

ABSTRACT

Content Analysis of Member Participation Regarding Natural Childbirth on Pinterest

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People are using online resources for an increasing variety of uses. One particular use that is rising is personal healthcare. While people use many online tools to gain information, a wealth of information is obtained from social media websites. This study seeks to examine behavior of people on the social media website Pinterest regarding natural childbirth. Pinterest was selected due to its prevalence among the target audience and its current lack of existing research. Due to the lack of research in this field, the researcher was able to develop their own methodology for studying Pinterest. A group of “boards” was collected in order to analyze the “pins” for certain variables such as: images of a pregnant belly, text, or exercise and then examined categorically for topics such as: books, labor, or breastfeeding, as well as whether the “pins” portrayed natural childbirth positively or negatively. The sources of the pins and the representation of natural childbirth in the community were among the significant findings, demonstrating that this community exists on Pinterest and views natural childbirth very positively.

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CONTENT ANALYSIS OF MEMBER PARTICIPATION REGARDING NATURAL
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CHAPTER ONE

Introduction

Social media are a fun way to connect with other people and share memories, jokes, and photographs. But they are also increasingly becoming a way of sharing information, particularly knowledge on health care. Entire online communities exist that are dedicated to different diseases and stages of life. One prominent community is the natural parenting movement, which is defined as “a desire to live and parent responsively & consciously” (“What Is NP?”). While this definition encompasses many parenting topics, one subject that it encompasses is natural childbirth. The existing literature that surrounds this topic often deals with gender roles from a sociological standpoint, safety from the perspective of the biomedical community, and some from the view of the women choosing natural childbirth themselves.

While literature can be found on social media, health, and natural childbirth, limited research has been conducted on the combination of the two. One particular area that is under-studied is the website Pinterest. After noticing trends in parenting on the website, the researcher was interested in exploring how the Pinterest community intersects with the natural childbirth community.

This is an important area for study because sharing information regarding health, specifically childbirth, on social media is a significant exchange. It is crucial that this information be accurate if a large proportion of people are depending on it for real-world decisions. Studying natural childbirth on Pinterest is also important to health care

providers who are looking to reach this population. Currently, Pinterest is an under-utilized resource that can be employed in ways that can affect millions of people.

This project aims to illuminate the conversations regarding natural childbirth occurring on Pinterest as it relates to other findings on social media and health. This study will educate the reader through a comprehensive introduction to social media and health, a look into Pinterest, and a study of natural childbirth in America in Chapter 2. An innovative, recently designed for the emerging world of social media methodology, will be explained in Chapter 3. This method specifically examines what is important to the natural childbirth community on Pinterest through the analysis of data such as images, text, and sources; these findings are discussed at length in Chapter 4. Chapter 5 outlines implications of these findings, and Chapter 6 ties together how these implications relate to existing research.

CHAPTER TWO

Social Media, Health, And Natural Childbirth

The Internet is a resource that is widely and variably used. One noteworthy realm is that of social media. Social media are defined as “any networked ICT [information and communication technology] tool or platform that derives its content and principal value from user engagement and permits those users to interact with that content as part of a larger movement in communications” (Norman, 2012). With an emphasis on user engagement, social media allow people to interact in new ways that can change social constructs and relationship roles. One application of social media is their use in the healthcare field. From marketing and self-promotion of doctors, clinics, and drugs to communities of patients sharing information, the Internet is indisputably becoming a major player in healthcare. Social media are changing the way health care providers interact with patients and how patients interact with each other.

Social media have many forms, some of which are applicable to healthcare. Fenton and Panay write, “networking platforms such as Facebook, LinkedIn, Twitter, Pinterest and others are leading the way in new methods of medical communication. They provide many new opportunities and a powerful tool for information dissemination” (2013). Each form offers a unique ability to connect with patients and consumers in new ways. From keeping patients informed with organization “pages” on Facebook to a hospital’s witty “tweets” on Twitter, there are numerous possibilities on how to use social media as an advantage for a healthcare organization.

An example of an organization with a high level of social media interaction is the Mayo Clinic. Mayo Clinic has a group called the Mayo Clinic Social Media Network, whose goal is “to improve health globally by enhancing the use of social networking tools throughout Mayo Clinic” (“About MCSMN”). They achieve this aim by hosting Webinars, posting YouTube videos, and streaming events on Facebook Live. The Mayo Clinic Social Media Network is fulfilling the idea that media “meet[s] Millennials where they figuratively live: connected, online, and in real time” (Weatherspoon et al., 2015). This high level of media involvement by healthcare organizations may be a sign of future healthcare connection.

Health care organizations keeping up with technology through social media is important because of how frequently people currently use social media, particularly for health care. For example, “PricewaterhouseCooper [LLP] reported that approximately 33% of consumers in the United States are using social media sites to obtain pertinent health information” (Asiodu et al., 2015) and Mcann et al. estimates that “eighty percent of US Internet users have sought health care information online” (2012, p. 450). The large number of people using such tools for such important information demands attention.

The phenomenon of high Internet usage for healthcare matters is not exclusive to the United States. Even the World Health Organization is attuned to the idea of using social media for medical purposes, specifically in its mobile form. They define the term “mobile health” to mean “medical and public health practice supported by mobile devices” (mHealth, 2011, p. 6) in a volume dedicated to exploring the ideas of mobile health and social media.

Mobile health and social media could be the way of the future. A study by Fisher and Clayton in 2012 found that some respondents already used mobile applications for health purposes and that many who were not already using a mobile application for health purposes expressed interest in doing so at the recommendation of their healthcare provider (p. 103). If healthcare organizations are unable or unwilling to accommodate the social media needs and desires of their patients, they may lose the authority the healthcare profession has enjoyed for so long.

Another reason that social media are important for healthcare is because they “shift health communication messaging from one-to-many to include one-to-one and many-to-many simultaneously, while offering novel means to reach people wherever they are located in real time” (Norman, 2012, p. 3). This new type of relationship between healthcare providers and patients could very well revolutionize the entire patient experience, from the first point of contact to the exam room. This is partially because “the Internet provides an unprecedented and dizzying source of communities united by common experiences, as well as equally unprecedented tools for creating new communities” (Hardy & Kukla, 2015, p. 109). These tools are empowering the patient for a new kind of healthcare industry.

While it is true that many people turn to the Internet and social media for healthcare information and community, one population is especially active: those about to experience childbirth. Lupton found that “women who are pregnant for the first time or caring for their first infant are particularly likely to use digital media” (2016, p. 2). And Asiodu et al. revealed that, “most participants, (91%) noted reviewing a [pregnancy related] mobile application or website on a daily or weekly basis” (2015). Women in a childbearing stage of life are increasingly turning to the Internet and social media for answers and support.

