledge about the deceased or the cause of death ([Carpenter et al., 2006](#)).

Second, with regards to the content of death reports, the age of the child did appear to affect the length and content of the autopsy report. We found that cases involving younger children involved a wider variety of examinations. We also examined the content of death reports for mentions of family and contact. We found that family was mentioned in some way in all the investigative and autopsy reports, showing consistency between the two sites. When assessing family contact, however, we found inconsistencies. Twenty-four of the thirty-six cases mentioned family contact beyond notification of next of kin. Family contact is a crucial part of death reporting, it can be beneficial in providing death investigation personnel with important key facts beneficial in determining cause of death, which may remain unknown otherwise.

9.2. Theoretical implications

The sociology of professions offers a theoretical framework for understanding issues in reporting death for children in the United States. The results of this study can be tied to the *theory of professional dominance* (Freidson, 1994). This theory focuses on the organization of healthcare and explicitly describes how some healthcare professionals have monopolistic privilege, as well as authority over clients. Per this theory, the political dominance of one group in the healthcare field shapes the way that we understand modern medicine. As a result, healthcare practices are shaped around the availability of resource, public opinion, and market control (Freidson, 1994). This could extend to medical examiners and coroners as they operate in the public health sector.

Through the theory of professional dominance lens, the findings of this study offer three alternative theoretical perspectives. The first perspective relates to the issue of uncertainty in death classifications. It is widely believed that ‘unknown’ and ‘undetermined’ classifications of death weaken the professional legitimacy of death investigators (Timmermans, 2005). Within the theory of professional dominance, the pressure from institutions and the general public may explain why even while using uncertain language, death was still classified in many cases.

The second perspective relates to inconsistencies in death investigation procedures. Caseloads for medical examiners and coroner offices continue to increase as the population increases (Jentzen, 2010). With shortages of death investigator personnel and limited tax-based funds, it appears death investigation offices may be limiting certain procedures, such as autopsies, to those mandated by law. State laws outline which types of death require autopsies, but for all other deaths, which fall outside of the legal requirements, death investigators have discretion to choose when to have the procedure performed and when not to. This authority seems to work out well for some offices, as autopsies may slow the death reporting process down. Avoiding autopsies creates swift death reports, but the verdict is still out on the accuracy of such reports.

The third perspective relates to differences in organization characteristics. Freidson (1994) suggests that while healthcare professionals’ actions are ultimately influenced by the public and bureaucratic entities, certain professionals can maintain occupational dominance consolidated in a market shelter. If professionals remain in charge of death investigation, they maintain the prerogative to set work standards in their local jurisdiction. This might be the reason medical examiners are less likely to contact a third party for assistance. Like many political figures, medical examiners and coroners often feel a loss of control when setting the perimeters of their profession. The ability to report death without interference, may be a way to regain autonomy. This, however, is only possible for medical examiners, as coroners, being elected, are more directly accountable to the public (Neuilly, 2013).

In summation, medical examiners and coroners are the gatekeepers to mortality data. As children are extremely vulnerable to both health ailments and injury, this makes death investigators’ ability to curtail uncertainties and inaccuracies in all aspects of child death reporting crucial. The key issues to consider when evaluating differences between the two medico-legal systems should be dependent on (1) whether death investigators can report death according to their professional standards, (2) how these professional standards differ for each system. A better understanding of death reporting work practices will do much to benefit child and adolescent populations.

9.3. Policy implications

Due to the limited generalizability of our sample, our ability to discuss policy recommendation is hampered. However, given the evidence above, we have uncovered possible variations in child death report between our two study sites. Therefore, we offer support, with added level of depth, for previous studies’ recommendations in several areas.

First, uncertainty when describing the cause of death may result in misclassification. Therefore, we recommend a more vigorous and standardized training module for coroners and medical examiner. In a previous study of accuracy in cause of death in young children, Murray et al. (2013) found that proper cause of death identification was largely dependent on medical examiner training and experience. Murray et al. (2013) went onto explain that the accuracy of death classification relies considerably on the quality of the training data (deaths with gold standard cause known to meet clinical diagnostic criteria). In support of these recommendations we also acknowledge that extensive training off quality training resources for both coroner’s and medical examiners may help increase certainty and inherently increase accuracy when diagnosis cause of death.

Second, with respect to consistency, many additional examinations that were performed for some and not for others were specialty examinations that had to be requested by family members. In a similar study on parental consent and unexpected child death, Thayyil et al. (2009) found that many families are not notified of their rights or the benefits of additional examinations such as brain autopsies or biopsies. Thus Thayyil et al. (2009) recommend that the first step to attaining consistency is ensuring that family members be notified and have a discussion sufficiently ahead of time to ensure paperwork is completed and all arrangements are made. With specialty neurological examinations, time is very important because the autopsy needs to be carried out as soon as possible after death, preferably within 6 h, to get optimal results.

