Proceedings of GREAT Day

Volume 15 Article 12

2024

A General Mortality Analysis in 19th and Early 20th Century Rochester, New York: “Exploring Sex-Based Differences in Childhood and Adolescence Mortality Rates Across Age Groups”

Chizoba Okorie
SUNY Geneseo

A General Mortality Analysis in 19th and Early 20th Century Rochester, New York: “Exploring Sex-Based Differences in Childhood and Adolescence Mortality Rates Across Age Groups”

Cover Page Footnote
sponsored by Kristi Krumrine, PhD

A General Mortality Analysis in 19th and Early 20th Century Rochester, New York: "Exploring Sex-Based Differences in Childhood and Adolescence Mortality Rates Across Age Groups"

Chizoba Okorie

sponsored by Kristi Krumrine, PhD

Abstract

This paper represents the initial phase of a research study that explores health and disease in 19th- and early 20th-century Rochester. The research focuses on the prevalence of historic diseases through the transcription and analysis of cemetery records for Mount Hope Cemetery. The purpose of this study is to compare mortality rates in childhood and adolescence across different age groups of males and females. The study investigates the average ages at death, as well as potential factors that may have contributed to mortality rates in these age groups. The study also seeks to identify the variety of factors (social, economic, behavioral, and environmental) that may have contributed to these diseases, as well as possible health disparities. Data from various sources, including vital statistics records, census data, and other health-related surveys, are used in the analysis. Overall, the main goal of this paper is to emphasize the importance of understanding the factors that contribute to childhood and adolescent mortality rates, as well as the need to address the underlying causes of these disparities.

"Child and adolescent mortality is [and has been] an everyday tragedy of enormous scale that rarely makes the headlines" ~ Max Roser

Childhood and adolescent mortality is a crucial measure of population health, reflecting the underlying factors that influence the health status of communities. These factors include economic development, living conditions, social well-being, illness rates, healthcare quality and access, public health practices, and environmental quality. Health historians, including Virginia Berridge and Dorothy Porter, have emphasized the need to consider population health in different time periods as an essential phenomenon, which will aid in better understanding past mortality rates (Scally & Womack, 2004). Porter has also highlighted the importance of considering the social, political, and economic factors influencing population health, including public health policies, medical technologies, and environmental changes (Scally & Womack, 2004). In the early years of Rochester, New York, the city proliferated, but poor living conditions, unsanitary environments, and disease outbreaks persisted. Rochester lacked essential public health infrastructure, including public sewers, waste disposal facilities, safe drinking water and food regulations, and medical knowledge, contributing to high mortality rates (McKelvey, 1956). Child and adolescent mortality were particularly prevalent during the 19th and 20th centuries, reflecting the city's poor health and living conditions, as complaints showcased that "the whole central portion of the city is filled with a stench" (McKelvey, 1956, p.10). Due to the unfavorable living conditions in the Rochester area, various factors caused many deaths in the community, with infectious diseases being the leading cause.

Notably, examining sex-based differences in mortality rates, it remains a consistent observation that women generally live longer than men. Despite research consistently showing fluctuations in the U.S. sex gap in mortality over time, much of the literature has overlooked essential covariates. Limited research has explored whether variations in mortality between sexes arise from distinct distributions of illnesses. Both sexes have witnessed significant, albeit uneven, increases in life expectancy at birth over the past century (Rogers et al., 2010). Between 1900 and 2005, male U.S. life expectancy rose from 46.3 to 75.2 years, and female life expectancy rose from 48.3 to 80.4 years (Rogers et al., 2010). From 1920, when the sex gap in life expectancy at birth was just 1.0 year, the sex gap slowly increased to a peak of 7.8 years in 1975 and again in 1979 (Rogers et al., 2010). Thus, the proliferation of articles published in the mid-1980s—on the heels of this peak—should come as no surprise (Rogers et al., 2010). Since 1979, the U.S. sex gap in life expectancy at birth has steadily declined to 5.2 years in 2005, the lowest level in nearly 60 years (Rogers et al., 2010). Therefore, persistence of the sex gap in mortality, even at the reduced level, along with the possibility of further narrowing and additional improvements in mortality for both genders, justifies the need for further research.