Women rely on the Internet and social media for diverse reasons. A few reasons are the anonymity it offers and a quick response time. Rather than calling a doctor’s office or making an appointment, a patient can simply search or post a question online and get an answer instantaneously. Lupton discloses that “participants noted that they sometimes felt that they did not want to ‘bother’ healthcare professionals with queries that might be considered trivial” (2016, p. 4). The ability to use another source of information provides control and security for the patient.

Patients can also gain control through the knowledge they gain online. In one study, “participants... viewed social media as a practical, convenient, and valuable way to obtain perinatal information and support” (Asiodu et al., 2015). This information is critical to patient well-being. However, it does raise concerns about the quality of the information found on social media.

Another study remarks that “participatory online social networking interventions enable patients to obtain knowledge and skills necessary to improve their self-efficacy” (Paige et al., 2015, p. 242). With this access, patients are able to be more independent in

their care. One participant remarked, “I want to be an informed thoughtful pregnant woman who knows what is going on with my body. So, I read like crazy: every pregnancy book, every pregnancy website” (Sundstrom, 2013, p. 137). Pregnant women’s high levels of use of the Internet and social media demonstrate their desire to be informed, autonomous patients.

This quest for knowledge can be organic or as a result of doctor’s visits that do not always give complete or comprehensible information. Lupton states, “some women find that they are unable to gain enough information or support during prenatal visits, so turn to digital media to compensate” (2016, p. 2). As doctors are shortening the amount of time with their patients, it is inevitable that some patients will be left with unanswered questions. For some women, the information that is provided is confusing and thus, unusable. In this case, “image-based resources is preferred among individuals with limited health literacy skills, because it allows low-literate users to obtain search results without having to read and process an excessive amount of text” (Paige et al., 2015, p. 243). Content online in the form of pictures and infographics can provide information in a way that doctors usually cannot.

Finally, and most importantly, the Internet and social media provide a space for conversation and support outside of the confines of the doctor's office. In one study, women went online to "receive social support and advice from other mothers and women in similar situations" (Asiodu et al., 2015). These spaces are unique because they "might offer potentially critical opportunities for women's knowledge in relation to what are often highly political aspects of the body, gender, and illness" (Pitts, 2004, p. 33). Online, women are not restricted to the traditional power and gender roles found frequently in medical contexts, and thus can freely ask questions, offer advice, and exchange stories.

Women not only use the Internet to avoid traditional healthcare. In fact, social media can provide avenues where "clinicians and patients are able to share stories and experiences." This invaluable experience "has been shown to improve understanding of medical conditions and their management, but also to lower levels of stress and depression among patients" (Fenton & Panay, 2013). For this reason, groups such as the Mayo Clinic Social Media Network are critical to both the organization and their patients.

Pinterest as Research Medium

Social media are an important tool for healthcare organizations to use to reach patients, particularly women. This tool is so effective because "social networking websites are used by 76% of all online women in the United States" (Paige et al., 2015, p. 242). And as far as pregnant women, "Platforms like Pinterest and Instagram were used by some women to make decisions about their purchases for pregnancy or their children and to purchase goods online" (Lupton, 2016, p. 5). Because Pinterest is a website

frequently used by women, particularly pregnant women, it was selected as the medium of study for this project. It is also home to an online natural parenting community, which includes anti-vaccine parenting, as found in Guidry et al.'s 2015 article "On Pins and Needles: How Vaccines are Portrayed on Pinterest." The hypothesis was that if Pinterest was home to an anti-vaccine movement, it might also be home to a pro-natural-childbirth movement as well.

About Pinterest

Founded in October 2010, Pinterest is a website that is based on users sharing images, called "pins" with each other by "pinning" them to a "board," much like pinning a piece of paper to a bulletin board. These "pins" link back to their source so that users may use a single image to represent an entire news article or recipe. Paige et al. defines a board as "topic-specific virtual bulletin boards that allow users to post, save, and share pins related to each pinboard's designated topic or purpose" (2015, p. 242). Users can "like" a pin, comment on a pin, say they have tried a pin and rate its outcome. Overall, Pinterest is "a popular image-based social networking website that uses a combination of video and image social media, serves as a platform where users are able to continuously share information and ideas through social networks" (Paige et al., 2015, p. 242). Users can follow each other to create relationships over shared interests.

On its website, Pinterest describes themselves as "the world's catalog of ideas" (about.pinterest.com). This means that Pinterest views themselves as an entity that reflects current ideas found around the world. Their self-reported mission statement is, "to help people discover the things they love, and inspire them to go do those things in

their daily lives” (about.pinterest.com/en/press/press). One way of stating this goal is “Pinterest aims to connect people based on shared tastes and interests” (Ahmed et al., 2016, p. 83). These connections quickly form communities among which users exchange ideas and products.

Communities on Pinterest

These interest communities are large and growing at a rapid rate. As of October 2016, Pinterest currently has “150 million monthly active users” (Chaykowski, 2016) and Pinterest was “the fastest site to break the 10 million unique visitors mark” (Mittal et al., 2014, p. 1) in January 2012 (Constine, 2012). These numbers are important for both business people and researchers because they show the ability to reach a large number of people in a short amount of time. A critical element of Pinterest’s growth may be attributed to the fact that it is a primarily image-based platform, proving that “some of the fastest growing Social Networking Sites (SNSs)... are those that are dedicated to sharing images” (Ahmed et al., 2016, p. 83). These differences set Pinterest apart and facilitate its hasty growth.

The popularity and reputation of Pinterest shows no signs of abating. Shortly after its founding, “Pinterest was listed among the 50 Best Websites of 2011 by Time Magazine” (Mittal et al., 2014, p. 1). Its size contributes to its success: “They’ve got 30 billion pins now, half of them in the last six months. They’ve got 750 million boards... they’re the top traffic source to retailer’s websites and an important secondary source after Facebook for some media sites, like BuzzFeed” (Madrigal, 2014). These large numbers have made Pinterest a serious player in the world of social media.

Pinterest has potential for many kinds of healthcare communication, including the pregnancy and childbirth communities. Part of this is due to Pinterest's unique design as an image based website: "Social networking websites that are not primarily text based are growing in popularity and recognized as having the potential to reach patients with health-related information" (Paige et al., 2015, p. 242). Health is made to be a topic of interest on Pinterest with "Health/Fitness" (pinterest.com) being one of the 32 main content categories on the site. Because of this, it is possible for healthcare organizations to tap into this existing interest.