We acknowledge that it may be neither necessary nor financially feasible to perform the same examinations for every decedent. However, the option should remain open for families to promote both consistency and definitive pathological diagnosis. In addition, we recognize that such a discussion may not always be the job of the coroner or medical examiner. This is where organization structure becomes pertinent and medico-legal investigators, as primary points of contact, may need to communicate with both coroners/medical examiners and families to ensure that available options are known.

Third, another factor influencing consistency may be systemization. In efforts to promote consistency many studies have recommended a systemization of child fatality review teams. Currently most states have an appointed review team that encompasses knowledgeable and experienced people within the field of child death. However, each state differs depending on regulations, requirements, and experience. A systemized review team would make the teams themselves more standardized and promote widespread consistency among the numerous states and medico-legal systems.

Limitations. It is important to note that there were some limitations to our study. A primary limitation was our fixed number of cases, indeed, there was a set number of children's death reports (36) in the sample, which thus made it impossible for us to ensure that we had reached saturation. However, it is important to note that we did have cases falling in each of the manner of death categories across both sites, therefore we do believe that our sample was diverse and expansive.

A second limitation of the study involved missing data. During the time of data collection three cases were pending, and for six cases, the status of the final report was missing. Therefore, we recognize that while performing the analysis, specifically with regards to completeness, there is the possibility that the missing information was not available at the time of data collection but may have become available at a later date. We were not able to assess whether information changed after the time of data collection. Nevertheless, this does highlight an even bigger issue of the reliability of children's death reports if information is constantly being added and/or changed. Our study only focused on the general way that death is reported for children in the United States, but in the future researchers should seek to utilize longitudinal medico-legal data and investigate the errors that may arise during changes to cause of death or manner of death.

10. Conclusion

Our methods of prolonging life are inherently dependent on our understanding of death. Further, our understanding of death is shaped by our understanding of medico-legal practices and death reporting procedures. As such, we know that the results of death reporting are flawed, especially for populations such as children. These flaws often arise from a lack of uniformity between medico-legal practitioners, differences in establishing manner of death, the political role of coroners versus the professional role of medical examiners, as well as differences in organizational structure (Hanzlick, 2006; Hanzlick & Parrish, 1996; Jentzen, 2010; Myers & Farquhar, 1998; Neuilly, 2011; Combs et al., 1995; Sehdev & Hutchins, 2001). As a result, public health suffers as these flaws potentially damage the validity and reliability of mortality data, which ultimately threatens the effectiveness of child death prevention policies.

Through our qualitative analysis of a sample of children's deaths emanating from a medical examiner's and a coroner's offices in the United States, we infer a deeper understanding of how medico-legal reporting processes, as well as identified areas for improvement in terms of death investigation practices. We argue that there are various issues that surround the quality, organizational structure, completeness, and consistency of death reporting for children in three separate ways. First, the possibility of uncertainty when assessing cause of death; second, the variability of medico-legal organizational structures; and third, a lack of consistency regarding contact with family and types of post-mortem examinations performed. Future research should focus on addressing theoretical explanations underpinning these issues, specifically within child populations. Then and only then, can we begin to create more efficient and accurate ways of reporting death for children in the United States.