This paper aims to investigate the sex-based differences in childhood and adolescent mortality rates across different age groups during the 19th and early 20th centuries in Rochester, New York. Understanding the distribution of mortality across age groups can provide insight into infant mortality's underlying causes and determinants. For example, factors contributing to early infant mortality, such as inadequate prenatal care, poor maternal nutrition, and lack of access to quality obstetric care, may differ

from those affecting later infant mortality, such as infectious diseases and accidents. The importance of this research is underscored by the work of Ram and Ram (2014), who highlight the significance of mortality among childhood and adolescence rates as a sensitive measure of overall population health. Their study notes that mortality rates can help to identify the underlying factors that contribute to poor health outcomes, including social inequalities, poor living conditions, and inadequate healthcare access; because, as McKelvey (1956) states, with more people surviving childhood and youth, the percentage of deaths caused by chronic diseases like heart failure, cancer, and arthritis has increased. Therefore, knowledge about the mortality rates in childhood and adolescent years, the causes of these diseases, and improved public health knowledge are essential for the aging population.

Research Objectives

- To investigate historical mortality rates among males and females during childhood and adolescence across various age groups in Rochester, NY, using data from cemetery records at Mount Hope Cemetery.
- To compare the average ages at death between males and females in childhood and adolescence.
- To identify potential factors that may have contributed to mortality rates in childhood and adolescence.
- To provide insights into the mortality rates of males and females during childhood and adolescence and to identify factors contributing to these rates.

By achieving these research objectives, the study can provide valuable insights into the historical mortality rates of children and adolescents in Rochester, NY. In addition, it can contribute valuable insights to shape public health policies and interventions with the goal of decreasing mortality rates and enhancing the health outcomes especially for children and adolescents.

Methodology

The present study utilized a rigorous and systematic methodology to obtain and analyze data on historical mortality rates among males and females during childhood and adolescence in Rochester, NY. The study relied on primary source materials, specifically death records from the highly regarded Mount Hope Cemetery, sourced from the University of Rochester Rare Books, Special Collections, and Preservation (RBSCP) library. The use of primary source materials is a critical aspect of conducting historical research, as it allows for the examination of data contemporaneously with the time period being studied, thus increasing the reliability and accuracy of the findings.

The death records were transcribed and carefully examined to gather information on each individual, including their name, date of internment, age, cause of death, and place of residence. The study period was limited to 1835 and 1935 in order to focus

exclusively on research objectives. The selected time frame encompasses significant development and growth in Rochester, NY. It thus provides a comprehensive overview of mortality rates during a critical period of the city's history (Centers for Disease Control and Prevention [CDC], 2023).

The dataset included 15,719 individuals, with 3,070 identified as children and adolescents. Records were filtered to include individuals that met the specified age range criteria. To enhance the clarity of this research paper, I created tables and charts using the data from Google Sheets, a widely used and reliable tool for data analysis. Findings were obtained by thoroughly examining the population data, including calculating mortality rates and identifying trends and patterns across age groups.

Results

This section presents key findings from the analysis, focusing on the differences in mortality rates between males and females and the factors that may have contributed to these differences. It also discusses the potential implications of these findings for public health policies and interventions aimed at reducing mortality rates and improving the health outcomes of children and adolescents.

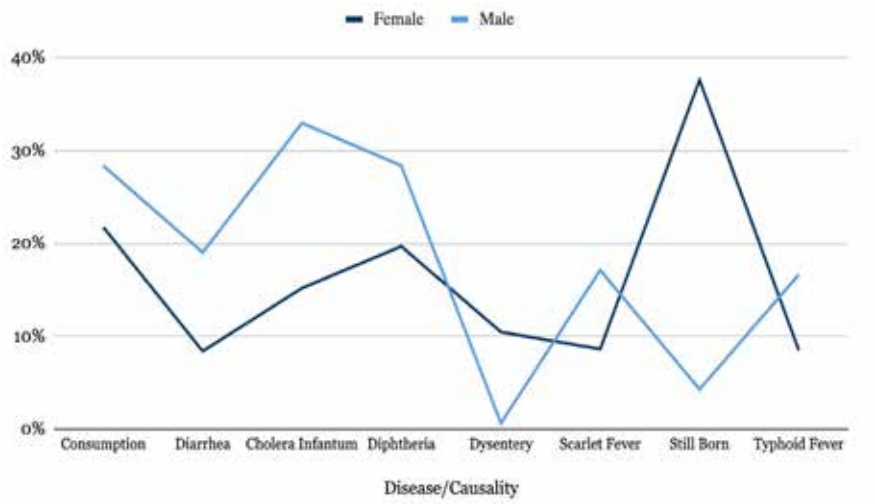

Figure 1: The mortality rate and causes of death in children and adolescents by gender from 1835–1899 (in %)

Figure 1 highlights the mortality rate and causes of death in children and adolescents for the years 1835–1899. The y-axis shows the mortality rates in percentage, while the x-axis shows the cause of death. Upon analyzing the graph, it is evident that there is a considerable disparity by sex in mortality rates.

