

ORIGINAL ARTICLE


Investigating the Social Representations of Contagious Diseases in the 19th and 20th Centuries: A Corpus-based Analysis of Cholera, Measles, and Plague in American Historical Texts

Abstract

The current study employed corpus linguistics techniques in order to shed light on the representation of “cholera”, “measles”, and “plague” over 19th and 20th centuries in American society. To this end and also to compare the representation of the mentioned contagious diseases over time, the current study explored how these target words (i.e., cholera, measles and plague) in texts of 19th and 20th centuries collocate with other words. To study the collocation patterns of contagious diseases over time, corpus of historical American English (COHA) was used. The results indicated that language change represented the events taken place in the society. Moreover, as expected, it was revealed that the texts on different diseases (i.e., cholera, measles, and plague) carried over a negative prosody. Regarding the difference between the 19th and 20th centuries, although the frequency of the target words in the 19th and 20th centuries were not equal, the collocational patterns of these contagious diseases over 19th and 20th centuries were almost similar.

Key words: Collocation patterns, Representation of contagious diseases, Cholera, Measles, Plague, Corpus of historical American English (COHA)

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Introduction

In the past century, the development of health programs (i.e., vaccinate programs) has led to a sharp decline of contagious diseases in the United States^{1,2}. However, the dramatic decline in the incidence of such diseases has led to the underestimation of the negative consequences of such diseases^{3,4}. As stated by the same researchers, this can lead to greater concern for costs and consequences of health programs which in turn will lead to vaccine refusal and greater risk of vaccine-preventable diseases such as cholera and measles. However, according to Van Panhuis *et al.* (2013), the interpretation of long-term disease patterns provided new insight into disease-transmission dynamics. Therefore, in line with the scholars worked on the cases such as measles and pertussis in the United Kingdom⁵ and dengue in Thailand⁶, we feel that a detailed analysis of the long-term data can inform people of the value of immunization against diseases.

Besides, as sociolinguistics focuses on the relationship between language and society⁷, investigating the discourse of a society over time can give an insight into the changes that has taken place in the people's points of views regarding the diseases. In recent years, corpus analysis is one of the most prominent data collection methods used to study issues related to linguistics in general and sociolinguistics in particular⁸. Corpus linguistics is defined as "the study of language based on examples of real life language use"⁹. One of the widely used techniques carried out on corpus data is collocation analysis. Collocation as defined by Firth (1961) is a way of demonstrating frequent relationships between words. "If two words collocate, then they have a tendency to occur near or next to each other in naturally occurring language use"¹⁰. Thus, as stated by Baker (2010), collocations demonstrate relationships, but the researchers need to identify how these relationships are manifested in language and texts.

Literature Review

A glance at the history of cholera, measles and plague

In a study conducted by Morris and Black (1985), it was explained that "cholera is not stranger to the united states". Cases were identified with cholera since the first outbreak of the disease in 1817. 150,000 Americans died of cholera during the second worldwide pandemic of cholera in 1832 and 1849. In 1866 also 50,000 died during the fourth worldwide pandemic. Besides, during the sixth pandemic in 1911, cases were reported in two different areas (i.e., New York and Massachusetts). According to Morris and Black (1985), within the last decades of the 20th century cholera was endemic

- 1- Hinman et al., 2011: 49-57.
- 2- Roush et al., 2007: 2155-63.
- 3- Larson et al., 2011: 526-35.
- 4- Omer et al, 2009: 1981-8.
- 5- Grenfell et al, 2001: 716.
- 6- Cummings et al., 2004: 344.
- 7- Scovel et al, 1998: 184-6.
- 8- Palacios Martínez, 2020: :101263.
- 9- McEnery et al, 1996: 1.
- 10- Baker, 2010: 24.



again. According to Kaper, Morris, and Levine (1995) also, despite many studies on Cholera, almost until the end of the 20th century, cholera was still presenting challenges. However, as stated by the same author two major developments occurred in the history of the disease: 1) A massive outbreak of cholera in South America -the continent that was untouched by the disease in the 20th century, in 1991; 2) the pandemic of cholera which began in India and Bangladesh by a previously unknown cause in 1992. In another study, some years later, Bhattacharya (2003) declared that, many anti-secretory drugs were tried and unfortunately, none was useful for treatment of cholera. Moreover, the researcher put emphasize on the role played by feeding during and after cholera.

Moreover, as explained in a more recent research study by Murugaiah (2011), cholera is known as the most feared epidemic disease in developing countries. Despite the effort taken by World Health Organization to reduce the incidence rate of cholera, it still continues to evolve in certain regions¹¹. Besides, there is not much information on the factors that contribute to cholera's transmission¹². However, according to Murugaiah (2011), there is a need for a growing awareness and knowledge of cholera. In the authors' opinion, the residents of developing nations will benefit the most from this developing knowledge and awareness.

In one of the most recent studies, Deen, Mengel, and Clemens (2020) stated that cholera is an ancient disease which is still causing public health problems in many areas of the world. Moreover, as explained by the authors, cholera caused seven pandemics since 1817, and the last of them is ongoing. According to Deen *et al.* (2020), the risk of cholera is increased as the result of factors such as overcrowding, poverty and insufficient water. They also explained that the epidemiology of cholera continues to evolve in many areas of the world (i.e., Asia, Africa and the America). In another study, Lonappan, Golecha, and Nair (2019) have explained that, although Cholera has posed a significant public concern in the last four decades, the researchers are still unable to predict and pre-empt the outbreak of cholera. However, with the current knowledge and advancements to effectively prevent and treat cholera, it is possible to prevent death from the disease¹³.

Measles is a highly contagious disease which has been referred to since the seventeen century¹⁴. A number of studies so far have studied measles impacts, outbreaks and ways to control it. For example, Assaad (1983) has explained the universality of disease until 1980s, particularly in developing countries which has led to the acceptance of measles as an inevitable risk of early life. Development of measles could

11- Murugaiah, 2011: 337-48.

12- Ibid.

13- Lonappan et al., 2019: Epub ahead of print.

14- Dardis, 2011: 9-12.



be the result of a set factors, such as inappropriate nutrition, common to developing countries. As stated by the same researcher, if given at the critical age, measles vaccine is effective in preventing the disease; as, by increase of age, maternal antibodies diminish and the risk of natural infection increases.

According to Hinman *et al.* (1983), since colonial times, measles has impacted American children. In the initial decades of the 20th century, many measles infections were reported each year. As reported by the same researchers, during 1950s, more than 500,000 cases were infected by measles and almost 500 people died of it in in the United States. The results of studies conducted showed that 95% of the infected population was under 15 years old. The introduction of measles vaccine in 1963 impacted the occurrence of measles in the United States. This led to a marked decline in the reported number of infection and death as a result of measles virus¹⁵. The incidence of measles declined dramatically in 1980s. However, centers for disease control in 1991 reported a 51.1% increase in the cases infected by measles in 1990 in comparison to cases reported in 1989. In 1990, 27672 cases were infected by measles virus.

The introduction of measles vaccine in 1962 led to a dramatic decrease in occurrence of measles in the United States when measles was an almost universal disease¹⁶. As reported by Wharton (2004), from 1956 to 1960, approximately 542,000 were infected by measles virus annually, which was not comparable to the high number of cases infected by measles virus before the introduction of the first measles vaccine. As demonstrated by the same researcher, in 1950, even before the introduction of measles vaccine, due to the improvements in health care and nutrition, measles-related deaths decreased dramatically. From 1912 to 1916 approximately 5300 measles-related deaths were reported while the measles-related deaths reported during 1956-1960 declined to 450 cases. Therefore, as stated by Griffin and Oldstone (2008), measles virus is one of the most contagious viruses that has been controlled by the introduction of measles vaccine more than 50 years ago. However, as stated by Dardis (2011), although measles is vaccine-preventable, the measles virus can cause serious illness and death. Moreover, according to Emanuele (2020), there has been an increase in the outbreak of measles in the United States in 2019. Therefore, there is need for increasing awareness about measles as a highly contagious disease. Besides, in terms of measles disease, true and accurate information should be disseminated. Furthermore, emphasize should be put on the benefits of im-

15- Hinman et al., 1983: 439-44.

16- Wharton, 2004: S1-S3.



munizing workers.

According to Pollitzer (1954), from the beginning of history, plague has been a threat to mankind. Almost in the beginning of the 20th century, Lloyd (1925) said that “plague has a most pernicious past; a present that is bad; and a future that seems to say to civilized man, ‘Your money or your life’¹⁷. A number of attempts have been made to immunize people against plague. For example in one of the earliest studies, Cavanaugh *et al.* (1974) explained, although exposure to rats and fleas transmitted the plague during 1966-1997 in south Vietnam, the number of Americans that were infected by the plague was really negligible. As stated by the researchers, one plausible explanation for negligible occurrence of plague in Americans was that the killed plague vaccine administered to American personals was effective in the prevention of the disease. However, 296 cases of human plague were reported from 1970 to 1991 in the United States¹⁸. 295 of these cases were believed to be indigenous cases while one was an imported case. Most of the cases were infected by bubonic or septicemic plague, or both.

In a more recent study, Stenseth *et al.* (2008) explained that although plague is often considered as a problem of past, in many parts of the world, it is still a threat. As explained by the same authors, despite the small number of human cases of plague, the threat of plague for humanity should not be overlooked because of “the disease’s inherent communicability, rapid spread, rapid clinical course, and high mortality if left untreated”¹⁹. In another study, D’ortenzio *et al.* (2018) explained that an epidemic of plague in 2017 highlighted the gap in knowledge of plague dynamics, factors affecting the disease and the best recommended treatment for this poverty related disease.

This study aims to answer the following research questions by employing the corpus-based analysis of American historical texts:

1. How do the collocates of the words “cholera”, “measles” and “plague” represent these diseases over the 19th and 20th centuries in the American society?
2. How were the collocates of the words “cholera”, “measles” and “plague” different in the 19th and 20th centuries in the American society?

