

Nature, Nurture, or that Fast Food Hamburger:
Media Framing of Diabetes in the *New York Times* from 2000 to 2010

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Abstract

Diabetes is a growing health concern in the United States, affecting nearly 1 in 6 adults and costing the country \$174 billion in 2007 alone. Despite the growing prevalence and cost of the disease, it is widely misunderstood by the general public. This project examined the ways in which diabetes has been discussed and framed by the *New York Times* over the past ten years. Framing enables journalists to emphasize a certain perspective or element of a problem, thereby shaping readers' thoughts and beliefs about the issue. Prior research has shown that the public's perception of the causes and solutions to broad problems such as diabetes has significant implications for the way related public policies are viewed; therefore, understanding how diabetes is being discussed in the news media can be an important first step in shifting public opinion about ways to combat the disease.

A content analysis of 239 articles published in the *New York Times* between 2000 and 2010 revealed that nearly one-third of articles failed to differentiate between type 1, type 2, and gestational diabetes, which may cause confusion among media consumers given that the types of diabetes vary substantially in root cause and treatment. Furthermore, an examination of the frames used within each type of diabetes showed that the overall dominant frame across types was either a medical frame, which referenced causes such as family history or genetics and solutions such as medication or surgery, or a behavioral frame, which referenced individual-level causes such as poor diet or insufficient physical activity and solutions such as exercise and improved nutrition. The overreliance on these two types of frames in the coverage spotlights a deficiency of a third frame, the societal level frame. A dominant societal frame discussed the

broader causes of diabetes such as poor food environments and unsafe areas to exercise and solutions such as improved access to healthy foods and better nutrition education. The limited use of societal level frames could make it difficult for the public to see the wider consequences of diabetes and decreases the likelihood that they will support the broader public policy solutions necessary to combat the disease.

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Diabetes is a serious and costly problem in the United States. Approximately 23 million Americans, or 7.8% of the population, have diabetes (CDC, 2009). This is an increase of more than 7 million people since 2000 alone. If current trends continue, one in three children born in the year 2000 will develop diabetes at some point during their lifetime. For minority populations, the number is nearly one in two (CDC, 2009). In addition to being a lifelong chronic disease, diabetes is also the leading cause of other significant ailments including heart disease, stroke, kidney failure, blindness, and nerve damage. In 2007, the total cost of diabetes in the U.S. totaled more than \$174 billion (American Diabetes Association [ADA], 2010a).

Like most chronic diseases, diabetes is complex in its risk factors, causes, treatment and outcomes. Type 1, or juvenile, diabetes, accounts for 5-10% of all cases of diabetes and is usually diagnosed during childhood. It occurs when the immune system, for reasons that are still unclear, kills off the cells in the pancreas that produce insulin, a hormone that converts food into energy (ADA, 2010c). People with type 1 diabetes must monitor their blood sugar and utilize insulin therapy (taking injections or using an insulin pump) to manage the disease. Type 2 diabetes accounts for 90-95% of all cases of diabetes. Type 2 diabetes occurs when the body does not produce enough insulin or does not utilize it effectively (ADA, 2010d). Risk factors for type 2 diabetes include being over age 45, having a family history of diabetes, being overweight, not exercising regularly, or being a member of certain ethnic and racial groups such as African Americans, Latinos, Native Americans, and Asian Americans (ADA, 2010e). People with type 2 diabetes must monitor their blood sugar and either take oral medication or utilize insulin therapy

to manage the disease. The third type of diabetes, gestational diabetes, affects 4% of all pregnant women during pregnancy and is similar to type 2 diabetes. Scientists have hypothesized that the hormones produced during pregnancy can cause insulin resistance, leading to elevated blood glucose levels that can harm the developing baby. Gestational diabetes often goes away after the woman gives birth, but puts both the mother and the child at risk for type 2 diabetes later in life (ADA, 2010b).

While there are a number of medical and behavioral causes of diabetes, there are also many societal causes that contribute to diabetes. Societal causes have a particularly significant effect on type 2 diabetes, which, as previously mentioned, has a more extensive and complex list of risk factors than type 1 diabetes (ADA, 2010e). These societal factors can impact outcomes for individuals with type 1 and gestational diabetes as well, however, since they can influence successful management of the disease. Most of the societal factors that impact diabetes affect one's ability to follow diet, exercise, and medical recommendations; in essence, behavior (Gollust & Lantz, 2009). Examples include lack of access to healthy foods (i.e. food deserts, where fresh foods are not available), limited access to safe places to exercise, and limited access to medical care and diabetes education. Without these broad structural variables in place, it is difficult to make healthy behavior choices. Other factors such as relationships with medical providers, social support, and community resources may further impact incidence of diabetes (Brown et al., 2004).