Consumption: Figure 1 showcases that the mortality rate from consumption for females is 22% and 28% for males.

Diarrhea: Figure 1 showcases that the mortality rate from diarrhea for females is 8% and 19% for males.

Cholera Infantum: Figure 1 showcases that the mortality rate from cholera infantum for females is 15% and 33% for males.

Diphtheria: Figure 1 showcases that the mortality rate from diphtheria for females is 20% and 28% for males.

Dysentery: Figure 1 showcases that the mortality rate from dysentery for females is 10% and 1% for males.

Scarlet Fever: Figure 1 showcases that the mortality rate from scarlet feverfor females is 9% and 17% for males.

Still Born: Figure 1 showcases that the mortality rate from stillbirth for females is 38% and 4% for males.

Typhoid Fever: Figure 1 showcases that the mortality rate from typhoid fever for females is 8% and 17% for males.

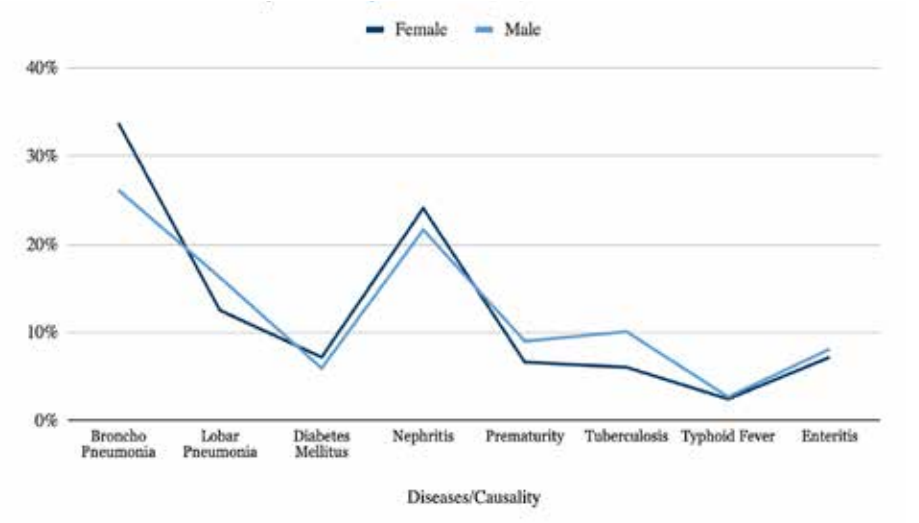

Figure 2: The mortality rate and causes of death in children and adolescents by gender from 1900–1935 (in %)

The graph chart Figure 2 highlights the mortality rate and causes of death in children and adolescents from 1900–1935. The y-axis shows the mortality rates in percentage, while the x-axis shows the cause of death. Upon analyzing the graph, it is evident that there has been a steady, equal rate of mortality between males and females, compared to Figure 1. A shift in the causes of death in 1835–1899 can also be seen in this graph.

Bronchopneumonia: Figure 2 showcases that the mortality rate from bronchopneumonia for females is 34% and 26% for males.

Lobar Pneumonia: Figure 2 showcases that the mortality rate from lobar pneumonia for females is 13% and 16% for males.

Diabetes Mellitus: Figure 2 showcases that the mortality rate from diabetes mellitus for females is 7% and 6% for males.

Nephritis: Figure 2 shows that the mortality rate from nephritis for females is 24% and 22% for males.

Prematurity: Figure 2 showcases that the mortality rate from prematurity for females is 7% and 9% for males.

Tuberculosis (TB): Formerly known as consumption in the 19th century. Figure 2 showcases that the mortality rate from tuberculosis for females is 6% and 10% for males.

Typhoid Fever: Figure 2 showcases that the mortality rate from typhoid fever for females is 2% and 3% for males.

Enteritis: Figure 2 showcases that the mortality rate from enteritis for females is 7% and 8% for males.