Method

According to Stubbs (2007), Sinclair’s (1998, 2008) model of extended lexical unit has turned to one of the most prominent models of phrasal units of meaning. The extended unit of meaning is composed of the following structure²⁰: a) col-

17- Lloyd, 1925: 629.

18- Craven *et al.*, 1993: 758-61.

19- Stenseth *et al.*, 2008: 11.

20- Sinclair, 1998: 1-24.



location, b) colligation, c) semantic preference, d) semantic prosody. For Stubbs, “collocation is the most specific level”²¹. Stubbs (2007) defined collocation as, “the relation between the target word and individual word-forms which co-occur frequently”²². As stated by Salama (2011), the target word could be the word which is searched in a concordance and the collocates is the word form which frequently co-occur with the target word. She also stated that semantic preference and semantic prosody are closely related to the concept of collocation. Semantic preference as defined by Stubbs (2007) is “the relation between the node word and the lexical sets of semantically related word-forms or lemmas”²³. As elaborated by Salama (2011), semantic preference provides a description of a specific lexical item which frequently collocates with a series of items belonging to the same semantic category. Besides, semantic prosody is “the discourse function of the unit, describing the speaker’s evaluative attitude”²⁴. Semantic prosody can indicate a hidden meaning. For example, if a word frequently collocates with the words that have a negative meaning, the word is believed to have a negative prosody²⁵.

1- Material and instrument

The current study has employed the 400 million-word corpus of historical American English (COHA)²⁶. COHA released in 2010 contains words of texts from 1810-2000s. As stated by Davies (2012), COHA is larger than other corpora of historical English; it is 100 times larger than other structured corpora. Besides, unlike other historical corpora, COHA is genre-balanced with genre and sub-genre from each decade²⁷. As a result, the inclusion of different genres means that the patterns derived from COHA can represent the English speaking societies²⁸. The corpus used in the current study (i.e., COHA) is freely available²⁹.

2- Procedure

As the first step, the frequencies of the target words under investigation (i.e., cholera, measles and plague) over the 19th and 20th centuries and across different time periods were determined. The frequency analysis was followed by the quantitative analysis which aimed to find an answer to the raised research questions. At this point, the collocates of the target words were studied. However, the number of the observed meaningful collocates for target words under investigation across the 19th and 20th centuries were not equal. Therefore, considering the fact that high positive mutual information (MI) scores are more likely to constitute collocation charac-

- 21- Salama, 2011: 320.
- 22- Stubbs, 2007: 178.
- 23- Ibid.
- 24- Ibid.
- 25- Louw, 1993: 176.
- 26- Davies, 2012: 121-57.
- 27- Ibid.
- 28- Norberg, 2016: 291-317.
- 29- <https://www.english-corpora.org/coha/>



teristics than those with lower MI scores³⁰, and similar to a number of other studies³¹, in order to balance the data for the ease of comparison of each disease over two centuries (19th and 20th), 10 collocating items with the highest MI values in COHA were studied. Moreover, as the qualitative phase of the research, the actual occurrences of the target words with their collocations have been studied. Then, the semantic relationships between the target words and their collocates have been explored to study the representation of a number of contagious disease (i.e., cholera, measles, plague) over 19th and 20th centuries. Furthermore, the collocates of the words “cholera”, “measles” and “plague” in the 19th and the 20th centuries in the American society are compared.

Results and discussion

1- Frequency analysis

Table 1 summarizes the frequency of the terms “cholera”, “measles” and “plague” from 1810-2000, as represented in COHA. As Table 1 shows, the total frequencies of the words “cholera”, “measles” and “plague” occurring in the COHA corpus are 3560 for “plague”, 1230 and 883 times for cholera and measles, respectively. The frequency of term “plague” is markedly higher than that of the two other diseases. Such results are predictable because from the beginning of history, plague has been a threat to mankind³². Besides, even in today’s modernized world, every year, thousands of people are infected by plague disease³³. Moreover, as presented in this table, “measles” has the lowest frequency. The observed result can be explained by the fact that the introduction of measles vaccine in 1962 led to a remarkable decrease in occurrence of measles in the United States when measles was an almost universal disease³⁴.

Table 1: The frequencies of “cholera”, “measles”, “plague” in the COHA, 1810-2000

Disease	Frequency
<i>cholera</i>	1230
<i>measles</i>	883
<i>plague</i>	3560

Moreover, Figure 1 shows the terms “cholera”, “measles” and “plague” in different time periods of 19th and 20th centuries.

In 1810, the words “cholera” and “measles” were not referenced in COHA. The non-occurrence of the term “cholera” can be explained by the fact that the first outbreak of cholera

- 30- McEnery et al, 1996: n. p.
- 31- e.g., Nelson, 2006: 217-34.
- 32- Pollitzer, 1954: 409-82.
- 33- Stenseth et al., 2008: e3.
- 34- Wharton, 2004: S1-S3.



occurred in 1817³⁵. However, according to Dardis (2011), measles were recorded since the 17th century. Therefore, the control of the disease by the introduction of measles vaccine in 1963³⁶ was likely to be the reason for non-occurrence of the term in 1810. Moreover, based on Figure 1, the term “cholera” was used more frequently in 1890s, 1850s, and 1830s, respectively. In 1832 and 1849 the, second worldwide pandemic of cholera resulted in death of 150,000 Americans. Besides, the outbreak of cholera in the last decades of 20th century³⁷ was likely to be the reason for the frequent use of the term cholera in 1890.

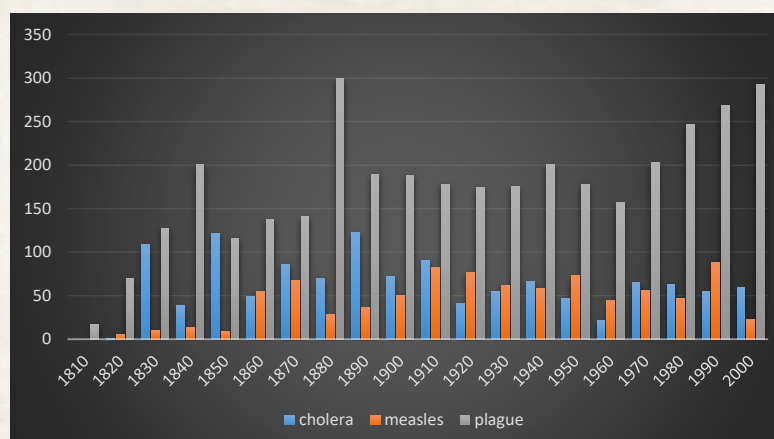


Figure 1. The frequency of the term “cholera”, “measles”, “plague” in the COHA, in different time periods of 1810-2000

Furthermore, the most frequent use of the term “measles” occurred in 1910s, 1950s, 1990s. From 1912 to 1916, approximately 5300 measles-related deaths were reported³⁸; therefore, the highly frequent occurrence of the word “measles” in the texts of 1910s is not surprising. In line with the explanations given by Hinman *et al.* (1983), during 1950s, the outbreak of measles led to infection of more than 500,000 cases which resulted in the frequent use of the term measles. Moreover, as reported by the centers for disease control, in 1990 a huge increase in the cases infected by measles virus, compared to that happened in 1980s, was reported. In 1991, 27672 cases were reported to be infected by measles virus. Finally, regarding the term “plague”, as it can be seen in the bar chart, the frequency of plague across all the time periods is greater than that of the two other terms under investigation in the present study.

2- Collocation analyses

As shown in the Table 2, most collocates of the word “chol-

- 35- Morris et al, 1985: 343-50.
- 36- Hinman et al., 1983: 439-44.
- 37- Morris et al, 1985: 343-50.
- 38- Wharton, 2004: S1-S3.



era” were carrying negative meanings from 1810s to 1890s. They were influential in creating a potential for focusing on different diseases and damages caused by them.

Table 2: Collocates of cholera in texts of 1810s-1890s

	Collocate	Frequency	MI
Cholera	infantum	9	14.58
	morbus	29	14.47
	dysentery	113	11.25
	epidemic	455	10.09
	Asiatic	550	10.03
	small-pox	455	8.72
	1832	726	8.05
	plague	1298	7.99
	raging	1140	7.59

Besides, the target word “cholera” attracts different health-related terms, such as name of other diseases (e.g., dysentery, small-pox, plague). Below some examples have been presented. Figure 2 also provides the representation of these diseases in the texts of 1810-1890.

Extract 1: *“Did you die of Cholera? diarrhea? dysentery? dog-bite? small-pox? violent death? --”*³⁹

Extract 2: *But we cannot have everything, as the man said when he was down with small-pox and cholera, and the yellow fever came into the neighborhood*⁴⁰.

Extract 3: *The General had never heard of the yellow fever in the East; had heard of the plague, of cholera and leprosy as terrible scourges*⁴¹.

- 39- Twain, 1962: 46.
- 40- Warner, 1871: 175.
- 41- Butler, 1888: 525-41.