The complexity of diabetes may present problems for journalists who do not have some background knowledge about the disease. Even experienced journalists who have previously covered diabetes issues may face challenges in discussing and framing the issue, given confusion about the three types, root causes, and the recent focus on the connection between type 2 diabetes

and obesity. It is important to consider the ways in which news coverage discusses an issue because this coverage influences public opinion about the subject, which in turn affects policymaking around the issue. For example, if diabetes is always framed as a personal problem with individual-level solutions, the public will likely be skeptical of broad policy initiatives to combat the disease. Conversely, if diabetes is discussed in terms of societal-level causes and solutions, the public will be more likely to support public health interventions and other policy solutions (Wallack, Dofman, Jernigan, & Themba-Nixon, 1993; Iyengar, 1990).

The purpose of this study is to examine the ways in which the *New York Times* has framed diabetes issues between 2000 and 2010. Diabetes is quickly becoming a serious public health threat; yet only a limited amount of research has been conducted on the media's framing of the disease. Given the lack of research about the framing of diabetes, this project fills a gap in the field of health communications and enables both journalists and public health officials to be more cognizant of how the disease is or is not being discussed. This knowledge can then lead to better communication and educational outreach about causes and solutions to the disease.

Framing

The study of media framing emerged as a field of communications research in the 1970s and has significantly advanced in the years since. Early researchers such as Goffman (1974) and Gitlin (1980) first discussed how frames help to organize information, both for journalists and media consumers. Gitlin wrote, "Media frames are persistent patterns of cognition, interpretation, and presentation, of selection, emphasis, and exclusion, by which symbol-handlers routinely organize discourse" (p. 7). Entman (1993) refined this definition in the early 1990s, writing that to frame is "to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal

interpretation, moral evaluation, and/or treatment recommendation for the item described” (p. 52). These authors recognized the power of frames to emphasize certain issues and downplay others, enabling communicators to shape the way audiences received information.

There are many ways in which the media frame issues, but the two ways of most interest to this research are episodic and thematic frames. According to Wallack et al. (1993), episodic frames tend to discuss individual-level decisions and responsibilities and suggest “personal-behavioral solutions” (p. 97). For example, a story about someone who developed type 2 diabetes after struggling with obesity would be utilizing an episodic (behavioral) frame. The reader would come away with the impression that weight problems cause diabetes, which is not always true. Conversely, thematic frames discuss issues in a broader social and political context and suggest public policy solutions (Wallack et al., 1993). A thematic (societal) frame might discuss diabetes in the context of food deserts (areas where healthy foods are not available), which is a broader societal problem. The reader might then consider public policy changes as a solution rather than merely believing that the individual was solely responsible for the disease. As Kim and Willis (2007) note, by using framing to emphasize certain aspects of an issue, they “promote a particular problem definition, leading the audience to make attributions of responsibility or other judgments based on different frames or interpretations offered for the same factual content” (p. 361).

Thus, the ways in which diabetes is framed can have a significant effect on the way readers perceive the problem and the way they view solutions. Scholars have examined the effects of frames on almost every public policy issue (a database search for “framing” and “public opinion” yields more than 300 articles). They have found that frames have a significant influence on the ways in which media consumers view causes and solutions to complex

problems. Iyengar (1990) found that individuals who viewed television reports using episodic frames were less likely to consider societal causes of the problem. For example, when subjects watched stories about individuals affected by poverty, they most often cited individual shortcomings such as low education or laziness as the cause. Conversely, subjects who watched stories about national rates of unemployment or general poverty tended to identify broader causes and solutions such as government programs or other public policies. These findings illustrate the power of frames in influencing public perception of a range of issues.