References

- Alvarez, A., & Bachman, R. (2016). *Violence: The enduring problem*. Sage Publications.
- Atrash, H. K., Alexander, S., & Berg, C. J. (1995). Maternal mortality in developed countries: Not just a concern of the past. *Obstetrics & Gynecology*, 86(4, Part 2), 700–705.
- Balis, T., & Postolache, T. T. (2008). Ethnic differences in adolescent suicide in the United States. *International Journal of Child Health and Human Development: IJCHD*, 1(3), 281.
- Becker, E. (2007). *The denial of death*. Simon and Schuster.
- Berman, A. L., Josselson, A. R., & Jobes, D. A. (1986). The impact of psychological autopsies on medical examiners' determination of manner of death. *Journal of Forensic Science*, 31(1), 177–189.
- Black, R. E., Morris, S. S., & Bryce, J. (2003). Where and why are 10 million children dying every year? *The Lancet*, 361(9376), 2226–2234.
- Black, R. E., Cousens, S., Johnson, H. L., Lawn, J. E., Rudan, I., Bassani, D. G., ... Eisele, T. (2010). Global, regional, and national causes of child mortality in 2008: A systematic analysis. *The Lancet*, 375(9730), 1969–1987.
- Breiding, M. J., & Wiersema, B. (2006). Variability of undetermined manner of death classification in the US. *Injury Prevention*, 12(suppl 2), ii49–ii54.
- Bryce, J., Boschi-Pinto, C., Shibuya, K., Black, R. E., & W.H.O. Child Health Epidemiology Reference Group (2005). WHO estimates of the causes of death in children. *The Lancet*, 365(9465), 1147–1152.
- Byard, R. W., & Krous, H. F. (2003). Sudden infant death syndrome: Overview and update. *Pediatric and Developmental Pathology*, 6(2), 112–127.
- Carpenter, B., Barnes, M., Naylor, C., Adkins, G., & White, B. (2006). Issues surrounding a reduction in the use of internal autopsy in the coronial system. *Journal of Law and Medicine*, 14(2), 199–208.
- Combs, D. L., Parrish, R. G., & Ing, R. (1995). *Death investigation in the United States and Canada*. US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Environmental Health, Division of Environmental Hazards and Health Effects, Surveillance, and Programs Branch.
- Crume, T. L., DiGiuseppi, C., Byers, T., Sirotiak, A. P., & Garrett, C. J. (2002). Underascertainment of child maltreatment fatalities by death certificates, 1990–1998. *Pediatrics*, 110(2), e18.