Even more important is the idea that Pinterest reaches many types of people. Paige et al. found that "between 2013 and 2014, a significantly greater proportion of Internet users from traditionally medically underserved and hard-to-reach populations reported using Pinterest, including rural residents and individuals with an annual income less than \$30,000." (2015, p. 242). Even though these are not the highest categories reported in the demographic analysis, Pinterest is still used significantly by people who may not be reached by traditional methods. Unfortunately, however, "Health-related research conducted on Pinterest is minimal at present" (Ahmed et al., 2016, p. 83). This project hopes to substantially contribute to the small, yet existing research on the subject.

Unique Qualities of Pinterest

Pinterest's effectiveness is what makes the social media platform truly stand out. It "is driving more traffic to some websites than Facebook" (McCann et al., 2015, p. 452) and "it already accounts for more referral links than Twitter, Google+, or LinkedIn" (Duffy, 2013, p. 62). Pinterest redirects traffic from a pin to its original site when a user

clicks on the pin. For retailers, this means revenue: “the company [Pinterest] said it would generate \$2.8 billion in ad sales by 2018” (Hempel, 2016), but for researchers, it also represents an ideal subject for scientific study.

Pinterest’s success may be due to a number of unexpected factors. Paige et al. suggest it “may be connected to its use as an Internet search engine” (2015, p. 243). The searching ability allows users to enter a keyword and find related “pins,” “boards,” and other users who are interested in similar content. The perspective of one of Pinterest’s founders, is found in its difference from other social media sites: “If Facebook is selling the past and Twitter the present, Pinterest is offering the future. ‘It’s about what you aspire to do, what you want to do down the line’” (qtd. in Bercovici, 2014). This unique feature aligns well with healthcare research, particularly pregnancy research, because of its similar location in the future.

Pinterest as a Research Realm

Regardless of its potential, Pinterest is still a relatively unexplored region. After conducting a large-scale review of Pinterest, Mittal et al. expressed the newness of the territory, “There exists little research work on Pinterest” (2014, p. 1). This fact presents both challenges and opportunity. Because little research on the platform exists, there are no standardized methods of data collection or analysis. This allows ample room for experimentation and relevant research for those willing to explore such a new field.

Understanding Pinterest’s user base is critical for performing research on their behavior. According to a Pew Research Study, “Roughly three-in-ten online Americans (31%) use Pinterest,” which is the third highest social media platform among those

studied, trailing Facebook (79%) and close behind Instagram (32%) (Greenwood et al., 2016). Also, “25% of Pinterest users... are daily visitors” (Greenwood et al., 2016), a significant portion of its population. These numbers reveal engaged users who are invested in their online communities.

User engagement can be analyzed by several socioeconomic factors: income, education levels, geographic location, and gender. Engagement by income level has a slight skew towards higher income levels: 30% of online adults who make less than \$30,000 per year use Pinterest compared to 35% of online adults who make more than \$75,000 (Greenwood et al., 2016). User engagement is skewed towards higher education levels with only 24% of online adults with a high school degree or less using Pinterest compared to 34% of online adults with some college and 34% of online adults with a college degree (Greenwood, et al., 2016). Geographically, Pinterest use is more frequent in suburban areas with 34% of online adults, followed by 30% of online adults in urban settings (Greenwood et al., 2016). The target demographic is mainly women of childbearing age, as “80% of users are women, and those who are mothers are 61% more likely than those who are not to use the platform” (McCann et al., 2015, p. 452). Motherhood is so critical that it is one of the top ten words used in profile descriptions (Feng et al., 2013). This makes Pinterest an ideal platform for exploring healthcare trends related to pregnancy and childbirth.

Natural Childbirth Trends in Relation to Pinterest

While some research utilizes Pinterest as a medium, almost no research can be found on the conversations regarding natural childbirth occurring on Pinterest. The large

percentage of users who are women and mothers makes Pinterest an ideal environment for such research. There are existing theories regarding natural childbirth trends which can be applied in this setting to explain the behaviors of users on Pinterest.

Natural childbirth can be defined as “a birth without drugs for pain management” (Dalton, 2009, p. 151) or a birth that fits any of these categories: “at home, no pain medication or episiotomy to hospital based, with as little intervention as possible” (Malacrida & Boulton, 2014, p. 48). With such a wide range of definitions, much is left up to interpretation and what constitutes a natural childbirth experience is flexible.

Natural childbirth is a socially and scientifically significant topic because it is currently experiencing an increase in occurrence, which impacts hospitals, birthing centers, and other retailers of birth-related products. This trend has been most seriously analyzed in a 2014 CDC study, which found that the “percentage of out-of-hospital births increased for all racial and ethnic groups from 2004-2012” (MacDorman et al.). More evidence of the increased trend of the occurrence of natural childbirths can be seen in the growth of birthing centers. A birthing center is “The birth center is a health care facility for childbirth where care is provided in the midwifery and wellness model” (“Definition of "Birth Center" Clarified - American Association of Birth Centers”). This type of facility lends itself to births that fall within the range of a natural birth, making it a measure of the number of natural births occurring in the nation. As of 2013, “the number of U.S. birth centers has increased by about 30 percent in the past five years” (qtd. in Rope). This significant increase in birthing centers indicates a growing trend of women choosing to give birth outside of a hospital in a more natural setting.

Beyond the usage rates and trends, it is important to understand the social demographics of these women choosing natural childbirth. By race, white women are substantially more likely to choose a natural childbirth. In the CDC study, “the increase was largest for non-Hispanic white women, whose percentage of out-of-hospital births increased from 1.20% in 2004 to 2.05% in 2012” (MacDorman et al., 2014). In fact, “1 in 98 [white women] had their babies at home in 2008” (Stobbe, 2011). This is very different than the rates of out-of-hospital births for other races. The study found that “only 1 in 357 black women give birth at home, and just 1 in 500 Hispanic women do” (Stobbe, 2011). This is probably due to differences in cultural expectations surrounding childbirth, economic status, and regions between races.

This race analysis aligns with findings from a Pinterest analysis. According to a Pew Research Center survey, white women were more likely to use Pinterest than any other race (Krogstad, 2015). The survey found that 32% of white Internet users used Pinterest, whereas only 12% of black Internet users were members of Pinterest (Krogstad, 2015). The fact that the racial breakdowns for natural childbirth and Pinterest users are similar indicates that an analysis of both topics will be more accurate.