Diseases/Causality	**0–5 Years**		**6–10 Years**		**11–15 Years**		**16–20 Years**	
Total n of females/ males	**F (n=983)**	**M (n=855)**	**F (n=204)**	**M (n=218)**	**F (n=130)**	**M (n=109)**	**F (n=263)**	**M (n=199)**
Cholera infantum	9%	12%	2%	16%	16%	15%	0%	1%
Consumption (Tuberculosis)	10%	9%	7%	**34%**	**34%**	28%	**72%**	**47%**
Diphtheria/Croup	**21%**	22%	19%	28%	28%	**30%**	3%	1%
Diarrhea	11%	11%	**23%**	0%	0%	0%	0%	0%
Dysentery	10%	12%	2%	4%	4%	9%	3%	3%
Nephritis	1%	2%	5%	0%	0%	0%	0%	0%
Scarlet Fever	19%	**23%**	22%	12%	12%	6%	3%	9%
Typhoid Fever	3%	2%	11%	3%	3%	11%	18%	34%
Still Born	7%	0%	0%	0%	0%	0%	0%	0%
Bronch Pneumonia/ Bronchitis	6%	4%	5%	3%	3%	2%	2%	4%
Enteritis	2%	3%	0%	0%	0%	0%	0%	0%
Lobar pneumonia	2%	1%	4%	0%	0%	0%	0%	0%

Table 1: The mortality rate and causes of death among males and females across four age groups (in %)

An analysis of mortality patterns in children and adolescents reveals that numerous causes of death exist within this population. However, the presented data in Table 1 emphasizes that diseases and other causal factors are the most dominant contributors

to mortality during this time. Meanwhile, Table 1 illustrates age-stratified mortality rates across different causes of death, which reveal that boys experience a higher mortality rate than girls across most age groups and causes of death. This finding is consistent with prior research and may reflect a complex interplay between biological and social factors.

The figures in bold within Table 1 denote the highest rates of mortality observed for the top causal diseases. These findings underscore the critical need to prioritize targeted interventions to prevent as well as manage the leading causes of death in children and adolescents.

Discussion

This study found that the leading cause of death in 1835–1899 was stillbirth, with a significant disparity between males and females. This major finding was fascinating, and a surprising factor was that stillborn baby girls are more likely to be named than baby boys, and stillborn girl infants were more likely to have their sex recorded than boy infants. According to Lin et al. (2007), these findings may represent the better capability of female fetuses to survive beyond the first half of pregnancy in the presence of a given insult, as reflected by the higher rate of first and early second-trimester abortions among male fetuses. However, this is only an assumption, as it was not evaluated in the current study.

Additionally, the study suggests that gender-related differences are linked to environmental and obstetrical risk factors associated with growth restriction. However, it's important to note that the correlation between fetal growth restriction and gender is not universally accepted. Concerning a case of fetal growth restriction, i.e. placental abruption, this complication has been shown to predominantly affect males. In a study of sex differences in placental dysfunction, researchers Ghidine and Salafia (2005) have shown that lesions of chronic inflammation were significantly more evident in male fetuses than in females; this may be manifested in higher rates of placental abruption, as we observed. Also, in cases of placental abruption, stillbirth is more frequent in male fetuses than in females.

Furthermore, diseases such as tuberculosis, cholera, diphtheria, scarlet fever, and diarrhea were present, with tuberculosis being the most prevalent. Notably, diseases that occurred in the 19th century were water-borne diseases that were highly infectious. To preface, waterborne illnesses are primarily caused by swallowing contaminated recreational or drinking water. Many waterborne pathogens can also be acquired by consuming contaminated food or beverages, from contact with animals or their environment, through person-to-person spread, or by breathing in contaminated water droplets (Haines, 2023). As pediatric organizations were established in America in the late 19th and early 20th centuries, from 1835 to 1899, infectious diseases were the primary causes of death among children and adolescents, and medical science had not yet advanced enough to address them (Shulman, 2004). Significant fluctuations

occurred; for example, during the first three decades of the 19th century, the severity of infectious disease increased. Scarlet fever, specifically, was less than observed previously, but then around 1830 increased dramatically. By 1840, scarlet fever had become the leading cause of infectious disease-related deaths among children in the U.S., Great Britain, and Europe.