SEARCH	FREQUENCY	CONTEXT	OVERVIEW
1 1841 FIC Essays—FirstSeries	A B C	wife and babes; insanity that makes him eat grass; war, plague cholera famine, indicate a certain ferocity in nature, which, as it had	
2 1843 NF ConciseExposition	A B C	exhalations the source of the most frightful diseases, such as the plague cholera the yellow fever, &c., and wild forests and plains, inhabited by nox	
3 1843 NF ConciseExposition	A B C	Derangement of Seasons. 6. Diseases artificially produced, such as the plague cholera yellow fever, etc. 7. Circle of error and prejudice, without;	
4 1853 NF AnecdotesPainters	A B C	, unless her interposition is urgently demanded by the apprehension of famine, plague cholera or some other public calamity. During my own residence	
5 1853 NF LangstrothOnHive	A B C	colony, perish from dysentery . Is it not under circumstances precisely similar, that cholera and dysentery prove most fatal to human beings? How often	
6 1854 MAG Putnams	A B C	fanatical preacher in the West: "ours by solemn compact; our small-pox our cholera our plague our leprosy." The writer to whom we have previously	
8 1855 NF EightYearsWanderings	A B C	, which year after year reap a pestilential harvest from the thinly-scattered population. Cholera dysentery fever and small-pox all appear in their turn a	
9 1855 NF EightYearsWanderings	A B C	ascend to the throne of pestilence and annually reduce the circle of our friends -- cholera dysentery small-pox and fever. This year (1854) there has be	
11 1859 NF NewStarPapersOr	A B C	breathing, K the human body be stricken with fever or palsy; if cholera or plague attack it; or if the sword or bullet smite it; or	
12 1861 MAG Atlantic	A B C	and Sardinians suffered miserably when the British had surmounted their misfortunes. The mortality from cholera and dysentery in the French force, d	
13 1861 MAG Atlantic	A B C	bread, and good cookery, and clever arrangements, they were swept away by cholera and dysentery , to an extent unrevealed to this day, while the Britis	
14 1861 NEWS NYT-Ed	A B C	decrease of 1,623,154 souls! Of this number upwards of 400,000 died of fever, cholera dysentery and starvation, while more than a million emigrated. T	
15 1866 FIC PursuitKnowledge	A B C	into his arm-chair once more. He felt decidedly relieved. Visions of small-pox cholera and throat-distemper, the worst evils that he could think of and d	
16 1867 FIC CelebratedJumping	A B C	Ghost: -- "Rap, rap, rap. " "Did you die of cholera ? diarrhea? dysentery ? dog-bite? small-pox ? violent death? -- "	
17 1870 FIC MySummerInGarden	A B C	not have everything, as the man said when he was down with small-pox and cholera , and the yellow fever came into the neighborhood. Now, the grapes	
18 1874 FIC UnwrittenHistory	A B C	for them! Why did they not keep quiet, and die of small-pox and cholera in the little pens built for them, all at the expense of the Government	
19 1874 NEWS NYT-Ed	A B C	diseases, pursuing the unfortunates in the tenement-houses; typhoid fever, dysentery , and cholera infantum will soon make their dreaded appearance i	
20 1875 FIC Infelice	A B C	more of the Minnie dose! I hate the name as I do small-pox or cholera . A pretty life you have led, dancing after her, as an outright	
21 1875 FIC Infelice	A B C	his ward's failure. He dreads humiliation of any kind, far more than cholera or Asiatic plague , or than even the eternal loss of that infinitesimal microscop	

Figure 2. The collocates of cholera in Texts of 1810s-1890s



Obviously, in the 19th century, cholera was considered as a major threat to mankind. The high frequency of the verb “raging” also provides support for this statement.

Extract 4: *In 1833, while the cholera was raging with extreme violence in Lexington, one of its first victims was a bitter personal enemy; and yet, while fear drove others from his bedside, General Combs nursed him with all the care and tenderness of a devoted friend.*

Moreover, the two other words that meaningfully collocate with cholera were “morbus” and “Asiatic”. As argued by Polard (1857), Asiatic cholera was the epidemic form of cholera morbus. The high frequency of the collocate “Asiatic” in the 19th century, along with a term such as “epidemic”, indicates that cholera was one of the most epidemic diseases of the 19th century⁴².

Furthermore, the term “infantium” indicates the danger posed by the cholera virus to children. Cholera infantum, a disease of infants most prevalent in summers, is “characterized by vomiting, uncontrollable diarrhea and collapse”⁴³. As reported by Flippin (1997), cholera infantum is considered as one of the major causes of death in late 19th century. An example of the cholera infantum in the context see the following extract.

Extract 5: *With such a crowding of population, can we wonder that “diseases from domiciliary causes, over which we have control, have increased in many instances 100 per cent.; cholera infantum, 250 per cent.; diarrhoea, 1,000 per cent.”.*

Besides, the high frequency and meaningful relationship between the collocate word “1832” and the word cholera indicates the year 1832 as an important year in the history of cholera disease. During the epidemic of cholera in 1832, thousands of people died in the united states⁴⁴. The extract below is taken from New England magazine.

Extract 6: *In 1832, while the cholera was raging in the city of New York, and the citizens were flying into the country, and many physicians and divines with them; ...*

The other word which meaningfully collocated with the node word cholera was “famine”. As indicated in the example below “war, plague, cholera, famine indicate a certain ferocity in nature, which, as it had its inlet by human crime, must have its outlet by human suffering”⁴⁵, cholera, like famine, was a cause of human misery in the 19th century. Besides, meaningful relation between the word famine and cholera can explain the fact that the researchers has emphasized the role played by feeding during and after cholera⁴⁶.

42- Glass et al., 1992: 1524-6.

43- Flippin, 1997: 4.

44- Morris et al, 1985: 343-50.

45- Emerson et al., 1987: 148.

46- Bhattacharya, 2003: 141-6.



Table 3: Collocates of cholera in texts of 1900s-1990s

	Collocate	Frequency	MI
Cholera	morbus	10	15.55
	typhus	249	12.44
	typhoid	706	11.04
	dysentery	315	10.72
	epidemic	1337	10.32
	smallpox	573	10.00
	Asiatic	1102	9.84
	diphtheria	405	9.62
	scourge	482	9.11
	malaria	830	9.00

47- Kaper et al., 1995: 48-86.

48- Pollard, 1857: 109-15.

One of the words that meaningfully collocated with the node word cholera in the texts of 1900s-1990s was “morbus” (see example below).

Extract 7: *Taylor’s death was caused by cholera morbus.*

In the 20th century, despite many studies conducted on cholera, cholera was still presenting challenges⁴⁷. The term “Asiatic” also collocated meaningfully with the node word under investigation (see example below).

Extract 8: *Simultaneously with the Americans, there appeared amongst the Moros the most fearful of all diseases, the Asiatic cholera, and straightway it was charged upon us.*

As explained before, Asiatic cholera is the epidemic form of the cholera morbus⁴⁸. The word “epidemic” also was another collocate of the word cholera in the texts of the 20th century (see example before).

Extract 9: *For example, water and milk are carriers of many forms of disease-producing bacteria, as witness the cholera epidemic in Hamburg nearly twenty years ago.*

According to Morris and Black (1985), during the sixth pandemic of cholera in 1911, cases were reported in two different areas (i.e., New York and Massachusetts). Moreover, in the last decades of the 20th century, cholera became endemic again. Furthermore, similar to collocates accompanying the node word cholera in the 19th century, collocates of the term cholera in the 20th century were mostly negative, creating the possibility for negative co-texts. One of the collocations of cholera with negative semantic prosody was “scourge”.

Extract 10: *The second epidemic came in 1834. but there were only 941 deaths before its advance was checked. In 1848. However, appeared the most disastrous choleras scourge the city has known.*

Furthermore, Cholera in texts of the 20th century has been collocated with words such as “typhus”, “thypoid”, “dynes-



try”, “smallpox”, “diphtheria”, and “malaria” (see Figure 3).

SEARCH	FREQUENCY	CONTEXT	OVERVIEW
1 1902 MAG Forum	A B C	and piracy. It has practically put an end to the scourges of smallpox and cholera ; it has established the reign of law and equity throughout the land; it	
2 1902 MAG Forum	A B C	and state-aided schools, with 8,092 scholars. Hospitals were formerly unknown institutions, and cholera and smallpox ran their course unchecked. There e	
3 1902 MAG Forum	A B C	free hospitals throughout the states, exclusive of jail hospitals and lunatic asylums; and cholera and smallpox have been practically extinguished. The pop	
4 1902 MAG Nation	A B C	a pound, is sufficiently realistic As a result of famine conditions, dysentery and cholera broke out and swept away thousands who had escaped the worst r	
5 1904 MAG PopSci	A B C	as the freshest dew-drop may contain in solution tasteless poison that spreads typhoid fever or cholera among the ill-informed skeptics who are unwilling	
6 1904 NF HistoryScience --	A B C	we possess, in addition to the diphtheria antitoxine, equally specific antitoxines of tetanus, cholera , typhus fever, pneumonia, and tuberculosis -- a ser of o	
7 1905 MAG Independent	A B C	.And how shall we answer for the responsibility that will rest upon us if cholera or typhoid makes an accidental entry here? It would decimate the entire p	
8 1907 MAG Atlantic	A B C	respect it is more dangerous than water, since a plague of typhoid or Asiatic cholera startles the community from its customary phlegm and causes immed	
9 1909 MAG Harpers	A B C	which has come to us within the last generation, epidemics of typhoid fever, cholera , or dysentery are now generally inexcusable. Such an epidemic is, in f	
10 1909 MAG Harpers	A B C	block the way to the successful serum treatment of such diseases as typhoid fever, cholera , pneumonia, and those of a streptococcal origin. The technical	
11 1909 NF PreventableDiseases	A B C	across the civilized world, beginning, as do nearly all our world-epidemics,? cholera , plague , influenza, etc.,? in China, and spreading, via	
12 1909 NF PreventableDiseases	A B C	Yet the deadliest known hotbed of horrors, the spawning ground of more deaths than cholera , smallpox , yellow fever, and the bubonic plague combined,	
13 1911 MAG Scribners	A B C	more. A wonder, too, that there is not more plague , more cholera , more disease of every kind. Here on the banks of this river are	
14 1912 MAG Harpers	A B C	the yellow-fever blanket and the scarlet-fever ribbon and all their kindred. But typhoid and cholera still came down the river, and ran thence into the milke	
15 1912 MAG Harpers	A B C	the great majority of healthy people. It seems fairly clear that in typhoid , cholera , smallpox , diphtheria , pneumonia, and perhaps a great number of other	
16 1912 MAG Harpers	A B C	voice-face, so have our notions regarding two other of the great human scourges, cholera and typhoid . I have VOL. CXVII? No. 780. - 104spoken a little	
17 1912 MAG Harpers	A B C	the great majority of healthy people. It seems fairly clear that in typhoid , cholera , smallpox , diphtheria , pneumonia, and perhaps a great number of other	
18 1912 NEWS NNT-Reg	A B C	or 200 or 300 years what a horrible sight the world presented: smallpox , cholera , the black death and strange diseases which consumed half the populat	

Figure 3. Collocates of cholera in texts of 1900s-1990s

“By the turn of the 20th century, life expectancy at birth was 45 years in the United States”⁴⁹. Besides cholera, typhoid, dysentery, smallpox, Diphtheria and malaria were the predominant infectious diseases in this time period⁵⁰.