Natural childbirth also has a regional component. The CDC study reported that “out-of-hospital births comprised 3%-6% of births in Alaska, Idaho, Montana, Oregon, Pennsylvania, and Washington, and between 2% and 3% of births in Delaware, Indiana, Utah, Vermont, and Wisconsin” (MacDorman et. al, 2014). These were the areas with the highest rates of out-of-hospital births. The areas with the lower rates were “Rhode Island (0.33%), Mississippi (0.38%), and Alabama (0.39%)” (MacDorman et. al, 2014). The geographic analysis also matches Pinterest analysis. The rates of Pinterest users

were lowest in rural areas and areas of low rates of out-of-hospital births were also rural. This further strengthens the reasoning behind using Pinterest as a medium for studying natural childbirth.

Finally, age was a factor in rates of out-of-hospital births. Women who had natural childbirths were significantly older than mothers in general. There were “fewer births to teen mothers” and “a greater percentage of out-of-hospital (19.0%) than hospital births (14.9%) were to mothers aged 35 and over” (MacDorman et. al, 2014). It is noteworthy that more women over 35 have births outside the hospital than in a hospital because it reveals a possible force behind the trend. Older, more experienced mothers may feel more comfortable giving birth outside of a hospital environment. However, this raises concerns about safety as women over the age of 35 are more likely to experience birthing complications. Again, these numbers align with the demographics of Pinterest users. The Pew Research Center survey identified that of all online adults, 34% between the ages of 30-49 use Pinterest. Overall, the similarities in trends between Pinterest users and natural childbirth clearly point to the potential Pinterest offers in analysis regarding natural childbirth.

CHAPTER THREE

Methods

As Pinterest is a new area of social science, no standard research protocol currently exists. Ottoni et al. states: “Pinterest is challenging to study, as the content shared is images (as opposed to text) and there is no official API for gathering data” (2014). This calls for innovation on the part of the researcher, which allowed for flexibility and creativity. However, most of the existing literature tends to follow a similar method of examining data. The general procedure is as follows:

1. Enter a relevant search term into the Pinterest search bar
2. Retrieve images
3. Apply inclusion and exclusion criteria
4. Assign images to categories using a theoretically-informed coding scheme.

To code, Ahmed et al. used the following categories: type of image, primary content of image, purpose of image, and information quality, such as the source of the information.

A method for this research question was established based on a “nonprobability census sampling method” (Paige et al., 2015). A minimum of 250 followers per board based on the average number of Pinterest followers per user being 229 followers (“Pinterest: A Review of Social Media’s Newest Sweetheart”). First, a sample of 25 boards was obtained by searching “childbirth” on Pinterest and selecting boards based on follower count. This sample size was selected due to statistical needs for calculations at a

confidence level of 95% and a standard error of 0.1. Once the boundary conditions of the study were set, the search step was initiated.

The search step included entering a term pertinent to the research question into the search bar under the category of Boards. During preliminary research, some terms used for searching included “childbirth,” “natural childbirth,” “birth,” and “natural birth.” The term generating the highest quantity and quality results was “natural childbirth.” The other terms yielded results that did not relate strongly enough to natural childbirth or did not provide as specific results as the term natural childbirth did. Because of this, natural childbirth was the primary term used to find the 25 boards analyzed.

Descriptive statistics were computed. These include the range of followers, average number of followers, range of number of pins, average number of pins, range of repins, average number of repins, etc. These data points were then analyzed based on a coding scheme.

Each pin was described by a slate of common superficial markers. These basic codes were:

1. A case number assigned to each pin
2. The title of the pin (if available)
3. The caption of the pin (if available)
4. Source of the pin
5. Original post or a “repin”
6. Number of “repins”
7. Number of members who had “tried it”

Each pin was then analyzed on three separate factors: the contents of the image, topical category, and what part of the pregnancy timeline to which the image applied. The contents of the image included codes such as: food, pregnant belly, baby, cartoon/drawing/infographic, mom and baby, words, animal, couple, etc. A total of 54 image contents codes were generated, and one code was assigned to each case. Topical categories were generated inductively and the categories included: breastfeeding, parenting, recovery, labor, fitness, diet, affirmations, and birth plan. Up to two topical category codes could be applied to each pin. Finally, the approximate pregnancy timeline was coded as 1 = pre-pregnancy, 2 = pregnancy, and 3 = postpartum. These categories allowed the researcher to analyze the images based on their content.

Pinned images were also examined through the lens of natural childbirth. Each pin was noted as to whether it mentioned or alluded to natural childbirth. Here is an example of a pin that references natural childbirth:



Fig. 1: An example of a natural childbirth “pin”

While natural childbirth is not explicitly mentioned in this image, a woman is pictured in a birthing pool, which is a common feature of a natural birth. The pins were then further examined as to whether natural childbirth was mentioned in a negative or positive light. Again, this was a subjective qualification. The example image mentioned above would be classified as a positive mention, due to the fact that the pin was providing instruction on how to achieve a natural birth.

Each pin was also analyzed by the traits of its user. Users are defined as the creator of the board who pinned all of the images that were analyzed. Information gathered about the author of the board included: gender and subjective race (both deduced from photograph of user if one existed), total number of followers, and type of user. Type of user refers to whether the owner of the board is a casual user who is gathering information for their own knowledge, if the owner is a blogger who is amassing this information for their audience, or if the author of the blog is an organization using the board to disseminate information related to their mission or product. This designation was determined by a combination of number of followers, user description, and board description.

The level of user connection was also analyzed. This code can be quantitatively examined by the number of “repins” or people who “tried it,” but can also be analyzed qualitatively. This was indicated in the act of “repinning” content from another user, which can be determined in the source of the pin information provided on Pinterest.

CHAPTER FOUR

Findings

Overall, 25 boards were analyzed for a total of 1,128 pins. Each board was described by name of the board, owner of the board, number of pins, and date on which the board was accessed. The author of the board was further broken down by the gender, race, and approximate age of its creator. Each “pin” was then categorized by the title, description, date the article pinned was posted, its source, whether it was an original upload or a “repin”, the number of “repins,” whether anyone had “tried it,” the picture featured on the pin, what category of information the pin contained, whether it mentioned natural childbirth, and whether that mention was positive or negative.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Board Name	Childbirth/Natural Childbirth												
2	Board Author	the Mushy Mommy												
3		Gender												
4		Race												
5		Age												
6		Location												
7	Board URL	https://www.pinterest.com/themushymommy/												
8	Board Description													
9	Number of Followers		1139											
10	Number of Pins		25											
11	Date													
12														
13														
14	Pin Number	Pin Title	Date	Source	Original or Repi	# of Repins	Caption	Tried it?	Picture of?	Category	Timeline	Natural Childbi	positive/negati	Comments
15		2.1 Topics for a Natural Minded Birth Plan	2/27/17		10	1	Read about the various procedures you can and should have a voice about	0	2	4	2	2	1	
16		2.2 How to push a baby out	6/9/2017		1	2	Let's answer the five most common questions I'm asked in my childbirth classes about how to push during labor and delivery.	0	5	4	2	1	3	
17		2.3 My Third Natural Hospital Birth	5/23/2017		10	1	Sharing our third natural, hospital birth - one of our most popular posts!	0	5	4	2	2	1	
18		2.4 Motherlove Sitz Bath Spray			10	1	Motherlove Sitz Bath Spray - I loved this stuff after birth!	0	9	9	3	1	3	
19		2.5 Motherlove Sitz Bath			10	1	Motherlove Sitz Bath to help sore bottoms those first few weeks after birth	0	9	9	3	1	3	
20		2.6 Breastfeeding Essentials	8/4/2014		10	1	Breastfeeding essentials to bring to the hospital and to have at home for the first few days after.	0	8	22	3	1	3	
21		2.7 Should I Use Gas and Air for Labor	3/24/17		1	2	Gas and air doesn't eliminate the pain of contractions, but eases anxiety and tension. But be warned, nitrous oxide has some serious side effects!	0	21	9	2	1	3	labor
							66 Doula Support for ALL births. Did you know that doulas love working with							