Many studies have examined the use of frames in the media and together have identified a tendency to use episodic rather than thematic frames. Kim and Willis (2007) wrote that news media strives to simplify information for consumers, presenting them in “easy-to-understand interpretive packages” (p. 361). Since broad, thematic frames tend to be more complex and require more discussion, it is easier for journalists to focus on individuals, employing episodic frames. Schudson (2003) remarked in his book *The Sociology of News* that media coverage tends to be “people-centered,” where “clearly identified individuals personify or stand in for larger, more difficult to grasp social forces,” and “news tends to simplify complex social processes in ways that emphasize melodrama, that turn a complex set of phenomenon into a morality tale” (p. 48). Both Wallack et al. (1993) and Iyengar (1994) also noted the prevalence of episodic frames in media coverage of most issues and the influence it had on public perceptions of solutions, contributing what Iyengar referred to as “the trivialization of public discourse” (p. 143). When media consumers are only presented with stories about individuals, it is more difficult for them to put the issues into a broader context and to understand the wider forces involved. This leads to a focus on individual-level causes and solutions and limits awareness of more comprehensive approaches to problems.

In addition to studies about episodic and thematic framing of social issues like poverty and crime, another body of research has examined the ways in which health issues are framed in the media. Similar to research on the prevalence of episodic frames, these studies on health framing frequently find an emphasis on personal responsibility for health in media coverage, despite a growing consensus among public health officials about the important role of societal and genetic factors. In their work examining the use of framing by health organizations, Park and Reber (2010) remarked, “Although most health problems are associated with social and environmental factors that are beyond immediate individual control, health news stories are more likely to focus on individual problems and personal examples rather than to deal with the consequences of societal conditions on public health” (p. 41). Dorfman, Wallack, and Woodruff (2005) in their article discussing the need for health professionals to reframe public health issues, said, “...public health issues are rarely portrayed in the news in ways that encourage audiences to comprehend and ponder the underlying causes of problems or their potential policy solutions; health stories, similar to other news, reinforce values of individualism and personal responsibility” (p. 329-330). By overemphasizing behavioral factors and personal responsibility, the media fails to provide a comprehensive picture of the factors impacting health, thereby limiting the public’s perception of broader solutions.

A growing body of research has also examined frames used in the discussion of obesity, an issue often linked to type 2 diabetes in the news. Saguy and Almeling (2008) examined news reports on scientific obesity studies and found that the news media and press releases were more likely to emphasize individual responsibility for weight, perhaps due to the tendency of news to focus on dramatic, alarmist issues. The authors wrote, “Both science and the news blame individual choices for excess weight more than social-structural or genetic factors [and] the news

further accentuates the focus on individual level blame” (p. 77). Kwan (2005) identified three prominent frames in obesity discourse: a medical frame, which referred to obesity as a chronic disease; a social justice frame, which focused on discrimination against obese individuals and emphasized being healthy at any weight; and a market choice frame, which emphasized personal choice in eating habits and a degree of personal responsibility. While this research did not evaluate how often these frames were used, it was an important first step in identifying the ways in which obesity was being discussed. Kwan also expressed concern about individual framing of obesity, remarking, “This frame blames individuals for their bodies and suggests policy that encourages changes in individual lifestyle. It also endorses moral judgments of fat individuals, thus legitimizing social inequality and health disparities” (p. 27). Given that obesity and type 2 diabetes are often discussed in tandem in the media, these concerns could also apply to episodic framing of diabetes.

Despite numerous studies about framing of other health issues, very few studies have been completed about the framing of diabetes. Rock (2005) conducted a study about the coverage of type 2 diabetes in four major newspapers from 1998-2000. In her findings she wrote, “Even when media coverage acknowledged societal forces and circumstances as causes [of type 2 diabetes], the proposed remedies did not always include or stress modifications to social contexts. Neither the societal causes of public health problems nor possible societal remedies automatically received attention from researchers or from journalists” (p. 1832). Gollust and Lantz (2009) came to a similar conclusion in their study of the print coverage of type 2 diabetes in 19 U.S. newspapers between 2005 and 2006. Their study found that behavioral causes, such as diet and weight gain, and behavioral solutions, such as diet, exercise and weight loss, were most often referenced. The authors concluded, “Overall, news articles about diabetes

tended to emphasize individualized causes and approaches far more than they mentioned social determinants or social policy approaches” (p. 1097). They also noted, “There could be a wide continuum of public understanding and acceptance of the notion that social, economic, and environmental factors influence health, bearing implications for the public’s likelihood of supporting interventions to reduce the population health burden of diabetes” (p. 1097). While these studies were an important first step in understanding the ways in which diabetes is framed in the media, the authors focused exclusively on type 2 diabetes, leaving a gap in knowledge about type 1 and gestational diabetes. Examining framing of all three types of diabetes would allow for useful cross-type comparisons as well.

