



H75 Correcting the Count: Improving Vital Statistics Data Regarding Deaths Related to Obesity

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After attending this presentation, attendees will be aware of the importance of including the term “obesity” on death certificates of natural deaths for accurate vital statistics. Inconsistencies in death certification of natural deaths with the comorbidity of obesity encountered at the Jefferson County Coroner/Medical Examiner Office (JCCMEO) will be used to illustrate the importance of considering Body Mass Index (BMI) when completing death certificates.

This presentation will impact the forensic science community by increasing awareness of including “obesity” in Part II of death certificates when appropriate, enabling coroners and medical examiners to help track the obesity epidemic in the United States. The attribution of death due to obesity can be used to track the effectiveness of obesity prevention measures and guide future health care initiatives.

A recent issue of the Journal of the American Medical Association highlighted the prevalence and impact of obesity in adults in the United States. No significant change in trends was shown since previous data published in 2005.¹ Obesity research has led to investments in preventative measures, advancements in clinical care, and development of programs to counteract obesity.² Although being obese is a well-documented risk factor in the development of several chronic diseases, obesity is rarely mentioned as a cause of death or as a contributing factor in death certification (Part I or Part II of the death certificate).³ BMI, defined as weight in kilograms divided by the square of the height in meters (kg/m^2), is considered a valid metric to track obesity among the population. The classification of “obese” according to the World Health Organization, is a BMI $\geq 30\text{kg}/\text{m}^2$.⁴ Though classified as “obese class III,” a BMI of $\geq 40\text{kg}/\text{m}^2$ is commonly referred to as “morbid obesity.” BMI could be utilized as an objective finding to support characterizing natural deaths due to obesity (in Part I of the death certificate). If an obesity-related illness was listed as the cause of death, then obesity could be a contributory factor in Part II. Either of these changes in practice among coroners and/or medical examiners across the country would more accurately depict the impact obesity has on death.

The JCCMEO Case Management Database was searched for cases with “obesity” listed in the cause of death or as a contributory factor to death. Thirty cases were identified among the 10,966 assumed cases from 1991 to 2015 (0.3%). Fourteen of the cases designated either obesity, morbid obesity, or cardiac complications of obesity in Part I of the death certificate, while 16 cases listed obesity or morbid obesity in Part II. A majority ($n = 25$) were natural deaths, but five cases were accidental. Of the accidental deaths, three were drug related, one case was due to complications from trauma sustained in motorcycle accident, and 1 case due to cardiac stress from a house fire. Overall the BMI ranged from $35\text{kg}/\text{m}^2$ - $86\text{kg}/\text{m}^2$ among 12 female and 18 male decedents aged 20 to 61 years old.

This prompted a search of the database to identify how often a postmortem exam was performed at JCCMEO on an obese or morbidly obese decedent. This review was limited to natural deaths due to conditions often encountered in the obese population from 2010 to 2015. Other exclusion criteria included decedents less than 18 years of age, deaths associated with drugs or alcohol, and decomposed or skeletonized decedents. The BMI was calculated for



Pathology/Biology - 2017

507 total cases. Of these, 33% ($n = 166$) were obese, and 9.9% ($n = 50$) would have been classified as morbidly obese.

These data suggest that obesity may cause or contribute to death more often than reflected solely by the death certificate. The data also suggest that deaths with similar BMI vary with regard to listing obesity on the death certificate. A greater awareness of the role that obesity may play in death will lead to a more accurate attribution of obesity as a cause or contribution to death. This will add to the utility of death certificates for public health and help to accurately depict the impact of obesity in a population.

Reference(s):

1. Flegal K.M., et al., Trends in Obesity Among Adults in the United States, 2005 to 2014. *JAMA*. 2016. 315(21): p. 2284-91.
 2. Zylke J.W., Bauchner H., The Unrelenting Challenge of Obesity. *JAMA*. 2016. 315(21): p. 2277-8.
 3. Duncan M., et al., Certification of obesity as a cause of death in England 1979-2006. *Eur J Public Health*. 2010. 20(6): p. 671-5.
 4. Who Expert Consultation, Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet*. 2004. 363 (9403): p. 157-63.
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