Although collocates of the target word “measles” (i.e., fever, ill, sick) have a negative semantic prosody, they are less negative than collocates of the term cholera (i.e., epidemic, scourge, raging, famine). The use of more neutral collocates can be the result of acceptance of measles as an inevitable risk of early life due to the universality of the disease until 1980s⁵¹; (see Table 4).

Table 4: Collocates of measles in texts of 1900s-1990s

	Collocate	Frequency	MI
Measles	Whooping-cough	34	14.53
	scarlatina	35	13.61
	mumps	56	13.52
	smallpox	455	10.50
	fever	4669	8.61
	ill	9356	5.55
	sick	10708	5.09
	children	41336	4.28
	like	168196	2.88
	down	123068	2.71

To clarify, a number of examples (extract 11-12) and the concordance of “measles” in texts of the 19th century (Figure 4) are provided:

- 49- Smith et al., 2012: 38.
- 50- Smith et al., 2012: 35-42.
- 51- Assaad, 1983: 452-9.



Extract 11: *As they rode on side by side they talked of the youngest two of her children -- Rose and Walter -- both quite ill with measles; ...*

Extract 12: *She usually sends for it, but her son is just now sick with measles.*

CLICK FOR MORE CONTEXT		<input type="checkbox"/>	<input type="checkbox"/>	SAVE LIST	CHOOSE LIST	CREATE NEW LIST	<input type="checkbox"/>	SHOW DUPLICATES
1	1864	FIC	FranksCampaign	A	B	C	She usually sends for it, but her son is just now sick with the measles. " Yes I think you can not fail to enjoy the pleasant morning	
2	1864	NF	LifeTimesCorrespondence	A	B	C	at home some time, much indisposed. He is now very ill with the measles. He preaches to admiration. Several of the students are also down with the	
3	1867	FIC	WearingGrayBeing	A	B	C	passed his lips until the first battle of Manassas, when, being sick with measles, he fought until almost fainting, and accepted a draught from the canteen of	
4	1869	FIC	MenWomenGhosts	A	B	C	a fellow beyond reason. " Well, then the children had been sick measles, whooping-cough, scarlatina, mumps, he was sure he did not know what	
5	1869	NF	HarrietMosesHer	A	B	C	water. It happened that she was once sent when she was ill with the measles and, taking cold from wading in the water in this condition, she	
6	1870	FIC	Hedgedin	A	B	C	people in the room besides herself and her child, -- a child sick with measles, a woman drunk, and a woman washing; the room was filled with	
7	1876	MAG	Atlantic	A	B	C	sutor ultra crepidam. " In February, 1828, I fell ill of the measles, of which the followin0 note to Miss S is a record. M ^r DEAREST	
8	1882	FIC	GrandmotherElsie	A	B	C	side they talked of the youngest two of her children -- Rose and Walter -- both quite ill with measles, of her sister's family, where also there was sickness amon	
9	1882	FIC	GrandmotherElsie	A	B	C	of all keeping together? " Because Rosie and Walter are down with the measles much too ill to travel. " And you are going to Europe	
10	1883	MAG	NorthAmRev	A	B	C	and by the same men. Mrs. Wilkinson was at the time sick with the measles. When the men rapped at the door, she begged her husband not to	
11	1887	FIC	QueenPirateIsle	A	B	C	already in the lone churchyard on the hill, and the others lying ill with measles and scarlet fever beside her. She had just walked many weary miles that day	

Figure 4. Sick and ill as collocates of measles in texts of 1810s-1890s

Moreover, different disease names that are meaningfully collocated with the target word “measles” in texts of the 19th century show that besides measles, different contagious diseases (i.e., Whooping cough, scarlatina, mumps, smallpox, scarlet fever etc.) are making trouble in the 19th century (see extract 10; Figure 5).

Extract 13: *“Well, then the children had been sick; measles, whooping-cough, scarlatina, mumps, he was sure he did not know what not; every one of them from the baby up.”*

Corpus of Historical American English					
SEARCH	FREQUENCY	CONTEXT	OVERVIEW		
1	1822	FIC	New-EnglandTale	A B C	you to take, he has had a dreadful spell with the whooping-cough and the measles, and they have left him kinder sore and rickety; he has not looked
3	1832	MAG	NewEngMag	A B C	to be sustained by the example of many diseases, such as small-pox, measles, scarlet fever, and others. But, it must be allowed, that
4	1832	MAG	NewEngMag	A B C	It is not the law of contagion, as we are acquainted with it in measles and small-pox. In this view the contagious principle of cholera affords a solitary ex
5	1835	FIC	AnOldSailorsYarns	A B C	unreflecting, ardent, first love, that, like the whooping-cough and the measles, we never have but once; though some patients have it earlier in life
6	1841	FIC	Essays—FirstSeries	A B C	out of his way to seek them. These are the soul's mumps and measles and whooping-coughs, and those who have not caught them can not describe th
7	1847	FIC	AroundTheTea-Table	A B C	she has in navigating a whole nursery of somebody else's children through mumps, measles, whooping-cough and chicken-pox! One of the things that
9	1847	FIC	AroundTheTea-Table	A B C	child's head a disadvantage at the start? Worse than the gauntlet of measles and whooping-cough and mumps which the little ones have to run is this p
11	1848	MAG	NorthAmRev	A B C	fre // quently suffered from a severe cough, and successive attacks of the measles and the small-pox still further injured his constitutiOn. During all his
12	1855	NF	EightYearsWanderings	A B C	descend to second-class diseases: there is no such thing as influenza; whooping-cough, measles, scarlatina, etc., are rarely, if ever, heard of; we
14	1860	FIC	MissGilbertsCareer	A B C	this desire for a career might possibly be a sort of mental small-pox or measles, which must run its course, and would then leave her free from the
15	1861	FIC	ElsieVenner	A B C	said the Doctor, " I should say there was something of that sort: Measles, Mumps, And Sin, -- that's always catching. " The old Doctor
16	1861	FIC	Trumps	A B C	dear; we all have it when we are young, as we have the measles and the whooping-cough. But we get robust constitutions, my dear, " said
17	1861	NF	BookhouseholdManagement	A B C	Dentobon 2405 General duties of the 2402-4 Habits of cleanliness in children 2400 Hooping-cough 2408 Measles and scarlatina 2410-12 Miss Nightingal
18	1864	FIC	Mazaria	A B C	as stupid as can be -- sleeps all the time. My children have had measles and whooping-cough, and chicken-pox and scarlet fever, and I can't imagine wh
19	1864	FIC	Moods	A B C	. I long to be among them, and named an early day, because measles and scarlatina are coming round again, and only Fanny, and the twins,
20	1866	FIC	DiversViewsOpinions	A B C	and to make ashoorence doubly shoor, starve em awhile, and run the measles and small-pox thro em. Mix with em a few thousand black wimmen wi
21	1868	FIC	IfyesPerhaps	A B C	" And then did not he have to hear about the mumps, and the measles, and arnica, and belladonna, and chamomile-flower, and dodecatheon, till she

Figure 5. Whooping cough, scarlatina, mumps, smallpox as collocates of measles in texts of 1810s-1890s



The term “children” also collocated meaningfully with measles. As reported by Hinman *et al.* (1983) since colonial times, measles impacted American children.

Extract 14: *Thanks to a kind provision of our natures, no man of sense, has a building mania more than once, any more, to use a borrowed comparison, than our children do their measles, or our collegians and young men of genius, their poetry.*

The word “like” meaningfully collocated with the term measles in texts of the 19th century. The frequent occurrence of the word “like” with the target word measles shed light on the worldwide acceptance of measles as an inseparable aspect of people’s lives in that time period.

Extract 15: *School-girl affection is like the measles, -- a disease common to all children, but rarely dangerous.*

The meaningful relation between the word “down” and measles also can be due to the misery caused by this infectious disease and the feeling of people as being defeated by this contagious disease.

Extract 16: *Because Roise and Walter are down with the measles; much too ill to travel.*

The 20th century witnessed damages due to different types of diseases such as measles, rubella, Chicken-pox, mumps, Whooping-cough, etc. Moreover, during the 20th century, the United States witnessed a huge decline in the deaths due to infectious diseases⁵².

Extract 17: *Although smallpox vaccination was developed in 1798, routine vaccination for diphtheria, tetanus, pertussis (whooping cough), smallpox, measles, rubella (German measles), and poliomyelitis has largely eliminated these diseases as causes of human suffering and death in this century.*

The other word that collocated with the word measles in texts of 1900s-1990s is “vaccine”. The word “vaccine” carries a positive semantic prosody (see example below).

Extract 18: *Infant deaths went down 20 percent in that period and we are just now beginning to realize the benefits of the measles vaccine*

As the above examples (Extract 15, 16) reveal, the introduction of measles vaccine in 1963 impacted the occurrence of measles in the United States⁵³. It led to a marked decline in the reported number of infection and death as a result of measles virus⁵⁴.

The collocate “epidemic”, in the collocation pattern “measles epidemic”, can refer to widespread infection with measles virus in the 20th century. As reported by Hinman *et al.* (1983), in the initial decades of the 20th century, many measles infections were reported each year. Moreover, dur-

52- Anonymous, 1999: 621.

53- Hinman et al., 1983: 439-44.

54- Ibid.



ing 1950s, more than 500,000 cases were infected by measles and almost 500 people died of it in the United States⁵⁵. Furthermore, as reported by centers for disease control in 1990, 27672 cases were infected by measles virus. For an example of collocation pattern measles epidemic read the example below.