Given increases in the prevalence of diabetes and the rising burden it is placing on society, it is important to determine if framing has changed or if journalists are still avoiding discussions of societal-level causes and/or solutions. It is also important to explore the ways in which the other types of diabetes are discussed in the media, an avenue of research that has not been pursued before. Type 1 diabetes is a lifelong disease with serious complications and gestational diabetes can have significant implications for pregnancy, and yet framing of these types has not been studied. Examining media framing of all three types of diabetes will not only provide better understanding of how frequently each type is discussed, but also in what context(s). Looking at differentiation across types can answer questions about whether or not news coverage adequately discusses the differences between types as well.

To deepen knowledge about the ways in which diabetes has been framed in news coverage of the disease, this project will answer four research questions:

- 1: Did the quantity of diabetes coverage change over time?
- 2: What proportion of news stories about diabetes mention a specific type, and which types(s) are most commonly discussed?
- 3: What was the dominant frame used?
- 4: What were the most common cause and solution frames used for each type of diabetes?

Answering these research questions will provide a more complete understanding of the ways in which diabetes is discussed in the media. The study will shed light on changes in coverage over time, level of coverage detail and differences in quantity of coverage, and finally the types of frames most commonly used, both overall and within each type of diabetes. This comprehensive approach will provide a more complete understanding of how diabetes is framed in the media and will help to identify potential areas of improvement in coverage.

Methods

To address the proposed research questions, a content analysis was conducted of relevant newspaper articles published in the *New York Times* between 2000 and 2010. The *New York Times* is the newspaper of record in the United States and, with a circulation of more than 900,000, is the third most-read newspaper in the United States (Audit Bureau of Circulation, 2010). Lexis Nexis was used to locate articles that mentioned diabetes either in the headline or lead. In order to ensure that the articles provided substantive coverage of diabetes, the search parameters specified a minimum length of 150 words. Articles with headlines including “paid

notice” were excluded in order to omit obituaries from the search results.¹ This initial search yielded 883 articles.

After obtaining the initial results for each year, the articles were evaluated in order to further verify their relevance. A relevant article was defined as one that substantively described the causes and/or solutions of diabetes. For example, an article that merely mentions diabetes as one of several leading causes of death in the U.S. was not considered relevant. In total, 239 articles were coded as relevant, or 27 percent of the initial sample.

Once the relevant articles had been identified, each article was evaluated according to a coding scheme developed by the author (see Appendix for specific coding procedure). Variables included the year of publication, whether it specified which type of diabetes was being discussed, and if so, which types of diabetes were mentioned (i.e., type 1, type 2, gestational). For each type of diabetes mentioned, the article was further coded for the presence of three types of frames for both causes of and solutions to diabetes, respectively: behavioral, societal, or medical. These frame classifications were adapted from research by Wallack et al. (1993), Park and Reber (2010), and Kwan (2005). Behavioral cause frames referenced poor diet, lack of physical activity, or other individual-level issues, and behavioral solution frames recommended improving one’s diet, increasing activity levels, etc. Societal cause frames referenced poor food environments, our car-centered culture, poor nutrition in schools, or other broad problems, and societal solution frames recommended improving access to healthy foods, increasing nutrition education, or other public policy/societal level solutions. Medical cause frames referenced family history, genetics, or age, and medical solution frames recommended blood sugar control, medication, or surgery. Coding for each frame was not mutually exclusive; therefore, it was

¹ The exact Lexis Nexis query was as follows: “HEADLINE(diabetes) or LEAD(diabetes) and length(>150) and NOT HEADLINE("paid notice").

possible for an article to reference up to all three frames. For the purpose of data analysis, two summary variables were computed to indicate which combination of cause and solution frames, respectively, were being used in the discussion of each type of diabetes (i.e., behavioral only, societal only, medical only, behavioral and societal, behavioral and medical, social and medical, or all three). This summary variable permits examination of whether certain frames were often used together in the cause or solution discussion of each type of diabetes. Finally, to capture a better overall picture of the frames being used, an additional coding category considered which frame was most prominent in the article (i.e., behavioral, societal, medical, or indeterminate). The most prominent frame was distinguished based on the amount of space dedicated to the description and/or discussion of the frame.