Figure 2: Sample Data Spreadsheet

Of the pins, 27% mentioned natural childbirth, either by using the words “natural childbirth” or by alluding to a treatment or method for birth that was designed for the use of minimizing medical intervention. Further, of the pins that mentioned natural childbirth, 99% of the mentions were positive. This is a staggering percentage that points to a strong trend in the community found on Pinterest. A community that overwhelmingly supports natural childbirth is a force that can shape society.

The 510 sources of the pins were analyzed. The sources were classified as a blog, private business or organization, public organization such as Childbirth and Postpartum Professional Association (CAPPA), university, official website or magazine, a Pinterest user, or other such as YouTube or Facebook.

Basic Descriptive Statistics

Table 1: Race of Board Authors

Race	Percentage of People
Black	4%
White	72%
Unknown	24%

As shown in Table 1, the majority of users sampled in this study were assumed to be white. The “Unknown” category referenced users who did not have a picture assigned to their profile, or it was a picture that was clearly not of the user (such as an infant or a cartoon). While the exact breakdown does not accurately reflect the user breakdown of Pinterest, the majority does align. According to Krogstad, “the social media site Pinterest

is more popular among white Internet users than among other groups. About one-third (32%) of whites use Pinterest, compared with 21% of Hispanics and just 12% of blacks.”

Table 2: Gender of Board Authors

Gender	Percentage of People
Male	0%
Female	76%
Unknown	24%

The gender breakdown of the sample population in Table 2 also matches with data described in Chapter 2. The gender data reporting that 100% of the users with identifiable genders were female can be explained by Pinterest’s abnormally high female user base, which is approximately 80% female (McCann et al., 2015, p. 452). While the sample population was 100% female, it corresponds to the known demographics of Pinterest. It also conforms to the topic of natural childbirth. Logically, more women than men will be interested in the subject of childbirth.

Table 3: Quantitative Statistics

	Mean	Standard Deviation	Median	Mode	Range
Followers per board	1,240	1,847	417	269	5,758
Pins per board	45	48	31	52	248
Repins per Pin	4,451	17,169	432	1	235,700

The quantitative statistics found regarding the “pin” and “follower” frequency had wide ranges and standard deviations. This corresponds to the fact that the mean and median are widely different for each variable. The greatest range can be found in the number of “repins” per “pin” column. This is due to a few outliers for number of repins which each had over 100,000 “repins.” As seen by the mode, most of the pins were “repinned” about once per “pin.” This indicates that most of the “pins” being shared are not reaching a wide audience.

Pinterest Users' Locations

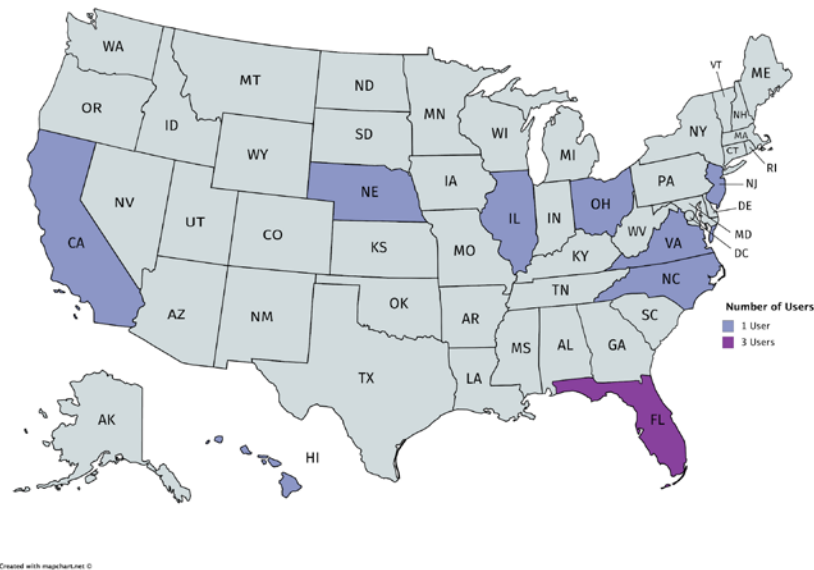


Figure 3: Map of Pinterest users' locations

The geographic analysis was striking in its diversity. While users were somewhat concentrated on the East Coast, they were still well spread throughout the United States. One state of note was Florida, which was home to three users, while all the rest of the states were home to one user each. These findings are not consistent with the current known information found in MacDorman et al.'s CDC study. In that study, out-of-

hospital births were localized to the Pacific Northwest and a few other states. A driving force behind this trend might be regional differences in parenting styles or other cultural variation.