Extract 19: *Canadian health officials were concerned that the remaining five percent of non - immune children would fuel a measles epidemic across the country.*

As it is obvious in the above extract from the text titled “needle points: Prickly questions about vaccination” which was written in 1997, from which the concern for vaccination against measles can be inferred. The introduction of measles vaccine in 1963 impacted the occurrence of measles in the United States⁵⁶. It led to a marked decline in the reported number of infection and death as a result of measles virus⁵⁷. As reported by Hinman *et al.* (1983) the incidence of measles declined dramatically in 1980s.

- 55- Ibid.
- 56- Ibid.
- 57- Ibid.
- 58- Pollitzer, 1954: 409-82.
- 59- D’ortenzio et al., 2018: 307-17.

Table 5: Collocates of measles in texts of 1900s-1990s

	Collocate	Frequency	MI
Measles	rubella	49	14.11
	chicken-pox	15	13.97
	mumps	138	13.30
	whooping-cough	24	13.29
	small-pox	84	11.48
	diphtheria	405	10.89
	meningitis	161	10.54
	measles	637	10.41
	vaccines	335	9.75
	epidemic	1337	8.98

From the beginning of history, plague has been a threat to mankind⁵⁸. As it can be predicted, the target word “plague” attracts collocates with different negative semantic preferences (see Figure 2). Collocates with negatively embedded semantic meanings (i.e., famine, infected, raged, etc.) provide evidence for the damage and misery caused by plague. Besides, even in today’s developed world, despite many developments that have taken place, there is not much known about the plague dynamics or even factors affecting the disease; there is also no highly accepted treatment for this poverty related disease⁵⁹.

To have a picture of the collocation pattern of the target word “plague” over 19th and 20th centuries, the concordance of “plague” in words of texts of 1810s-1890s and the concor-



dance of “plague” in texts of 1900s-1990s will be explored. Table 6 shows the collocations of the word “plague” over 19th century.

60- Yan-ping, 2013: 3.
61- Shoucheng, 2003: 2.

SEARCH	FREQUENCY	CONTEXT	OVERVIEW
1 1821 MAG NorthAmRev	A B C	would catch the small pox, and another with a fracture be infected with the plague ; and the most virulent and contagious disorders would soon obtain	
2 1825 FIC RebelsBostonBefore	A B C	, and to speak Of freedom, the forbidden fruit. Manfred. When the plague raged in London, one of the most remarkable features of the time was the	
3 1827 FIC BuccaneersARomance	A B C	grain, which had been manured by the gore of armies. Excitation, from plague , famine , murder, leprosy, and a thousand torments and diseases, are	
4 1827 FIC HopelLeslieVolume1	A B C	or guinea of mine shall ever go to one who is infected with this spreading plague . " This letter was too explicit to be misunderstood; but so far from	
5 1827 FIC Tanored	A B C	Scene I The Council Tent as before. Ray, Raymond Famine and the plague have so distressed our Camp, The soldiers rise in open mutiny -- Despondin	
6 1830 MAG NorthAmRev	A B C	and parcel of manufactures from every part of the world had been infected with the plague ; the exclusion could not have been enforced with a more s	
7 1833 NF ByOrderKing	A B C	the people, war on kings, the plague on war, famine on the plague , folly on everything, having proved a certain measure of chastisement in the mere	
8 1835 FIC NormanLeslieATale	A B C	produced in double abundance, and the huts of the poor had been sheltered from plague and famine . He entered. His step was soft and noiseless. He	
9 1836 FIC Philothea	A B C	health. Some attributed it to the atmosphere of Athens, still infected with the plague ; others supposed it had its origin in the death of Paralus. The wild	
10 1836 FIC Philothea	A B C	of the visible. Tithonus formerly told me of similar cases that occurred when the plague raged in Ethiopia and Egypt; and Artaphernes says he has seen	
11 1836 FIC Philothea	A B C	courtiers, he added: " A proud nation are these Greeks! When the plague raged all Persia and Media, Hippocrates of Cos, refused our entreaties, and	
12 1836 MAG NorthAmRev	A B C	of summer?" In 1665, the city of London was ravaged by the plague . If, with Mr. Forster, we attribute this to the remarkable comet which	
13 1837 MAG NorthAmRev	A B C	, because we now know every particular of his malady, is his malady a plague that has infected his whole mind, so that we must take it with us	
14 1840 NF YoungMaiden	A B C	absolutely indefensible. History tells us, that in the thirteenth century, when the plague raged in Florence, it spread through the suburbs of that city, fr	
15 1843 FIC LettersFromNew	A B C	phenomena governed by laws which regulate the universe. It is recorded that when the plague raged in Athens, in the days of Plato, many recovered fr	
16 1844 MAG NewEngValeRev	A B C	every reflecting man in Christendom -- the voice of war, or famine , or plague , could scarcely sound more terrific. He knows what is to come: he	

Figure 6. Concordance of plague in Texts of 1810-2000

Table 6: Collocates of plague in texts of 1810s-1890s

	Collocate	Frequency	MI
Plague	bubonic	14	13.63
	locusts	204	8.76
	famine	1416	8.29
	cholera	596	7.99
	infected	696	7.36
	pestilence	867	7.56
	raged	735	7.28
	smallpox	455	7.38
	ravages	629	7.14
	spots	1788	6.52

A very strong collocate of plague is “locusts”. As indicted by the text extracted from New York Times in 1987, in the late 19th century, the United States experienced locust plague⁶⁰.

Extract 20: ..., and the plague of locusts settles on the land.

Destroying agriculture, plague of locusts can negatively impact every aspects of human’s life (i.e., social life, politics, etc.)⁶¹. Extract 19 refers to the destructive nature of plague in general, and plague of locusts in particular.

Extract 21: ..., for his army, destructive as a plague of locusts when plunder urged them on, ...

Another strong collocate of plague that can be perceived negatively is “famine”. As it is clear in the below example “plague” such as “famine” was inflicting suffering on vast number of people in 19th century.

Extract 22: the voice of war, or famine, or plague, could

scarcely sound more terrific.

The other world collocated with plague is “bubonic”, as reported by New York Times in 1899:

Extract 23: *“Two cases of what is believed to be bubonic plague reached this port yesterday”.*

Bubonic plague is believed to be transmitted by fleas and responsible for the catastrophic epidemic through the history⁶².

Moreover, plague was meaningfully collocated with names of other contagious diseases, such as cholera, pestilence and small pox. As indicated by the given examples, plague, along with other infectious diseases (i.e., cholera, pestilence, small pox), was a source of discomfort for people in the 19th century.

Extract 24: *...; war, plague, cholera, famine, indicate a certain ferocity in nature, ...*

Extract 25: *They are indeed, the peculiar victims of plague, pestilence, and famine.*

Extract 26: *Whether an epidemic like the plague or small pox has seized them, or whether the flies and wasps and bees upon which they feed had grown poisonous, we never shall know.*

Moreover, the significant co-occurrence of the world “spot” with the target word plague can refer to the endemic nature of plague. Plague is a contagious disease that spreads rapidly over the land^{63, 64}.

Extract 27: *Panama is one of the earth’s plague spots.*

The other terms with negative semantic prosody (i.e., infected, raged and ravages) that collocate with the target word “plague” can reveal the threatening situation caused by plague (see Figure 7).

- 62- Hinnebusch, 1997: 645-52.
- 63- Brinkerhoff et al., 2009: 491-7.
- 64- Davis et al, 2008: 634-7.

1	1821	MAG	NorthAmRev	A	B	C	would catch the small pox, and another with a fracture be infected with the plague ; and the most virulent and contagious disorders would soon obtain a mass
2	1825	FIC	RebelsBostonBefore	A	B	C	, and to speak Of freedom, the forbidden fruit. Manifest. When the plague raged in London, one of the most remarkable features of the time was the
3	1827	FIC	HopLeslieVolume1	A	B	C	or guinea of mine shall ever go to one who is infected with this spreading plague . " This letter was too explicit to be misunderstood; but so far from
4	1830	MAG	NorthAmRev	A	B	C	and parcel of manufactures from every part of the world had been infected with the plague , the exclusion could not have been enforced with a more strict an
5	1836	FIC	Philothea	A	B	C	health. Some attributed it to the atmosphere of Athens, still infected with the plague ; others supposed it had its origin in the death of Paralus. The widowed
6	1836	FIC	Philothea	A	B	C	of the visible. Tithonus formerly told me of similar cases that occurred when the plague raged in Ethiopia and Egypt; and Araspheernes says he has seen a learr
7	1837	MAG	NorthAmRev	A	B	C	, because we now know every particular of his melody. Is his melody a plague that has infected his whole mind, so that we must take it with us
8	1838	NF	IncidentsTravel	A	B	C	little cabin. /q/ /z/ The Rock of the Chain. -- Ravages of the Plague . -- Deserted Quarries -- A. youthful Navigator: -- A recollection of Sam Patch
9	1840	NF	YoungMaiden	A	B	C	absolutely indefensible. History tells us, that in the thirteenth century, when the plague raged in Florence, it spread through the suburbs of that city, from the
10	1843	FIC	LettersFromNew	A	B	C	phenomena governed by laws which regulate the universe. It is recorded that when the plague raged in Athens, in the days of Plato, many recovered from it w
11	1844	MAG	NewEngSaleRev	A	B	C	American party avoid a district inhabited by Irishmen as if it was infected with the plague ? Do Irishmen confine their repeal meetings, which are suspected by
12	1844	NF	KrickerbockerNew	A	B	C	of Constantinople, sufficiently near the scenes of death caused by the ravages of the plague to be thoroughly acquainted with them, and yet to be separated fr
13	1849	NF	EssayOnUnionChurch	A	B	C	king's match with this lady was a greater judgment to the nation than the plague , which then raged in the land; for, considering the malignity of the
14	1855	FIC	WorksEdgarAllan	A	B	C	!" It was in the spirit of this wisdom that, when a great plague raged at Athens, and every means had been in vain attempted for its removal
15	1866	FIC	WinningsHisWay	A	B	C	turned away without answering, -- avoiding her as if she was infected with the plague . When the cold northeast storms came, when the clouds hung low upon
16	1871	NF	FragmentsScience	A	B	C	kind, thoroughly investigated and successfully combated by M. Pasteur. For fifteen years a plague had raged among the silkworms of France. They had sickn
17	1875	NF	AdviceMotherOn	A	B	C	neither young nor old, rich nor poor, and commits greater ravages than the plague ever did. Small-pox is a disgrace; it is a disgrace to any civilised
18	1879	NEWS	NYT-Reg	A	B	C	efforts in behalf of the people who suffered so terribly by the ravages of the plague . Independent of its value as a means of preventing the introduction of cor
19	1887	NEWS	NYT-Ed	A	B	C	of them, and the coast is now said to be permanently infected with that plague . The California Board of Health has observed with much anxiety the developm

Figure 7. *Infected, raged and ravages as collocates of plague in Texts of 1810s-1890s*



The significant collocates co-occurring with the target word plague in the texts of 1900s-1990s constitute a number of words with mostly negative semantic prosody. Table 7 provides the collocates of “plague” in texts of the 20th century.