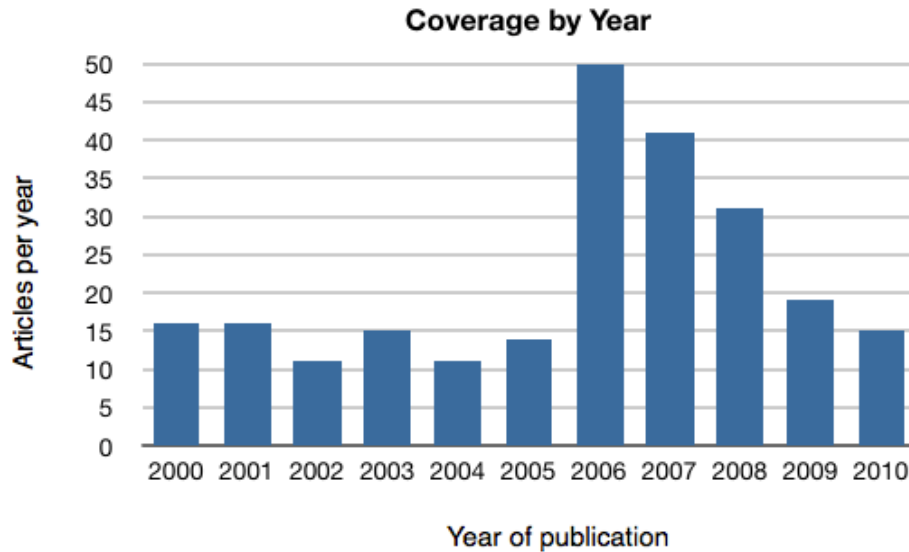
All articles were coded by the author. In order to verify the reliability of the coding scheme, 50 articles, or approximately 20% of the total sample, were independently coded by a second coder. Inter-coder reliability, calculated using Krippendorff's alpha for nominal-level data, ranged from .66 to 1.0. On all but four of the 33 variables that were coded, reliability achieved at least .80.

Results

Research question 1: Did the quantity of diabetes coverage change over time?

The amount of coverage diabetes issues received fluctuated over the past decade. On average, the *New York Times* published 22 articles about diabetes issues each year. The median was 16 articles per year. As can be seen in Figure 1, there was a noticeable increase in articles published between 2006 and 2008, with those articles comprising nearly half of the total coverage. Twenty percent (n=50) of all articles were published in 2006 alone, followed by 17% (n=41) in 2007 and 13% (n=31) in 2008.

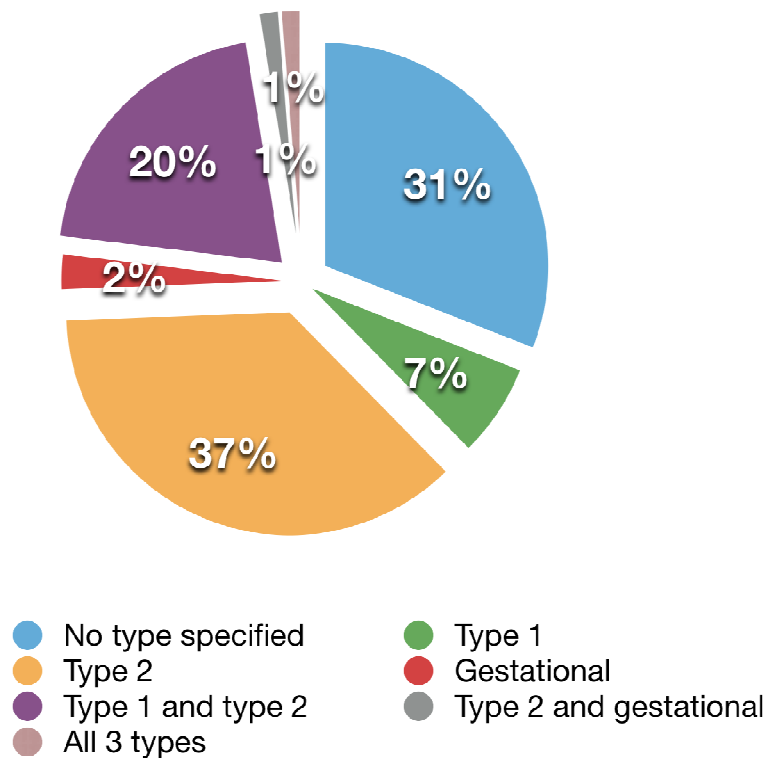
Figure 1: Number of diabetes articles per year



Research question 2: What proportion of news stories about diabetes mention a specific type, and which types(s) are most commonly discussed?

Figure 2 depicts the proportion of total coverage devoted to each type of diabetes. Thirty-one percent of the articles coded did not specify which type of diabetes was being discussed. Thirty-seven percent of articles discussed only type 2 diabetes, 20% discussed type 1 and type 2 diabetes together; 7% discussed only type 1 diabetes, and 6% percent discussed gestational diabetes only. Type two and gestational diabetes were mentioned together in 1% of the stories. All three types of diabetes were also mentioned together in just 1% of the stories.