This study also found that between 1900 and 1935, the mortality rate of diseases such as pneumonia and diabetes increased exponentially. Pneumonia and influenza, tuberculosis, and enteritis with diarrhea were the leading causes of death in the United States, and children under 5 accounted for 40 percent of all deaths from these infections. In the 20th century, childhood and adolescent mortality rates lowered, and infectious diseases slowly declined (Field & Behrman, 2023). This decrease in mortality was due to advancements in public health, living standards, medical science, technology, and clinical practice (McKelvey, 1956). This study further concurs with the argument put forth by Field and Behrman (2023) that during the 19th and 20th centuries, boys had a higher mortality rate than girls across most age groups and for most causes of death.

An early 1928 American study entitled "Sex Differences in the Incidence of Certain Diseases at Different Ages" provides clear evidence of changes in the male-female patterning of illness during early childhood and adolescence (Sweeting, 1995). In children younger than ten years, the incidence of infectious diseases was higher among males than females, reversing to excess among females after that, "an indication which is not so generally observed and regarding which not a great deal of data has been published." A similar picture is painted regarding sex differences in the incidence of respiratory, nervous, digestive, and circulatory disease, where "in general, young boys were affected to a greater extent than young girls...but in adolescence, precisely the opposite is true" (Sweeting, 1995, p. 78).

This study also found that children between 0–5 years suffered the most deaths. In this age group, diphtheria caused more deaths among females, while scarlet fever caused more deaths among males. Among children between the ages of 6–10 years, tuberculosis caused the most deaths, with an equal rate for males and females. Among adolescents, females dominated the deaths caused by tuberculosis in the age groups of 11–15 years and 16–20 years. Notably, there is quite a disparity of deaths in the 19th century compared to the 20th century, where we see an even distribution of deaths between males and females across all age groups. Scholars have identified that this is because, during the 19th century, people were more susceptible to infectious diseases in the U.S. due to the lack of proper public health (McKelvey, 1956).

Considering the deaths from all categories and for all the age groups, it is seen that the absolute differences between the mortality rates in the males and females are most significant for those under 1 year old, reaching a minimum for the 5 to 14 age group, and increases after that age bracket (Ciocco, 1940). There are two age periods: infancy and late adulthood/old age, in which the males exhibit markedly higher mortality

than the females. Higher male mortality during infancy is due to what might be regarded as the extension into post-natal life of the factors responsible for the high masculinity of stillbirth (Ciocco, 1940).

Also, these scholars noted that various factors, such as social, economic, behavioral, and environmental factors, may have contributed to these diseases and possible health disparities. Some of these include:

- **Poverty and Income:** The relative poverty rate is the proportion of the population with low income relative to the median income. Historically, the U.S. poverty rate declined from very high levels in the 1940s to low levels in the late 1970s; the rate (based on total household income) fell from 40.5 percent in 1949 to 22.1 percent in 1959, 14.4 percent in 1969, and 13.1 percent in 1979. The gap between the levels of income inequality in the United States and other affluent democracies began to widen in the 1970s–1980s, possibly because of the adoption of more conservative economic policies in the United States and a retrenchment in public assistance programs (Woolf & Aron, 2013). Regarding relative poverty, the United States also has the highest child poverty rate. McKelvey (1956) highlights how poverty is a significant factor contributing to mortality rates in Rochester, among many others. One participant in McKelvey's study who witnessed the 1852 cholera-epidemic reports:

  > The house [of the first victim the board reported] was an old rookery without a cellar and presented inside the usual appearances of the residences of the poorer classes of laborers with the usual smell—but nothing very remarkable—the father still lying sick in a small ill-ventilated room adjoining the kitchen…and almost adjoining the house, a small pen containing two small pigs… In front and near the door was an opening into the main sewer into which the slop was thrown—but the water was running clear with a free current. (p. 8)

  It was seen that majorly poorer families suffered during disease outbreaks. The trend first became noticeable in the 1980s, a time of economic transformation in the United States, and the effect on child poverty rates was dramatic. Within the mid-1980s, child poverty increased by almost one-third in the United States. Since then, the country has consistently had the highest relative child poverty rates compared to other high-income countries.
- **Ethnicity and Culture:** Racial-ethnic and cultural health disparities take various forms in many countries. According to Woolf and Aron (2013), these health disparities often mirror significant differences in income, wealth, education, occupation, and neighborhood conditions among people of different races and ethnicities, differences that reflect a