Table 7: Collocates of plague in texts of 1900s-1990s

	Collocate	Frequency	MI
Plague	bubonic	112	13.80
	pneumonic	18	12.76
	typhus	249	9.87
	cholera	575	9.66
	locusts	409	9.42
	smallpox	573	8.22
	epidemics	328	8.15
	famine	1655	7.93
	outbreaks	428	7.77
	ravage	470	7.37

Among the collocates of plague, the highest MI value belongs to the term “bubonic”. The strong association between the target word plague and the collocate “bubonic” is justified as bubonic plague has been considered as the most common disease occurred in endemic countries⁶⁵. In 1900, several cases were reported to be infected by bubonic plague in San Francisco⁶⁶.

Extract 28: *..., outbreak of bubonic plague continued steadily and devastatingly for centuries,...*

“Pneumonic” was another term that meaningfully collocates with the target word plague. The United States witnessed the outbreak of pneumonic plague in the 19th century⁶⁷. In 1919, an outbreak of pneumonic plague occurred in Oakland. In 1924 also, another outbreak of the disease was reported in Los Angeles. The extract below is taken from the Time magazine in 1956.

Extract 29: *But there was a danger that the disease might spread to his lungs- where it would become the dangerously infectious form known as pneumonic plague, or “Black Death”.*

The words “ravage” and “epidemic” and “outbreak” in the texts of the 20th century represent the threat of plague to vast number of people over time. As stated by Stenseth *et al.* (2008), even in today’s developed world, plague is causing damages. Therefore, actions should be taken to understand how human are affected by plague dynamic.

Extract 30: *With no weapon but cleanliness, governments in Europe made of plague epidemics an inert entry in the*

65- Organization, 1999: 340-4.

66- McClain, 1988: 447-513.

67- Meyer, 1961: 249.



dusty annals of medicine.

Extract 31: *In former times National Geographic, October 1980|p525 the rat explosion triggered outbreak of plague or devastated wheat and rice crops.*

Extract 32: *... partly, at any rate, to repair the ravages the plague had made among the clergy.*

CLICK FOR MORE CONTEXT		<input type="checkbox"/>	<input type="checkbox"/>	SAVE LIST	CHOOSE LIST	<input type="checkbox"/>	CREATE NEW LIST	<input type="checkbox"/>	SHOW DUPLICATES
1	1906	MAG	Cosmopolitan	A	B	C	name is forgotten. With no weapon but cleanliness, governments in Europe made of plague epidemics an inert entry in the dusty annals of medicine. In India the h		
2	1911	NF	OldEnglishLibraries	A	B	C	, was enlarged, partly, at any rate, to repair the ravages the plague had made among the clergy. -- Camb. Lit., ii, 354;		
3	1923	NF	GossipSeventeenth	A	B	C	in-127 Gossip of the Seventeenth and Eighteenth Centuries sanitary conditions and recurrent outbreaks of the plague . In this case, however, Bishop Burnet sug ges		
4	1925	MAG	Atlantic	A	B	C	by prayer and almsgiving. Christians gave up washing; Hindus liberated rats captured during plague epidemics . Religious orders and priests of the church gave the		
5	1930	MAG	Harpers	A	B	C	has succumbed to the disease of size, that malady which ravages like a very plague . Thus football, which used to be a game, has of late become		
6	1936	NF	ScientificProgress	A	B	C	was due largely to the barbarian invasion, but partly to a series of devastating plague epidemics . Since all knowledge and culture throughout the Middle Ages rema		
7	1941	MAG	Time	A	B	C	rats to city rats, there would be danger of great epidemics . # The plague is spread in two ways: 1) by fleas; 2) by the		
8	1942	MAG	ReadersDigest	A	B	C	other illness. Authorities are doing their best to check these ravages , but the plague spots around military camps multi- ply faster than they can be wiped out.		
9	1953	NF	EnglishHousewife	A	B	C	you an unclean small lock of the same." 4 During outbreaks of the plague the London theatres were closed; assemblies were prohibited, and the sale of possibly		
10	1957	MAG	Time	A	B	C	with a profit. Because of slow transportation, storms, piracy and outbreaks of plague , trade and profit margins were so precarious as to give ulcers to the steeliest		
11	1958	NEWS	NYT-Ed	A	B	C	be eradicated by the middle of the next decade. Meanwhile, epidemics of cholera, plague and typhus have been checked. Effective treatment has been, provided fi		
12	1975	MAG	Time	A	B	C	285560 By comparison with the great influenza epidemics , the plague that hit Minnesota recently was a trivial affair. One hundred and twenty-five people were		
13	1977	FIC	MovGauntletThe	A	B	C	a while, then moves to his side. Sensing the ravages of betrayal that plague him, an innate compassion surfaces. She reaches out, gently touches his shoulder		
14	1980	MAG	NatGeog	A	B	C	In former times National Geographic, October 1980 p525 the rat explosion triggered outbreaks of plague or devastated wheat and rice crops. Thus the flowering c		
15	1983	FIC	Phantoms	A	B	C	a fine job when it comes to tracking down and controlling vectors for outbreaks of plague or mass food poisoning or water contamination. But essentially, they're b		
16	1993	FIC	UglyWays	A	B	C	the Ark to Ekron, and that city also suffered the ravages of the terrible plague . Finally they realized what the nature of the problem was. So they returned		
17	1999	MAG	America	A	B	C	1). Though leprosy gradually died out in Europe, outbreaks of the bubonic plague continued steadily and devastatingly for centuries, well beyond Timonetto's lifesp		

Figure 8. Epidemics, ravage and outbreak as collocates of plague in Texts of 1910s-1990s

As it is obvious in the above examples, plague is not a disease limited to human but also a disease widespread in wildlife. The spread of the disease in wildlife can also be supported by the fact that the term “locusts” collocates significantly with the target word “plague”, in texts of the 20th century. The extract below is taken from Time magazine, 1988:

Extract 33: *As if all those woes were not enough, a plague of locusts is threatening to wipe out the country's meager corps of millet and sorghum.*

As explained by Stenseth *et al.* (2008), since plague is widespread in wildlife reservoir, it is not possible to eradicate it. Therefore, serious actions are needed to control the devastating impact of plague on human life.

The target word plague is also accompanied by the word “famine” with a negative semantic meaning. Again, the co-occurrence of these two words can refer to the devastating situations caused by Plague.

Extract 34: *...no appointment to office small or great, no handling of any community in time of plague or famine, ...*

Similar to the case of other diseases, collocates of other disease names (i.e., cholera, small-pox and typhus) with the term “plague” can refer to the misery that was caused by these diseases over time and specifically in the 20th century (see examples below).



Extract 35: *And the plague, smallpox or whatever it was, finished him first.*

Extract 36: *It is indisputable that such diseases as cholera, malaria, plague, typhus, and typhoid fevers have practically disappeared as the result of improved sanitation and cleanliness.*

Extract 37: *Of less immediate interest to us in the western hemisphere are the specific vaccines for the prevention of cholera and bubonic plague, but their decided worth necessitates their mention.*

68- Stenseth et al., 2008: e3.

Corpus of Historical American English			
SEARCH	FREQUENCY	CONTEXT	CONTEXT +
1 1900 NF StoryNineteenth	A B C	of the following summer. The drought of 1896, with the consequent famine and plague that devastated India last winter, was thus predicted some months in a	
2 1907 MAG Naton	A B C	of a total population of nearly 150,000,000. Hence, increasing poverty, famine , plague , and discontent. The argument of increasing population is recognized as	
3 1908 FIC PlayPiper	A B C	creatures of the Ark, For a similitude. -- our famine gone, Our plague of rats and mice. -- CROWD Hurrah -- hurrah! JACOBUS T is	
4 1909 FIC HappyHawkins	A B C	bit of a fuss over us,' 'cause the gang had been worse'n a plague an' a famine . You can judge o' their nerve when they made	
5 1911 MAG Scribners	A B C	in life but to die; who look upon disease and disaster, famine and plague , as visitations of God; who? some of them? have held it	
6 1911 MAG Scribners	A B C	appointment to office small or great, no handling of any community in time of plague or famine , no hygienic precautions or sanitary arrangements, into which	
7 1920 FIC BackGodsCountry	A B C	, and there was no food; why it matters that there were famine and plague in the great unknown land, and that people were dying and our world going	
8 1922 MAG Atlantic	A B C	as Gandhi IVOLdd have it. all logic suggests chaos, invasion, famine , plague , internecine war; and yet it can be argued that the very habits of	
9 1923 MAG Harpers	A B C	or no schools, colleges or universities; no police system; and famine and plague were uncombated. The country was like a vast domain in dilapidation with few	
10 1932 NF GrowthDevelopment	A B C	dreadful deed, for not only was there plague upon the land, but the plague had brought famine in its train. One can imagine the crowds of trembling men	
11 1946 FIC LastCircle	A B C	would brace his heart and put himself in Death's way -- but, in plague and famine and conflict, Death passed him by. So he went on.	
12 1953 FIC ReturnLannyBudd	A B C	!p212Where they smile in secret, looking over wasted lands, Blight and famine , plague and earthquake, roaring deeps and fiery sands, Clanging fights, and flar	
13 1962 FIC Reivers	A B C	who after ages of trying to cope with the anguishes of mortality -- famine , plague , war, injustice, folly, greed -- in a word, civilised government	
14 1965 FIC Thomas	A B C	still unsatisfied. After his plundering of the countryside came famine , and after famine plague . And it was said there fell a rain of blood three days and a	
15 1971 FIC DeathFox	A B C	." Our King calls it " a foul town." Though famine and plague may scatter the crowds -- not silencethem, mind you, for they are as	
16 1971 FIC DeathFox	A B C	, who could kill more men by ignorance, folly, and rash stupidity than plague and famine together, and scratch your head to recollect a victory by any of	
17 1972 MAG SatEvePost	A B C	rate. Population growth could be stopped in its tracks by worldwide famine , or plague , or thermonuclear war. Worldwide today there are, annually, about thirt	
18 1977 MAG Time	A B C	probably was only part of the ransom paid. In a time of famine , plague , constant war, baronial feuding and serious peasant uprisings, the poet lived to	
19 1977 MAG NatGeog	A B C	matter that burnt offerings on such a scale were only in times of crisis? plague , famine , or invasion? and the victims often criminals or prisoners of war	
20 1981 FIC FollowRiver	A B C	temples to make sacrifice, all the gods appear. They threaten the people with plague and famine . So to avoid disaster, the temple priests beg the people to	