Figure 2: Percentage of coverage dedicated to various diabetes types and combinations of types



This study also looked for changes over time in the percentage of articles that differentiated between diabetes types. There were no discernable trends for this variable, however, as the percentage of non-differentiating articles ranged from a low of 20% in 2010 to a high of 46% in 2003. There was great fluctuation between each year, preventing the identification of any major trends.

Research question 3: What was the dominant frame used?

Overall, the medical frame was the dominant frame, used in 39% of all stories. The behavioral frame was the dominant frame in 33% of stories, with societal coming in third with 21% (see Table 1).

A more telling approach is to examine the dominant frame used in the discussion of each type of diabetes. In stories that did not differentiate between diabetes types, the behavioral frame was dominant most often (42% of articles), followed by the societal frame (33%), and then the medical frame (16%). Seventy-five percent of stories about type 1 diabetes used a dominant medical frame. For type 2 diabetes, 43% used a dominant medical frame, followed by 27% using a dominant behavioral frame and 22% percent using a dominant societal frame. For stories discussing gestational diabetes, the behavioral frame was dominant in half of all stories. In stories discussing both type 1 and type 2 diabetes, the medical frame was dominant in 53% of articles.

Table 1: Dominant frame by type

	Diabetes Type					
	No type	Type 1	Type 2	Gestational	Type 1 & 2	Overall
Dominant frame						
Behavioral	41.9%	18.8%	27.3%	50%	30.6%	33.1%
Social	33.8%	6.3%	22.7%	8.3%	8.2%	21.3%
Medical	16.2%	75%	43.2%	33.3%	53.1%	38.5%
<i>N</i>	68	16	82	11	45	222

While there were variations of dominant frames across types of diabetes, there were no discernable trends in dominant frames over time. The medical frame was dominant in six of the eleven years included, followed by behavioral in three of the years and then societal in two of the years. The most common order of frame prominence, occurring in six of eleven years, was

medical, behavioral, and social. Four of the remaining five years each had a different order of prominence.

Research question 4: What were the most common cause and solution frames used for each type of diabetes?

Within articles that did not differentiate between diabetes types, a behavioral frame was most commonly used (see Table 2). A staggering 73% of articles employed this frame when discussing the causes of diabetes, either alone or in conjunction with another type of frame, and 41% used exclusively a behavioral cause frame. In discussions of solutions to diabetes, 55% of the non-differentiating articles used some form of a behavioral frame, with 26% using a solely behavioral frame. Surprisingly, societal-level frames were also used frequently in the discussion of solutions to diabetes in general, with 52% of all articles mentioning societal-level solutions.

Articles that covered type 1 diabetes overwhelmingly used medical frames to discuss the cause and solution to the disease. All of the articles that addressed type 1 diabetes employed a medical cause frame. Ninety-eight percent of articles used a medical frame alone, with the remaining 2% using a combination of medical and behavioral frames. Stories covering solutions to type 1 diabetes used a medical frame 85% of the time, although 27% of these stories used a behavioral frame as well.

Coverage of type 2 diabetes primarily employed either a behavioral or medical frame. Seventy percent of stories used a behavioral cause frame, either alone or in conjunction with another cause frame, and 69% of stories used a medical frame. The most common combination of cause frames was behavioral and medical, accounting for 33% of all stories about type 2 diabetes. The frames used for the solutions for type 2 diabetes followed a similar pattern, with

67% using a behavioral solution frame and 64% using a medical frame. Again, the most common combination was a behavioral and medical cause frame, accounting 29% of stories.

Among the few stories about gestational diabetes, medical cause frames were the most common. All stories used a medical frame in some capacity, with 56% using solely a medical cause frame and 44% using a combination of behavioral and medical frames. A combination of behavioral and medical frames also accounted for 67% of solution frames, with a combination of behavioral and societal frames accounting for the remaining 33%.