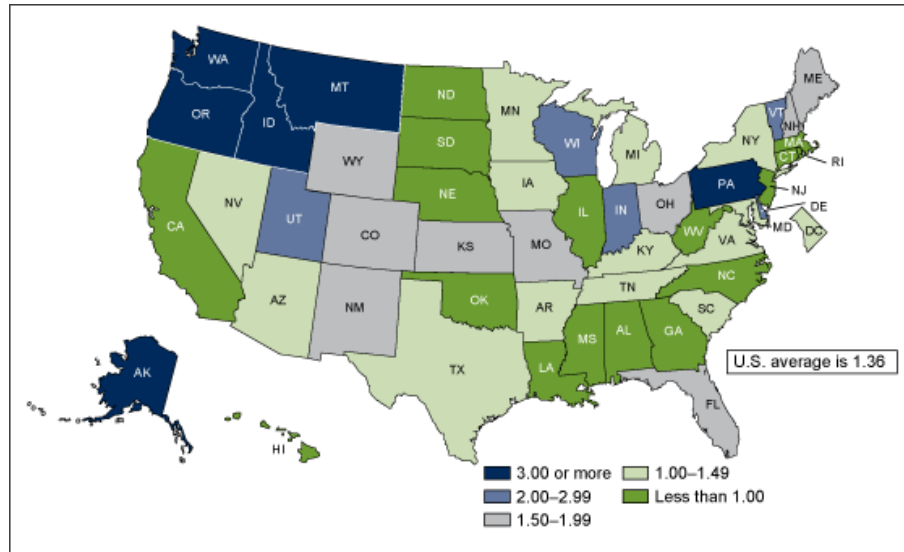
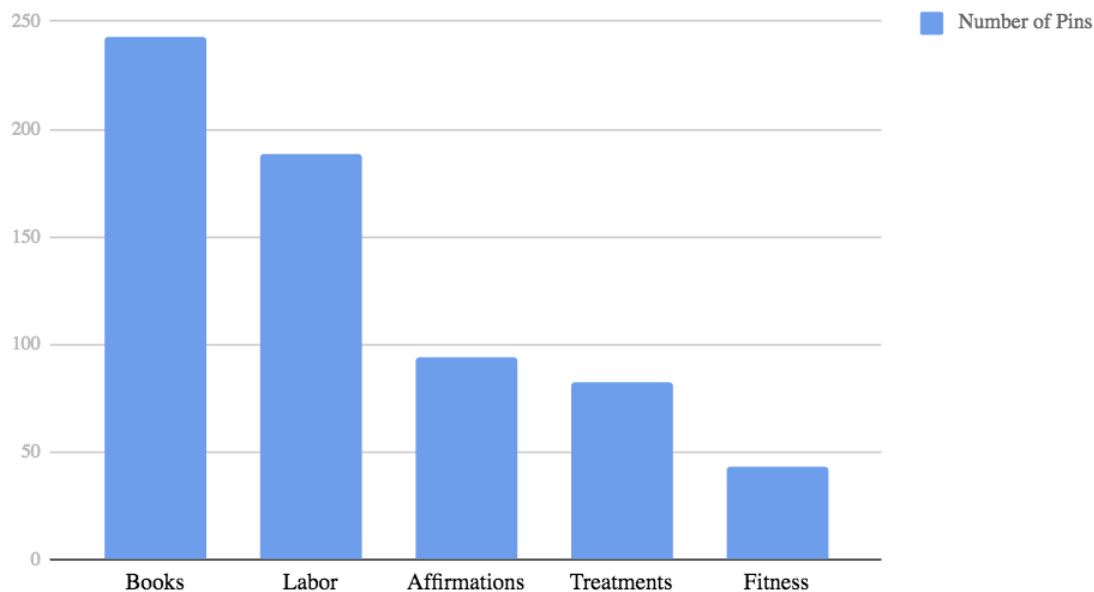


Figure 4: MacDorman et al.’s findings: “Percentage of births occurring out-of-hospital, by state: United States, 2012”

While the population sampled for this thesis had Florida as the clear favorite location, it is fairly unremarkable in the MacDorman et al. findings, coming in slightly above the national average. The location of the user was based on self-reported information listed in the board author’s profile description.

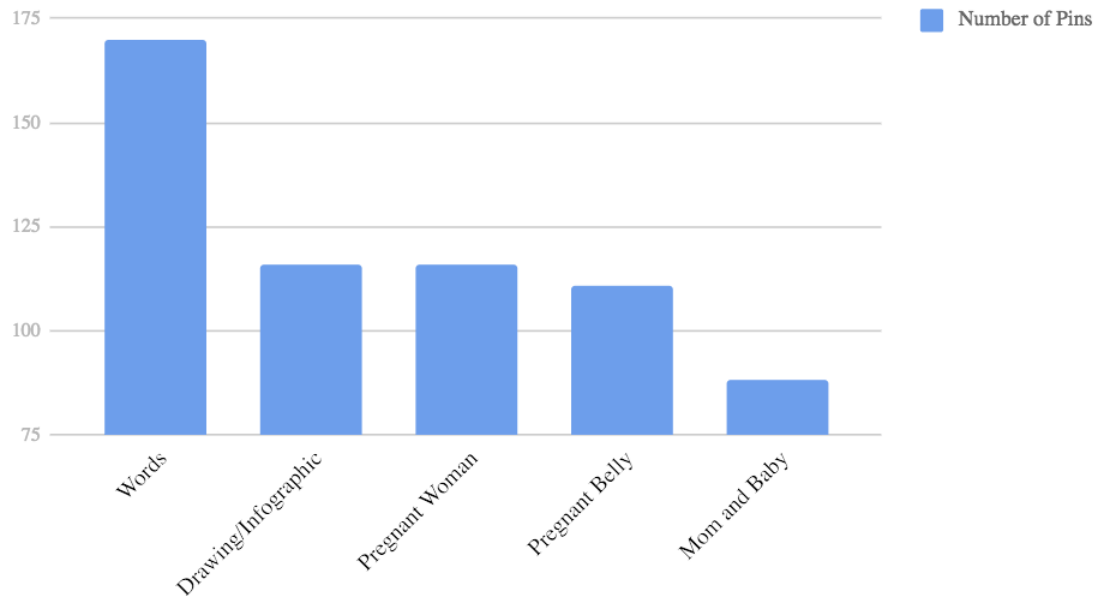
“Pin” Categories

Figure 5: Top Five Content Categories



There were a wide range of “pin” content, with 58 categories. The five most common can be seen in Figure 5, with books being the top content category. “Pins” about books included children’s books and books to help prepare for or continue parenting. This finding indicates that the users of Pinterest are looking for information from verified sources. While not all books are reputable, they undergo a more extensive publication process than a blog post, and are thus generally more reliable.

Figure 6: Top Five Image Categories



The overwhelming majority of pins analyzed used an image to convey a message. The most common variety was actually an image that was primarily composed of text. “Drawings/infographics” and images of “Pregnant Women” were also popular. Below is an example of a pin that conveys its message through a text-based image.