historical legacy of discrimination. In the United States, racial and ethnic groups that have historically experienced discrimination suffer ill health effects from these experiences. The health effects may result from material deprivation, other conditions that directly damage health, and physiologic mechanisms involved in reactions to stress. Such stress can result from overtly discriminatory experiences, and a pervasive vigilance about whether harmful incidents will occur to themselves, or their families has been linked with smoking and hypertension (Woolf & Aron, 2013). In addition, a relative difference in social standing or a sense of social exclusion may induce stress and influence one's sense of self-worth or control, influencing subsequent economic success, health-related behaviors, and health outcomes. Specifically, this happens a lot with immigration, as McKelvey (1956) highlighted, that during the smallpox epidemic in 1884–1885, "the overcrowding of poor immigrants in dilapidated and unsanitary blocks could be checked only when a contagion or fire hazard appeared." (p. 13). Thus, this disregard for sanitary lifestyles among immigrants compared to citizens started the trajectory of the huge gap in health disparities that permeates racial and ethnic groups in the United States.

- **Epigenetic effects:** Social factors—or their consequences in social and physical environments—may also influence health by interacting with a person's genotype in ways that can trigger or suppress the phenotypic expression of deleterious (or favorable) genes that may be related to obesity, heart and lung disease, diabetes, and cancer (Woolf & Aron, 2013). For example, a deleterious gene in one's DNA may not be harmful without specific triggers that "turn on" gene expression and cause cancers to develop. These modifications in gene expression, which are thought to occur through molecular processes (such as histone modification and DNA methylation), can be inherited and affect the health of offspring. *Epigenetics* refers to the transfer of gene expression patterns from generation to generation that does not rely explicitly on differences in the DNA code (Cappa et al., 2011). The literature thus far suggests that prospective, adequately powered studies are warranted to discover the role that epigenetics plays in contributing to the currently intractable racial disparities in morbidity and mortality in the United States. In Rochester's history, there have been instances where environmental exposures have had significant health consequences. While McKelvey's (1956) article did not directly mention epigenetic effects, it is crucial to consider the potential impact of environmental factors and social determinants of health on gene expression, mutations, and long-term health outcomes.
- **Poor geographical location (lack of sewage care, clean water, and healthy food):** By definition, environmental factors affect large groups that share common living or working spaces. Thus, they are key candidates as explanatory factors for health differences across geographic areas, such as

countries. Indeed, a major motivation for the research on environmental determinants of health has been the repeated observation that many health outcomes are spatially patterned (Woolf & Aron, 2013). These patterns are present across countries and regions, such as urban neighborhoods, within and at smaller scales. For example, during the 19th century, Rochester experienced a period of rapid industrialization that led to waste discharge into local waterways, resulting in pollution and poor water quality. The lack of proper sewage systems also contributed to the spread of waterborne diseases like typhoid fever. In addition, access to healthy food has been a persistent issue in Rochester, particularly in low-income neighborhoods where residents may need access to grocery stores or fresh produce. This can lead to higher rates of diet-related diseases like diabetes and obesity.

- **Household competition:** Household composition is strongly related to income and education and can influence social factors, which in turn, influences health. For example, children in low-income single-parent households experience higher poverty rates, food insecurity, unstable housing, and other adverse living conditions. Poverty strains families and creates a greater risk of single-parent households (Woolf & Aron, 2013). McKelvey (1956) provides historical context by highlighting public health concerns during the 1972 smallpox epidemic in Rochester. The epidemic raised questions about the safety of milk brought into the city on hot days and led to calls for the inspection of slaughterhouses. Additionally, the lack of a public bathhouse and urinal in the city center was deplored, demonstrating the importance of sanitation and hygiene for public health. The board even ordered the demolition of a building that had become a public nuisance, further highlighting the role of the built environment in promoting public health.

Possible Limitations to Research

One potential limitation for a study examining public health outcomes in Rochester, New York, during the 19th and early 20th century is the reliability of vital statistics data. As noted in McKelvey's (1956) article, the collection of vital statistics in urban centers was only reliable sometimes, with instances where doctors neglected to register births and ministers refused to record marriages. This can result in incomplete or inaccurate data, which may compromise the validity and generalizability of research findings. Furthermore, the lack of reliable data on infants can make the analysis more challenging, given the high infant mortality rates in Rochester during the period under study.