Table 2: Percentage of frames used by type

Frame	No Type % of articles		Type 1 % of articles		Type 2 % of articles		Gestational % of articles	
	Cause	Solution	Cause	Solution	Cause	Solution	Cause	Solution
Behavioral	41%	25.9%	0%	4.2%	19.7%	19.5%	0%	0%
Societal	11.7%	24.7%	0%	0%	1.7%	5.1%	0%	0%
Medical	13.3%	12.1%	98.4%	58.3%	26.5%	27.1%	55.6%	0%
Behavioral and societal	20%	13.8%	0%	2.1%	9.4%	11%	0%	33.3%
Behavioral and medical	10%	12.1%	1.6%	27.1%	33.3%	28.8%	44.4%	66.7%
Societal and medical	1.7%	8.6%	0%	6.3%	1.7%	0.8%	0%	0%
Behavioral, societal, and medical	1.7%	3.4%	0%	4.2%	7.7%	7.6%	0%	0%
<i>N</i>	60	58	62	48	117	118	1	3

Discussion

This study was designed to examine framing of diabetes in the *New York Times* from 2000 to 2010. Specifically, it strived to determine if coverage had changed over time, if certain types of diabetes were discussed more than others, and which frames (behavioral, societal, or medical) were used most frequently. The study found that while there were no discernable trends in the frames used over time, type 2 diabetes was most commonly discussed, and behavioral and medical frames were utilized far more often than societal frames.

Differences in quantity of coverage between the types of diabetes seem to correlate closely with differences in incidence between types. Type 2 diabetes accounts for 90 to 95% of all cases of diabetes; therefore, it is to be expected that it received the majority of the coverage. Incidence of gestational diabetes is poorly tracked because it is an acute condition that ceases after pregnancy, and limited knowledge of the disease may contribute to its limited coverage.

Similarly, the most common frames used within each type of diabetes seemed to closely correlate with the most widely recognized causes and solutions for each, but often neglected more complex policy or societal initiatives. Type 1 diabetes is caused by a malfunction of the immune system, which causes the body to kill insulin-producing islet cells in the pancreas. There is little consensus in the medical community about what causes this process to start; therefore, it is widely framed in terms of its medical causes. Likewise, type 1 diabetes is primarily treated through the use of injected insulin, although individual behavior also plays a role in the form of medical adherence, and eating and exercise habits. Societal and policy characteristics such as availability of nutrition facts or access to safe parks can help or hinder these behavioral solutions, but they were not discussed at all in coverage of type 1 diabetes.

Risk of type 2 diabetes is influenced by an array of factors, from family history and age to eating and exercise habits, which probably contributes to the dominance of a combined medical and behavioral cause frame in its coverage. The prominence of the medical solution frame for type 2 diabetes may have been exacerbated by the medical scares involving medications such as Avandia, which generated numerous articles that discussed prescription drugs as a solution to the disease.² In actuality solutions to type 2 diabetes are more broad, however, ranging from medication to individual-level behavior change such as diet and increased exercise to societal-level initiatives such as healthy living education, access to fresh healthy foods, or exercise-friendly urban planning. Since type 2 diabetes disproportionately affects minority and low-income populations, these types of societal-level solutions should be even more important to discuss, but coverage did not reflect this.

The causes of the last type of diabetes, gestational, are still not fully understood, and it was the least covered of any type of diabetes in this study. Of the small number of articles about gestational diabetes, most tended to rely on a medical explanation, similar to coverage of type 1 diabetes. Unlike type 1 diabetes, however, coverage of gestational diabetes also frequently used a combination of a behavioral and medical explanation as both a cause and solution. Excess weight can be a risk factor for gestational diabetes and diet and exercise can help control the disease, which likely contributed to the use of the behavioral frame. Women with gestational

² In 2007, research came to light suggesting that Avandia, one of the most commonly prescribed type 2 diabetes medications in the world, put patients at an increased risk for heart problems. In response to this study, the FDA issued a strict warning but did not completely pull the drug (U.S. National Library of Medicine, 2010). Diabetes doubles a patient's risk for heart attack on its own; therefore a medication that further increases chances of heart trouble was cause for significant concern. A similar situation occurred in 2000 when the drug Rezulin was taken off the market when it was linked to liver failure and death (U.S. Food and Drug Administration, 2000).

diabetes need access to advice and care from medical professionals to minimize the risk of complications for the mother or child, but this societal-level solution was rarely discussed.

The overall framing of diabetes in the *New York Times* failed to fully reflect the complexity of the disease in several ways, which raise two key areas of concern. First, the fact that nearly a third of articles failed to specify which type of diabetes was being discussed is an issue of concern. As previously mentioned, type 1, type 2 and gestational diabetes differ significantly in root cause and treatment; therefore, readers may become confused about diabetes issues as a whole when journalists fail to specify which form of the disease is being covered. This confusion could be further exacerbated given that nearly three-quarters of non-differentiating articles used a behavioral cause frame, which places blame on the individual rather than considering broader causes. For example, while it is true that individual behavior is a risk factor for type 2 diabetes, this is not the case for type 1 diabetes. Consumers may not realize this when reading articles that broadly discuss “diabetes.”