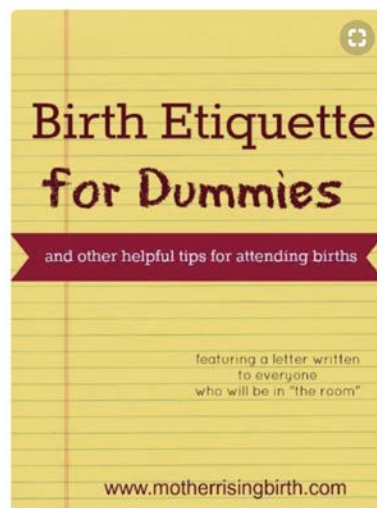
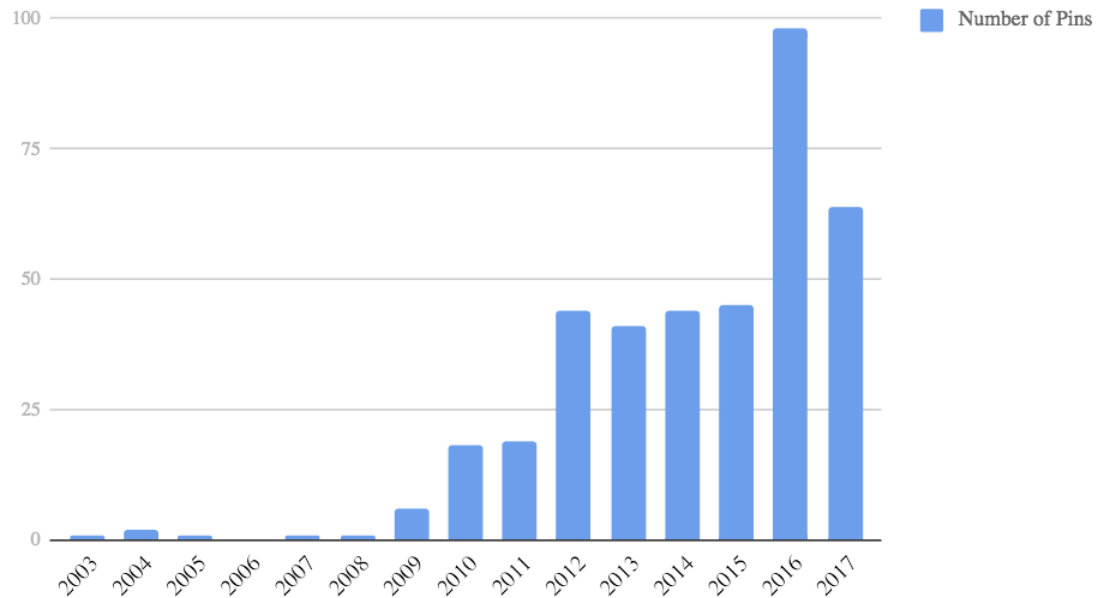


Figure 7: An example of a text-based pin

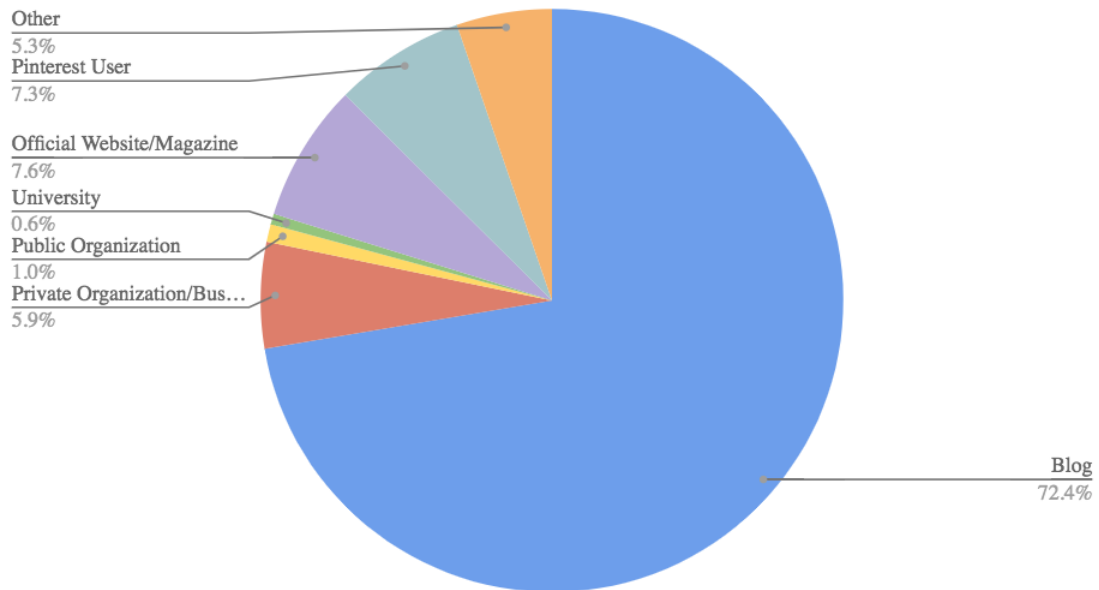
Figure 6 can also be compared to Figure 5. The top categories for both figures, “Books” and “Words” point to the dissemination of information between users through written modes of expression. The third category of images “Affirmations” is also a text-based image that was frequently used by the sampled Pinterest users. While visuals were often utilized to express emotions and information, words were the dominant method. This is an interesting finding because Pinterest is an image-based website. Because of this, one might expect that images would be the prime practice, but this was not found in the population sampled. This may be due to the nature of the topic of natural childbirth. It is possible that another area of interest, such as fashion or food, would employ images more frequently.

Figure 8: Pins By Year



Although Pinterest was only launched in March 2010, some of the sources of the pins date back much farther, to 2003 at the earliest. The number of pins per year was stagnant between 2010 and 2011, experienced a surge of growth between 2011 and 2012 and then was flat from 2012-2015. Between 2015 and 2016, there was a marked increase in the number of pins used. The decline between 2016 and 2017 is artificial because this data was collected in the middle of 2017.

Figure 9: Sources of Pins



The sources of the “pins” was one of the most important findings. Approximately 72% of the “pins” originated from a blog. While the earlier findings propose that users are seeking information from verifiable sources, this new factor suggests otherwise. Because blogs are frequently personal musings, they cannot be factually trusted, particularly for a topic such as health care. It is disconcerting to see the Pinterest users sampled rely so heavily on an non-dependable source for such important information. Information on the Internet is disseminated almost immediately, regardless of its accuracy. Pinterest users, especially those who hold themselves as leaders in the community should be aware of the influences they have on others and verify the factuality of their information.

The finding that blogs are the most common source of content can be used to reach pregnant women. Knowing that many users obtain information from blogs, health care providers could partner with popular blogs to help provide factual knowledge to empower users to make informed choices about their bodies and children.

Some analysis that was not done in this study, but would be valuable to investigate is qualitative analysis on the textual data collected. Further inquiry of the titles and captions of the “pins” may yield insight into patterns that would elucidate behaviors among the natural parenting community found on Pinterest. This information could possibly show motivation behind behaviors and reveal other nuances in this community.