Another possible limitation is the omission of gender-specific data, which can have significant implications for research on public health outcomes in Rochester during the late 19th century. At the time, societal norms may have influenced the likelihood of female infants being recorded more often than male infants. For instance, birth attendants, who were often female, may have been more likely to record the gender of

female infants due to cultural and social norms. This could bias the data and limit the ability to accurately analyze and interpret public health outcomes, particularly those related to infant mortality rates.

Furthermore, the lack of gender-specific data may have limited the ability to analyze and interpret other public health outcomes with gender-specific patterns. Certain diseases or health conditions may have affected males and females differently and understanding these differences could have important implications for public health policy and intervention design. As such, it is crucial to consider potential limitations, such as the lack of reliable data and omission of gender-specific data, when interpreting research findings on public health outcomes in Rochester during the late 19th century.

Therefore, researchers should exercise caution when drawing conclusions based on incomplete or biased data and consider other factors that may have influenced public health outcomes, such as environmental or social factors. By accounting for these limitations, researchers can ensure that their conclusions are based on the best available evidence and that their public health policy and intervention design recommendations are appropriately targeted and effective. Overall, recognizing the potential limitations of the data can help ensure that research findings are interpreted and applied appropriately to improve public health outcomes.

Conclusions

Childhood and adolescent mortality rates serve as a crucial measure of population health, reflecting the underlying factors that shape the health status of communities. This study examines mortality in Rochester, New York, during the 19th and early 20th centuries. It underscores the impact of poor living conditions, unsanitary environments, and disease outbreaks on high mortality rates, particularly among children and adolescents. Analyzing the distribution of mortality across different age groups provides an in-depth understanding of the determinants of infant mortality, including factors such as inadequate prenatal care, poor maternal nutrition, and limited access to quality obstetric care. This current research aims to investigate sex-based differences in childhood and adolescent mortality rates across different age groups during this period, contributing to improved public health policies and interventions to reduce mortality rates and improve overall population health.

Given the increasing aging population, knowledge of childhood and adolescent mortality rates and their underlying causes of death has become increasingly important. These findings underscore the need for more comprehensive public health practices, especially those aimed at reducing social inequalities and improving living conditions and access to healthcare services. It is important to note Carr's view that "A society which has lost belief in its capacity to progress in the future will quickly cease to concern itself with its progress in the past" (Scally & Womack, 2004, p.752). The significance of historical research becomes apparent in the context of child and adolescent mortality, which stands as a pivotal concern within the field of public health,

necessitating immediate attention and comprehensive interventions. By examining the historical trajectory of child and adolescent mortality rates, researchers can gain valuable insight into the underlying factors, trends, and social determinants that have shaped these outcomes. This historical perspective illuminates the issue's roots and informs contemporary efforts to address and mitigate child and adolescent mortality. Therefore, the history of public health can help explore the interplay between fact and historical interpretation—which in turn can help professionals analyze current beliefs and challenge those that are no longer "relevant."

References

Cappa, C., Wardlaw, T., & Morgan, R. (2011). Disparities by sex in early childhood and adolescence. *The Lancet 378*(9797), 1122–1123. (Merriam-Webster Online Dictionary) https://doi.org/10.1016/s0140-6736(11)61303-2

Centers for Disease Control and Prevention. (2023). *Vital statistics of the US 1890-1938.* (Merriam-Webster Online Dictionary) https://www.cdc.gov/nchs/products/vsus/vsus_1890_1938.htm

Ciocco, A. (1940). Sex differences in morbidity and mortality (concluded). *The Quarterly Review of Biology 15*(2), 192–210. (Merriam-Webster Online Dictionary) https://doi.org/10.1086/394606

Field, M. J, & Behrman, R. E. (Eds.). (2003). *When children die: Improving palliative and end-of-life care for children and their families.* National Academies Press (US). (Merriam-Webster Online Dictionary) https://doi.org/10.17226/10390

Ghidini, A., & Salafia, C. (2005). Gender differences of placental dysfunction in Severe Prematurity. *BJOG 112*(2): 140–144. (Merriam-Webster Online Dictionary) https://doi.org/10.1111/j.1471-0528.2004.00308.x

Haines, M. R. (2023). The urban mortality transition in the United States, 1800-1940. *Annales de Demographie Historique, 101*(1), 33–64.