- D'Amico, M., Agozzino, E., Biagino, A., Simonetti, A., & Marinelli, P. (1999). Ill-defined and multiple causes on death certificates—A study of misclassification in mortality statistics. *European Journal of Epidemiology*, 15(2), 141–148.
- Davis, G. G. (1997). Mind your manners: part I: History of death certification and manner of death classification. *The American Journal of Forensic Medicine and Pathology*, 18(3), 219–223.
- Deaton, A., & Lubotsky, D. (2003). Mortality, inequality and race in American cities and states. *Social Science & Medicine*, 56(6), 1139–1153.
- Dolinak, D., Matshes, E., & Lew, E. O. (2005). *Forensic pathology: Principles and practice*. Academic Press.
- Drake, B., & Zuravin, S. (1998). Bias in child maltreatment reporting: Revisiting the myth of classlessness. *American Journal of Orthopsychiatry*, 68(2), 295.
- Ebrahimi, N. (1996). The effects of misclassification of the actual cause of death in competing risks analysis. *Statistics in Medicine*, 15(14), 1557–1566.
- Elo, I. T., & Preston, S. H. (1997). Racial and ethnic differences in mortality at older ages. *Racial and Ethnic Differences in the Health of Older Americans*, 10–42.
- Fairclough, N. (2001). Critical discourse analysis as a method in social scientific research. *Methods of Critical Discourse Analysis*, 5, 121–138.
- Fraser, J., Sidebotham, P., Frederick, J., Covington, T., & Mitchell, E. A. (2014). Learning from child death review in the USA, England, Australia, and New Zealand. *The Lancet*, 384(9946), 894–903.
- Goodin, J., & Hanzlick, R. (1997). Mind your manners: part II: General results from the national association of medical examiners manner of death questionnaire, 1995. *The American Journal of Forensic Medicine and Pathology*, 18(3), 224–227.
- Hanzlick, R., & Combs, D. (1998). Medical examiner and coroner systems: History and trends. *JAMA*, 279(11), 870–874.
- Hanzlick, R., & Parrish, R. G. (1996). The role of medical examiners and coroners in public health surveillance and epidemiologic research. *Annual Review of Public Health*, 17(1), 383–409.
- Hanzlick, R. (1997). Death registration: History, methods, and legal issues. *Journal of Forensic Science*, 42(2), 265–269.
- Hanzlick, R. (2006). Medical examiners, coroners, and public health: A review and update. *Archives of Pathology & Laboratory Medicine*, 130(9), 1274–1282.
- Herrett, E. L., Thomas, S. L., & Smeeth, L. (2011). Validity of diagnoses in the general practice research database. *British Journal of General Practice*, 61(588), 438–439.
- Hill, R. B., & Anderson, R. E. (1988). Is a valid quality assurance program possible without the autopsy? *Human Pathology*, 19(10), 1125–1126.
- Hill, M. E., & Rosenwaike, I. (2001). Social security administration's death master file: The completeness of death reporting at older ages. *The Social Security Bulletin*, 64, 45.
- Horon, I. L. (2005). Underreporting of maternal deaths on death certificates and the magnitude of the problem of maternal mortality. *American Journal of Public Health*, 95(3), 478–482.
- Hsieh, M.-L., & Neuilly, M.-A. (2016). Within and inter-Institutional differences between death certifiers on autopsy conclusions. *Journal of Interpersonal Violence*. <http://jiv.sagepub.com/cgi/reprint/0886260516647006v1.pdf?ijkey=ySmzVF4kzRkxIL&keytype=finite>.
- Jason, D. R., Preisser, J. S., & Lantz, P. E. (1997). A national survey of autopsy cost and workload. *Journal of Forensic Science*, 42(2), 270–275.
- Jentzen, J. M. (2010). *Death investigation in America: Coroners, medical examiners, and the pursuit of medical certainty*. Harvard University Press.
- Johnson, J. (1994). Coroners, corruption and the politics of death: Forensic pathology in the United States. *Legal Medicine in History*, 268–289.
- Kastenbaum, R. (Ed.). (2000). *The psychology of death*. Springer Publishing Company.
- Kircher, T., & Anderson, R. E. (1987). Cause of death: Proper completion of the death certificate. *JAMA*, 258(3), 349–352.
- Kung, H. C., Hanzlick, R., & Spitzer, J. F. (2001). Abstracting data from medical examiner/coroner reports: Concordance among abstractors and implications for data reporting. *Journal of Forensic Sciences*, 46(5), 1126–1131.
- Lahti, R. A., & Penttilä, A. (2001). The validity of death certificates: Routine validation of death certification and its effects on mortality statistics. *Forensic Science International*, 115(1), 15–32.
- Lauer, M. S., Blackstone, E. H., Young, J. B., & Topol, E. J. (1999). Cause of death in clinical research: Time for a reassessment? *Journal of the American College of Cardiology*, 34(3), 618–620.
- Liu, L., Johnson, H. L., Cousens, S., Perin, J., Scott, S., Lawn, J. E., & Mathers, C. (2012). Global, regional, and national causes of child mortality: An updated systematic analysis for 2010 with time trends since 2000. *The Lancet*, 379(9832), 2151–2161.
- Mathers, C. D., Ma Fat, D., Inoue, M., Rao, C., & Lopez, A. D. (2005). Counting the dead and what they died from: An assessment of the global status of cause of death data. *Bulletin of the World Health Organization*, 83(3), 171–177c.
- Miller, B. J., Paschall, C. B., III, & Svendsen, D. P. (2008). Mortality and medical comorbidity among patients with serious mental illness. *Focus*, 6(2), 239–245.
- Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *JAMA*, 291(10), 1238–1245.
- Moon, R. Y., Horne, R. S., & Hauck, F. R. (2007). Sudden infant death syndrome. *The Lancet*, 370(9598), 1578–1587.
- Murray, C. J., Abraham, J., Ali, M. K., Alvarado, M., Atkinson, C., Baddour, L. M., ... Bolliger, I. (2013). The state of US health, 1990–2010: burden of diseases, injuries, and risk factors. *JAMA*, 310(6), 591–606.
- Myers, K. A., & Farquhar, D. R. (1998). Improving the accuracy of death certification. *Canadian Medical Association Journal*, 158(10), 1317–1323.
- Neuilly, M. A. (2011). Impact of medico-legal practices on mortality statistics and their use in comparative research. *Victims and Offenders, A Journal of Evidence-Based Policies and Practices*, 6(3), 306–320.
- Neuilly, M. A. (2013). Putting the public back in public health: An argument for the articulation of fatality reviews and coroners' inquests. *Homicide Studies*, 17(4), 339–352.
- Oppewal, F., & Meyboom-De Jong, B. (2001). Family members' experiences of autopsy. *Family Practice*, 18(3), 304–308.
- Patton, G. C., Coffey, C., Sawyer, S. M., Viner, R. M., Haller, D. M., Bose, K., ... Mathers, C. D. (2009). Global patterns of mortality in young people: A systematic analysis of population health data. *The Lancet*, 374(9693), 881–892.
- Platt, S., Backett, S., & Kreitman, N. (1988). Social construction or causal ascription: Distinguishing suicide from undetermined deaths. *Social Psychiatry and Psychiatric Epidemiology*, 23(4), 217–221.
- Preston, S. H., Elo, I. T., Rosenwaike, I., & Hill, M. (1996). African-American mortality at older ages: Results of a matching study. *Demography*, 33(2), 193–209.
- Rao, C., Lopez, A. D., & Hemed, Y. (2006). Causes of death. *Disease and Mortality in Sub-Saharan Africa*, 2, 43–58.
- Ravakhah, K. (2006). Death certificates are not reliable: Revivification of the autopsy. *Southern Medical Journal*, 99(7), 728–734.
- Ring-Cassidy, E., & Gentles, I. J. (2002). *Women's health after abortion: The medical and psychological evidence*, Vol. 15. DeVeber Institute for Bioethics and Social Research.
- Rockett, I. R., Samora, J. B., & Coben, J. H. (2006). The black–white suicide paradox: Possible effects of misclassification. *Social Science & Medicine*, 63(8), 2165–2175.
- Rockett, I. R., Wang, S., Stack, S., De Leo, D., Frost, J. L., Ducatman, A. M., ... Kapusta, N. D. (2010). Race/ethnicity and potential suicide misclassification: Window on a minority suicide paradox? *BMC Psychiatry*, 10(1), 1.
- Schapira, K., Linsley, K. R., Linsley, A., Kelly, T. P., & Kay, D. W. K. (2001). Relationship of suicide rates to social factors and availability of lethal methods. *The British Journal of Psychiatry*, 178(5), 458–464.
- Schraeder, P. L., Delin, K., McClelland, R. L., & So, E. L. (2006). Coroner and medical examiner documentation of sudden unexplained deaths in epilepsy. *Epilepsy Research*, 68(2), 137–143.
- Sehdev, A. E. S., & Hutchins, G. M. (2001). Problems with proper completion and accuracy of the cause-of-death statement. *Archives of Internal Medicine*, 161(2), 277–284.
- Siebert, J. R. (2009). Increasing the efficiency of autopsy reporting. *Archives of Pathology & Laboratory Medicine*, 133(12), 1932–1937.
- Sinard, J. H., Powell, S. Z., & Karcher, D. S. (2014). Pathology training in informatics: Evolving to meet a growing need. *Archives of Pathology and Laboratory Medicine*, 138(4), 505–511.
- Smith, W. J. (2013). Culture of death: The assault on medical ethics in America. *Encounter Books*.
- Sohn, M. W., Arnold, N., Maynard, C., & Hynes, D. M. (2006). Accuracy and completeness of mortality data in the Department of Veterans Affairs. *Population Health Metrics*, 4(1), 1.
- Sorenson, S. B., & Haikang, S. (1997). Undetermined manner of death, a comparison with unintentional injury, suicide, and homicide death. *Evaluation Review*, 21(1), 43–58.
- Sorenson, S. B., Shen, H., & Kraus, J. F. (1997). Undetermined manner of death a comparison with unintentional injury, suicide, and homicide death. *Evaluation Review*,