Figure 9. *Famine as a collocate of plague in Texts of 1910s-1990s*

As it can be inferred from Extract 26, there have been a number of attempts to immunize people against plague. In a study conducted by Cavanaugh *et al.* (1974), it was explained that, although there was the plague, transmitted by rats and fleas during 1966-1997 in south Vietnam, the number of Americans that were infected by plague virus was negligible. According to Cavanaugh *et al.* (1974), one plausible explanation for negligible occurrence of plague in Americans was that the killed plague vaccine administered to American personals was effective in the prevention of the disease. However, despite the attempts made so far, plague is still considered as a threat in many parts of the world⁶⁸.

2-1. Comparing the centuries

To find an answer to the second research question, the frequency of the terms “cholera”, “measles”, and “plague” in the texts of 19th and 20th centuries were compared (Table 8).

As it is shown in the Table 8 and Figure 10, there is not a huge difference between the frequency of the target word



“cholera” in the 19th and 20th centuries. Cholera is not stranger to United States⁶⁹. The outbreak of cholera occurred in both 19th and 20th centuries. Since the first outbreak of cholera in 1817, cases infected with cholera were identified. In 1832 and 1849, during the second worldwide pandemic of cholera, 150,000 Americans died of cholera. In the 20th century also cholera presented challenges to Americans. For example, during the sixth pandemic in 1911, cases were reported in New York and Massachusetts. Within the last decades of the 20th century also cholera was endemic again⁷⁰. Therefore, despite many studies on Cholera, almost until the end of 20th century, cholera was still presenting challenges⁷¹.

- 69- Morris et al, 1985: 343-50.
- 70- Ibid.
- 71- Kaper et al., 1995: 48-86.
- 72- Hinman et al., 1983: 439-44.
- 73- Ibid.
- 74- Gregg, 1941: 170-180.
- 75- Pollitzer, 1954: 409-82.

Table 8: The frequencies of “cholera”, “measles”, “plague” in the COHA over 19th and 20th centuries

	1810-1890	1900-1990
Cholera	596	575
Measles	224	637
Plague	1298	1969

Moreover, the frequency of the word “measles” in the 19th and 20th centuries was not comparable. Much to researchers’ surprise, the frequency of the term measles in texts of the 20th century was more than two times higher than the frequency of the same word in texts of the 19th century. Initial decades of the 20th century witnessed several measles infections. Moreover, during 1950s, more than 500,000 cases were infected by measles and almost 500 people died of it in the United States⁷². Furthermore, as reported by centers for disease control in 1990, 27672 cases were infected by measles virus. The introduction of measles vaccine in 1963⁷³ could be another reason for more frequent use of the word “measles” in the 20th century. Moreover, a closer inspection of the concordance of “measles” in texts of 1900s-1990s revealed that the outbreak of German measles (rubella) in 1941⁷⁴ was another reason for the remarkable increase in the frequency of term “measles” in texts of 1910s-1990s. Although the word “German” collocates meaningfully (MI= 5.99) with the target word “measles” in words of texts of the 20th century, no significant relationship can be found between the word “German” and “measles” in texts of 1810s-1890s.

Although higher than the frequency of measles and cholera in both 19th and 20th centuries, the frequency of the term “plague” in the 19th century was lower than the frequency of the target word in the 20th century. From the beginning of history, plague has been a threat to mankind⁷⁵. Although plague is often considered as a problem of past, in many parts of the



world, it is still a threat⁷⁶. However, according to Reed, Palmer, Williams, and Kisch (1970), “little plague was recorded through mid-nineteenth century”⁷⁷. This could be the reasons for the lower frequency of the target word “plague” in texts of the 19th century in comparison to texts of the 20th century.

Figure 10 presents the same information in a histogram format. The x axis shows the contagious diseases under investigation in the present study (i.e., cholera, measles, and plague) over 19th and 20th centuries. The y axis presents the frequency of the words.

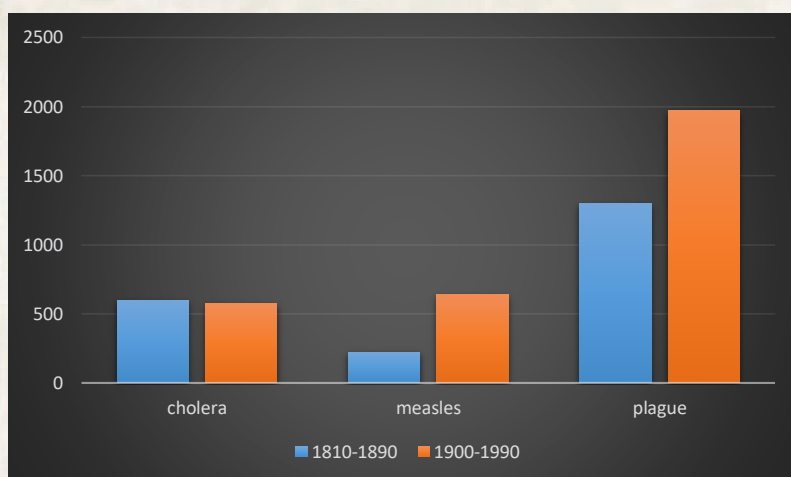


Figure 10. The frequency of the term “cholera”, “measles”, “plague” in the COHA, over 19th and 20th centuries

As the next step, after comparing the frequency of “cholera”, “measles” and “plague” over 19th and 20th centuries, their collocation patterns over 19th and 20th centuries were investigated. A closer analysis of the selected collocates of the target words under investigation revealed that several words had similar prosodies. Not surprisingly, a negative prosody was displayed in collocational patterns of the target word “cholera” in texts of the 19th century. The significant association of the words “epidemic” and “raging” referred to the trouble making nature of “cholera” as a contagious disease. Additionally, two other semantic groups were identified. One of which was health-related nouns such as the name of diseases (i.e., morbus, dysentery, Small-pox, plague) as well as a word such as infantum which referred to a viral disease of infants. The third group, which was covering a small proportion of the meaningful collocates of the term “cholera” (less than 5%), was referring to the time and origin of the disease outbreak. Besides, a large proportion of the meaningful collocates of the word “cholera” in texts of the 20th century was concerned with health-related terms. Others were classified

76- Stenseth et al., 2008: e3.

77- Reed et al., 1970: 466.



under the category disaster, giving reference to the trouble and misery caused by this infectious disease in the 20th century.

Semantic category of the meaningful collocates of the target word “measles” in texts of the 19th century was also explored. No semantic prosody with time and origin of the disease was made; but two other semantic categories were presented. In addition to the health-related terms and the words categorized under the heading disaster, the term “children” was categorized under stage of life, referring to the acceptance of the disease as an inescapable part of children’s life. The other semantic category exhibited to the power of the measles disease over the mankind. Moreover, a closer inspection of collocations of measles in texts of the 20th century showed that in addition to health-related terms and the terms categorized under the heading disaster, a number of other collocations referred to the introduction of vaccine in this time period. Next, semantic associations of the target word “plague” in texts of the 19th century were investigated. Results showed that in addition to the two semantic groups of health and disaster, there was another semantic group linked to the nature of the disease. Moreover, almost the same semantic classification was displayed for “plague” in texts of the 20th century. This shows that plague has been always a danger to mankind and no marked fluctuations is observed in the pattern of infection by plague over 19th and 20th centuries.

As the next step, collocational patterns of the disease under investigation over 19th and 20th centuries were compared. As it can be seen in Table 9, collocates of the word “cholera” in both 19th and 20th centuries were carrying negative meanings and they were creating the potential for a negative context. Besides, the target word “Cholera” in both 19th and 20th centuries attracted different health-related terms such as the name of other diseases (e.g., dysentery, small-pox, plague). Moreover, the use of terms such as “raging” and “scourge” as collocates of cholera in texts of 1810-1890 and 1900-1990, respectively, revealed that cholera in both 19th and 20th centuries was considered as a threat to mankind. Moreover, Collocational patterns such as “Asiatic cholera” and “cholera epidemic” referred to the pandemic of cholera in both 19th and 20th centuries. Cholera was one of the most feared diseases of the 19th century⁷⁸. The 20th century also witnessed epidemic of cholera in the United States. During the sixth pandemic of cholera in 1911, cases were reported to be infected by measles virus⁷⁹. In the last decades of the 20th century also cholera was endemic again. The meaningful relationship between the world “infantium” and “cholera” indicated that children were

78- Seas et al., 1996: 37-46.