Lin, C. M., Chen, C. W., Chen, P. T., Lu, T. H., & Li, C. Y. (2007). Risks and causes of mortality among low-birthweight infants in childhood and adolescence. *Pediatric and Perinatal Epidemiology, 21*(5), 465–472. (Merriam-Webster Online Dictionary) https://doi.org/10.1111/j.1365-3016.2007.00853.x

McKelvey, B. (1956). The history of public health in Rochester, New York. *Rochester History, 18*(3), 1–28.

Ram, B., & Ram, S. (2014). Mortality rates. In A. C. Michalos (ed.), *Encyclopedia of quality of life and well-being research* (pp. 4142–4144). Springer. (Merriam-Webster Online Dictionary) https://doi.org/10.1007/978-94-007-0753-5_1851

Rogers, R. G., Everett, B. G., Saint Onge, J. M., & Krueger, P. M. (2010). Social, behavioral, and biological factors, and sex differences in mortality. *Demography, 47*(3), 555–578. (Merriam-Webster Online Dictionary) https://doi.org/10.1353/dem.0.0119

Scally, G., & Womack, J. (2004). The importance of the past in public health. *Journal of Epidemiology & Community Health, 58*(9), 751–755. (Merriam-Webster Online Dictionary) https://doi.org/10.1136/jech.2003.014340.

Shulman, S. T. (2004). The history of pediatric infectious diseases. *Pediatric Research, 55*(1), 163–176. (Merriam-Webster Online Dictionary) https://doi.org/10.1203/01.pdr.0000101756.93542.09

Sweeting, H. (1995). Reversals of fortune? Sex differences in health in childhood and adolescence. *Social Science & Medicine, 40*(1), 77–90. (Merriam-Webster Online Dictionary) https://doi.org/10.1016/0277-9536(94)e0059-2.

Woolf, S. H., & Aron, L. Y. (2013). *US health in international perspective: Shorter lives, poorer health.* National Academies Press. (Merriam-Webster Online Dictionary) https://doi.org/10.17226/13497.

Appendix

Bronchopneumonia. Pneumonia involving many relatively small areas of lung tissue. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/bronchopneumonia

Cholera Infantum. An acute non-contagious intestinal disturbance of infants formerly common in congested areas of high humidity and temperature, but now rare. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/cholerainfantum

Consumption. Now commonly known as tuberculosis (TB) is a contagious and potentially life-threatening disease transmitted through the air. While it can affect any body part (such as the brain, the kidneys, or the spine), TB usually affects the lungs. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/tuberculosis

Diarrhea. A disease characterized by loose, watery stools three or more times a day. Diarrhea may be acute, persistent, or chronic. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/diarrhea

Diabetes Mellitus. A variable disorder of carbohydrate metabolism caused by a combination of hereditary and environmental factors and usually characterized by inadequate secretion or utilization of insulin, excessive urine production, excessive amounts of sugar in the blood and urine, and thirst, hunger, and weight loss. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/diabetesmellitus

Diphtheria. An acute febrile contagious disease typically marked by the formation of a false membrane, especially in the throat, and caused by a gram-positive bacterium (Corynebacterium diphtheriae) that produces a toxin causing inflammation of the heart and nervous system. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/diphtheria

Dysentery. A disease characterized by severe diarrhea with the passage of mucus and blood and usually caused by infection. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/dysentery

Enteritis. Inflammation of the intestines and especially of the human ileum. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/enteritis

Lobar pneumonia. Acute pneumonia involving one or more lobes of the lung characterized by sudden onset, chill, fever, difficulty in breathing, cough, and blood-stained sputum, marked by consolidation, and normally followed by resolution and return to normal of the lung tissue. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/lobarpnuemonia

Nephritis. Acute or chronic inflammation of the kidney caused by infection, degenerative process, or vascular disease. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/nephritis

Prematurity. Born after a gestation period of less than 37 weeks. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/prematurity

Scarlet Fever. An acute contagious febrile disease caused by hemolytic Group A streptococci and characterized by inflammation of the nose, throat, and mouth, generalized toxemia, and a red rash. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/scarletfever

Still Born. Dead at birth. Stillbirth is a common obstetric complication, constituting nearly half of all perinatal mortalities, and is ten times more common than sudden infant death syndrome. (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/stillborn

Typhoid Fever. A communicable disease marked especially by fever, diarrhea, prostration, headache, and intestinal inflammation and caused by a bacterium (Salmonella typhi). (Merriam-Webster Online Dictionary) https://www.merriam-webster.com/dictionary/typhoidfever