- 21(1), 43–57.
- Sorlie, P. D., Rogot, E., & Johnson, N. J. (1992). Validity of demographic characteristics on the death certificate. *Epidemiology*, 3(2), 181–184.
- Stanistreet, D., Taylor, S., Jeffrey, V., & Gabbay, M. (2001). Accident or suicide? Predictors of coroners' decisions in suicide and accident verdicts. *Medicine, Science, and the Law*, 41(2), 111–115.
- Taylor, S. (1982). *Durkheim and the study of suicide*. London: Macmillan.
- Thayyil, S., Robertson, N. J., Scales, A., Weber, M. A., Jacques, T. S., Sebire, N. J., & Taylor, A. M. (2009). Prospective parental consent for autopsy research following sudden unexpected childhood deaths: A successful model. *Archives of Disease in Childhood*, 94(5), 354–358.
- Children's Defense Fund (US) (2015). *The state of America's children yearbook*. Children's Defense Fund.
- Timmermans, S. (2005). Death brokering: constructing culturally appropriate deaths. *Sociology of Health & Illness*, 27(7), 993–1013.
- US Department of Health and Human Services (Ed.). (2006). *Health, United States, 2005: With chartbook on trends in the health of Americans*. Claitor's Law Books and Publishing Division.
- Vane, D. W., & Shackford, S. R. (1995). Epidemiology of rural traumatic death in children: A population-based study. *Journal of Trauma and Acute Care Surgery*, 38(6), 867–870.
- Weinberg, M., Weedn, V. W., Weinberg, S., & Fowler, D. (2013). Characteristics of medical examiner/coroner offices accredited by the National Association of Medical Examiners. *Journal of Forensic Sciences*, 58(5), 1193–1199.
- World Health Organization (2008). *World malaria report 2008*. World Health Organization.
- World Health Organization (2010). *World health statistics 2010*. World Health Organization.
- Zellman, G. L. (1992). The impact of case characteristics on child abuse reporting decisions. *Child Abuse & Neglect*, 16(1), 57–74.