A second reason for concern was the overall lack of discussion about societal causes and solutions to diabetes. Societal-level frames were the least utilized of the three types, which could lead readers to focus only on individual level causes and solutions. While individual behavior is important in working to prevent diabetes or managing its daily demands, broader public policies and programs, such as nutrition education, food in schools, urban planning, and access to comprehensive medical care and advice, can either contribute to diabetes or be a part of the solution. Individuals unfamiliar with diabetes may not realize the importance of these broader policies, especially when they are not discussed in media coverage of the issue.

While this study is an important first step in identifying major trends in the coverage of diabetes in the media, it is simply that: a first step. Future research is needed to explore how

diabetes is discussed in newspaper publications other than the *New York Times*. The *Times* is the newspaper of record and reaches millions of people every day, but coverage in other newspapers, including smaller local newspapers, could yield a more complete and perhaps different picture of how frames are used in diabetes coverage. Evaluations of other forms of media, including the internet, television and radio, could also uncover different trends in framing diabetes. Another avenue of research could examine public opinion of diabetes and if it does or does not follow trends in framing of the disease.

Given current trends in diabetes today, the disease is poised to become an increasing burden on society in coming years. Stemming its advance will require focused, coordinated efforts at multiple levels, from individuals to communities to the local, state, and national government. Each of these efforts will require education of the public, and the media can play an important role in doing this. To best accomplish this goal, however, journalists must change the way they frame diabetes. While behavioral and medical frames certainly have their place in the coverage of diabetes, journalists' overreliance on these frames prevents the public from considering other causes of the disease, and, most importantly, other solutions. A problem as complex as diabetes will require complex solutions, which are best implemented at the societal level. It is easy to ask a person to change their behavior, but support structures must be in place to support these changes. People must have access to healthy foods, nutrition information, and good medical care. By changing the way diabetes is framed and presenting societal-level solutions as viable options, we can expand the arsenal of solutions to diabetes, helping to prevent new cases and enabling those with the disease to live healthier lives.

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Appendix: Coding Procedure

1. Treat each article as a unit of analysis. Each row of the spreadsheet corresponds with one article. Each column corresponds with a coding rule below.
2. Code an article completely before moving on to another.
3. While coding each article, use the following rules:
 - A) Enter the article number, author, title, and print date (MM/DD/YYYY).
 - B) Is the article relevant? In order for an article to be deemed relevant, it should substantively describe the causes and/or solutions of diabetes. For example, an article that merely mentions diabetes one of several leading causes of death in the U.S. would not be relevant. If an article is irrelevant, indicate “NO” in the relevance column and include a reason why, such as “insufficient coverage.” No further coding is necessary for an article deemed irrelevant. For a relevant transcript, indicate “YES” and continue coding.
 - C) Does the article specify which type(s) of diabetes is being discussed (type 1, type 2, gestational)? [0=no, 1=yes]
 - a. If yes, which of the following types of diabetes is mentioned? [0=no, 1=yes]
 - i. Type 1 diabetes
 - ii. Type 2 diabetes
 - iii. Gestational diabetes
 - b. If yes, add columns and code part D and E for each type of diabetes.
 - D) Does the article use any of the following frames when discussing the causes of diabetes? [0=no, 1=yes]
 - a. Behavioral frame (i.e. poor diet, lack of physical activity, obesity)
 - b. Societal frame (i.e. poor food environment, car-centered culture, poor nutrition in schools)
 - c. Medical frame (i.e. family history, genetics, age)
 - E) Does the article use any of the following frames when discussing potential solutions to diabetes? [0=no, 1=yes]
 - a. Behavioral frame (i.e. improve diet, increase activity level, lose weight)
 - b. Societal frame (i.e. improve access to healthy foods, nutrition education, other public policy/societal solutions)
 - c. Medical frame (i.e. blood sugar control, medication, surgery)

F) Which frame, if any, was the most prominent in the article? Determine the most prominent frame based on number of paragraphs dedicated to description/discussion of the frame. If the number of paragraphs is the same but differs significantly in length, determine based on the number of lines of text.

1= Behavioral frame

2=Societal frame

3=Medical frame

4=Indeterminate

99=No frame used