79- Morris et al, 1985: 343-50.



also threatened by the cholera virus in 19th and 20th centuries. Negative words such as famine also indicated that cholera was a cause of human trouble and misery. In the 20th century, despite many studies on “cholera”, cholera was still presenting challenges⁸⁰.

- 80- Kaper et al., 1995: 48-86.
81- Assaad, 1983: 452-9.
82- Hinman et al., 1983: 439-44.

Table 9: Collocates of cholera in texts of 1810-1890 and 1900-1990

1810-1890	1910-1990
infantum	morbus
morbus	Typhus
dysentery	typhoid
epidemic	dysentery
Asiatic	epidemic
smallpox	smallpox
1832	Asiatic
plague	diphtheria
raging	scourge
famine	malaria

As it can be seen in Table 10, collocates of the target word “measles” in 19th and 20th centuries, despite carrying negative prosody, are more neutral than collocates of the two other diseases under investigation. This could be due to the fact that until 1980s, because of the universality of the disease, the measles has been accepted as an inevitable risk of early life⁸¹. Furthermore, in texts of the 20th century, “vaccine” is meaningfully collocated with the target word “measles”. The significant co-occurrence of the term “measles” could be the result of the introduction of measles vaccine in 1963⁸².

Table 10: Collocates of measles in texts of 1810-1890 and 1900-1990

1810-1890	1910-1990
whooping cough	rubella
scarlatina	chicken-pox
mumps	mumps
smallpox	whooping-cough
fever	smallpox
ill	diphtheria
sick	meningitis
children	measles
like	vaccines
down	epidemic

Moreover, irrespective of the time the text is extracted from, collocates of the target word “plague” carry a nega-



tive semantic meaning. This findings can be justified since from the beginning of history, plague has been considered as a threat to mankind⁸³. Collocates with negative semantic preferences (i.e., famine, ravage, etc.) can provide evidence for the misery and damages caused by plague through history. Moreover, the word “bubonic”, which is the most frequent collocate of the target word “plague” in texts of the 20th century, does not appear in the concordance of “plague” in texts of the 19th century except in 7 texts of magazine and news in the last decades of 1890s. As reported by New York Times in 1899:

Extract 27: ... he said: “The appearance of the bubonic plague in the East during the past two years finds the world for the first time prepared to investigate scientifically the cause of its development and indicate the means of relief.”

As reported by Craven *et al.* (1993), 296 cases of human plague were reported from 1970 to 1991 in the United States. Most of the cases were infected by bubonic or septicemic plague, or both⁸⁴.

- 83- Pollitzer, 1954: 409-82.
- 84- Craven *et al.*, 1993: 758-61.
- 85- Pollitzer, 1954: 409-82.
- 86- Stenseth *et al.*, 2008: e3.
- 87- Wharton, 2004: S1-S3.

Table 11: Collocates of plague in texts of 1810-1890 and 1900-1990

1810-1890	1910-1990
bubonic	bubonic
locusts	pneumonic
famine	typhus
cholera	cholera
infected	locusts
pestilence	smallpox
raged	epidemics
smallpox	famine
ravages	outbreaks
spots	ravage

Discussion

Higher frequency of the target word “plague” in comparison to “measles” and “cholera” can be justified as plague is still considered a menace to mankind⁸⁵. Despite so many developments in health-care issues over the years, thousands of people are reported to be infected with plague annually⁸⁶. The lower frequency of the term “measles” in comparison to the two other diseases under investigation in the present study is also justified. The introduction of measles vaccine in 1962 led to a steep decline in the number of measles-infected patients in United States⁸⁷. Therefore, as described by Griffin and Oldstone (2008), measles virus - one of the most contagious viruses- has been controlled by the introduction



of measles vaccine. Moreover, as demonstrated by Wharton (2004), outbreak of measles was controlled by improvements in health care and nutrition and thereby led to a remarkable decline in measles related deaths.

Moreover, exploring the collocational patterns of “cholera”, “measles”, and “plague” showed that most of the collocates of the word “cholera” and “plague” (i.e., raging, scourge, etc.) carried negative meanings and they mostly created a potential for co-texts that focused on different diseases and damages caused by them. Such negative collocates revealed the misery, trouble and the threatening atmosphere caused by such diseases. Although attempts were made to control cholera, the disease was eradicated even up to the end of 20th century⁸⁸. According to Morris and Black (1985), numerous cases were identified with cholera since the first outbreak of the disease in 1817. In 1832 and 1842, 150,000 Americans died of cholera. In 1866, also 50,000 died during the fourth worldwide pandemic. Besides, during the sixth pandemic of cholera in 1911, a number of people were reported to be infected by cholera in New York and Massachusetts. Last decades of the 20th century also witnessed another pandemic of cholera⁸⁹. Plague also has been a never-ending threat for public health⁹⁰. “Plague has a most pernicious past; a present that is bad; and a future that seems to say to civilized man, ‘Your money or your life’”⁹¹. As explained by Stenseth *et al.* (2008) plague should not be considered as a problem of past as it is still a threat in many parts of the world. Despite the small number of human cases of plague, the threat of plague for humanity should not be ignored because of “the disease’s inherent communicability, rapid spread, rapid clinical course, and high mortality if left untreated”⁹².

However, the collocates of the term “measles”, although negative, carried less negative semantic meanings in comparison to collocates of the target words “cholera” and “plague”. The history of measles, a tremendously contagious disease, dated back to the seventeenth century⁹³. However, the universality of disease until 1980s, especially in developing countries has led to the worldwide acceptance of measles as an unavoidable risk of early life⁹⁴. Another reason for the use of collocates with less negative semantic meanings with the term “measles” in comparison to the terms “cholera” and “plague” could be the introduction of vaccine in 1963. Introduction of the measles vaccine resulted in a remarkable decrease in infection and death due to measles virus^{95,96}. As explained by Assaad (1983), if given at the critical age, measles vaccine prevents the disease effectively.

Furthermore, the larger number of instances of “measles”

- 88- Kaper *et al.*, 1995: 48-86.
- 89- Morris *et al.*, 1985: 343-50.
- 90- Pollitzer, 1954: 409-82.
- 91- Lloyd, 1925: 629.
- 92- Stenseth *et al.*, 2008: 11.
- 93- Dardis, 2011: 9-12.
- 94- Assaad, 1983: 452-9.
- 95- Hinman *et al.*, 1983: 439-44.
- 96- Wharton, 2004: S1-S3.



and “plague” in texts of 1900s-1990s, in comparison to frequency of the same words in texts of 1810s-1890s, does not necessarily imply that these contagious diseases have been more prevalent in the 20th century. Closer investigation of the concordance of the target word “measles” revealed that the first attempt to use vaccine to immunize against measles in 1963⁹⁷ as well as the outbreak of German measles (rubella) in 1941⁹⁸ were among the main reasons for higher frequency of the term measles in texts of the 20th century. The higher frequency of the target word “plague” in texts of the 20th century was likely to be due to the fact that “little plague was recorded through mid-nineteenth century”⁹⁹.

Furthermore, comparing the collocational patterns of the target words “cholera”, “measles”, and “plague”, the researchers found that collocates of the word “cholera” in both 19th and 20th centuries carried negative meanings. This finding revealed that cholera in both 19th and 20th centuries was challenging. According to Glass *et al.* (1992), cholera was one of the most widespread diseases of the 19th century. The 20th century also witnessed epidemic of cholera in the United States. During the epidemiology of cholera in 1911, cases were reported in New York and Massachusetts¹⁰⁰. Last decades of the 20th century also witnessed another pandemic of cholera. In 20th century, despite many studies on “cholera”, cholera was still causing trouble¹⁰¹. Moreover, it was observed that the collocates of the target word “plague” also in texts of both 19th and 20th centuries carried a negative semantic meaning. Moreover, collocates with negative semantic preferences (i.e., famine, ravage, etc.) provided evidence for the challenges caused by plague through history. These findings can be justified in the light of the fact that plague has been always a common cause of death¹⁰². However, findings of the current study revealed that collocates of the target word “measles” in both 19th and 20th centuries carried a less negative meaning. Besides, the word “vaccine” which was a significant collocate of the term “measles” in texts of 1900s-1990s but not the texts of 1810s-1890s can be justified in the light of the fact that measles vaccine was first introduced in 1963¹⁰³. Introduction of the measles vaccine led to a remarkable decrease in the disease burden¹⁰⁴.

Conclusion

Results of the present study, in line with the findings reported by Balteiro (2015), shows that language is the linguistic mirror of society. In the present study, collocations of the target words “cholera”, “measles” and “plague” provided insight into the social events that took place during 19th and

97- Hinman et al., 1983: 439-44.

98- Gregg, 1941: 170-180.

99- Reed et al., 1970: 466.

100- Morris et al., 1985: 343-50.

101- Kaper et al., 1995: 48-86.

102- Pollitzer, 1954: 409-82.

103- Hinman et al., 1983: 439-44.

104- Ibid.



20th centuries. As an example, collocates, such as “raging” and “scourge”, mirror the threatening atmosphere of society caused by contagious diseases, such as “cholera”, and “plague”. Moreover, the use of more neutral collocates with the target word “measles”, in comparison to the collocates used with the two other diseases, reflects the acceptance of the measles as an unavoidable risk of early life in the past centuries. Furthermore, the appearance of the word “vaccine” as a significant collocate of the target word “measles” in texts of the 20th century also reflects the introduction of measles vaccine in the 20th century.

Therefore, findings of the current study have showed that language can represent the events taken place in the society. Overall, as expected, the texts on different diseases (i.e., cholera, measles, and plague) have carried over a negative prosody. Over years, different contagious diseases have caused so much pain and damage to people. All three diseases explored in the current study (i.e., cholera, measles and plague) have been the causes of huge misery and death to people. However, there have been ongoing attempts to decrease the destructive effect of such diseases. Despite this ongoing attempt to control diseases, the negative consequences of such diseases should not be underestimated. Considering the devastating effect of contagious diseases, people should be aware that they have to take part in health programs. Therefore, the descriptions provided in the current study have tended to offer strong evidence of the value of participation in health programs such as vaccination programs.

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