Overall, these findings provide insight as to how Pinterest users are acquiring information about health care, how they are conveying such details to each other, who is participating, and from where. These results can be utilized by health care providers to target demographics that may be difficult to reach by other methods.

CHAPTER FIVE

Discussion

The aim of this paper was to examine the discourse on natural childbirth as found on Pinterest. This was done by collecting data on the race, gender and location of the board's author, quantitative data such as number of followers or pins per board, qualitative data such as pin or image category, and the tone of the pin. The major findings concluded that the typical board author was a white female from many locations across the United States. While the majority of the pins did not reference natural childbirth specifically, those that did were overwhelmingly positive. Another finding regarded the sources of the pins: over half of the pins came from a blog.

These findings are important for several reasons. The breakdown of race, gender, and location provides insight into who feels positively about natural childbirth and where they live. The quantitative information tells us the volume of pins that reference natural childbirth. The qualitative information lets us know what people are looking at pictures of and which items or topics are most popular among users. It is important to inspect the tone of the pins because that allows us to see how a pin of either a positive or negative nature will be received by the users on Pinterest. This information can be helpful in establishing a social media presence for a brand, clinic, or informational website. Finally, the sources indicate the frightening trend of receiving medical information from a non-credible source. As Guidry et al. found in their 2015 study, few sources were from official organizations or institutions.

Studies explored in Chapter Two determined that pregnant women indeed use social media for health information. However, these studies mainly focused on blogging communities or other social media platforms. Other studies used Pinterest as a vehicle to examine other topics such as vaccines (Guidry et al., 2015), concussion-related images (Ahmed et al., 2016), and COPD education (Paige et al., 2015). This research project is one of the first to examine the intersection between natural childbirth and Pinterest specifically.

One surprising finding was that the top category of pins was books. In an increasingly digital world, soon-to-be parents still rely on books to learn about parenthood. This may be due to classic books such as “What to Expect When You’re Expecting,” but it also leaves room for new types of books. The ranking of this category is reassuring because it illustrates that people are still obtaining information from books as opposed to only social media websites. Information from books might be more accurate and factual, as it has gone through an intense editing process that social media do not have. The next most common category of pins was labor, which is logical because it is the aspect of pregnancy and childbirth which can be most intimidating. Pins regarding labor usually focused on how to minimize pain during labor or how to experience labor without the use of medications.

For the image categories, the most common image was words. An image was categorized as “words” if words were prominent in the majority of the image, often overlaying an image of an object or person, or just stand-alone text such as an affirmation or list. This is an easy way to convey information between users, and clearly a popular method.



Figure 10: An example of a text-based pin

The second most common image type was an infographic or drawing. Another popular way to convey information, infographics are clear and concise. This particular infographic below illustrates “Positions for Laboring Out of Bed,” a way for women to experience labor while attempting to avoid medication. Infographics are so popular because “they draw attention and they result in a lot of social sharing” (Long, J., 2013). Drawing attention and increased social sharing is a perfect recipe for a successful pin.



Figure 11: An infographic pin

Another interesting finding was the percentage of positive mentions of natural childbirth. Although many pins did not reference natural childbirth, 99% of the 307 pins that did were positive. One explanation for this may be that online, women are free to discuss ideas and topics that may be taboo or looked down upon in certain social settings, such as with their physicians. Established earlier in this paper was the rise of natural childbirth incidence. It is clearly becoming a more popular option, and the online community reflects this trend well.

There were several limitations to the study. The first was that race and gender were assumed based on details from the users' profiles as opposed to being self-reported. This is problematic because the researcher's interpretation may be incorrect, leading to skewed data. Unfortunately, Pinterest does not provide a method for contacting other

users directly, such as a chat feature. Another limitation was the limited statistical analysis. It was difficult to statistically analyze the qualitative information, and even the quantitative information was only examined through basic statistical practices. More analysis is required for a greater understanding of the data. Finally, the study was limited by its lack of precedence. There are few studies that have used Pinterest as a vehicle of research, allowing the researcher extreme flexibility in creating a research method. While this was interesting and exciting, it created potential flaws in the project by not having a well-defined method of research.

For further research, the researcher would recommend obtaining data from Pinterest directly, as opposed to accessing Pinterest as a fellow user. This might allow for more informative and easily manipulated data. Another suggestion for further research is examining how natural childbirth is discussed on other websites such as Facebook, YouTube, or Twitter. These may reveal the same positive trends found in this study, but it may offer a different perspective. Overall, with the expansive growth of natural childbirth in the United States, this topic is ripe for research.

CHAPTER SIX

Conclusion

This paper sought to examine how people converse on the topic of natural childbirth through the medium of Pinterest; who these people were and what they had to say. Natural childbirth is on the rise in the United States, particularly for non-Hispanic white women (MacDorman et al., 2014). The increase in incidence calls for further inspection into who is contributing to the growth and why they are doing so. This is important information for healthcare professionals and childbirth industries as they adjust their expectations for patients and consumers. One way of reacting to the idea that natural childbirth is growing in popularity is by analyzing it through the lens of social media.

As stated earlier, many people use social media to find healthcare information (Guidry et al., 2015). Knowing this, it is important that we understand what kind of information is being shared online: is it factual? Is it dangerous? Where is the information coming from? This paper attempted to answer some of these questions. From the evidence found in the Literature Review and the data collected for this project, it is probable that social media are a good reflection of trends of our society. If one is interested in the future of an idea or topic, social media are a sound collection of places to find movements and progression.

Some of the major findings were that the users were mainly white women from around the country. The things that were posted about most frequently were books and images of text. This reveals that parents-to-be still obtain information from reputable

sources and the information shared on Pinterest is more often conveyed through words than images. Another major finding was the source of the information that users pinned. Most of the sources, 72.4%, were blogs. This is alarming because these blogs share anecdotes as opposed to empirical evidence on healthcare, leading to skewed insight for readers. Finally, one of the most important findings was that 99% of the mentions of natural childbirth were positive. This corroborates with the idea that natural childbirth is growing in popularity both in practice and online.

For many people, Pinterest is a place to share information and ideas about a wide range of topics. Specifically regarding health care, it is not currently a trustworthy resource for women. While most of the “pins” were harmless, a few did go against current medical advice. For example, one “pin” described how a mother began pushing before she was sufficiently dilated, something physicians do not recommend. Ultimately though, I believe that Pinterest provides community and the ability to share resources which is more beneficial to users than the few harmful pins observed in the sample. Because many of the “pins” shared referenced books, it can be seen that the community is taking a step in the right direction.

While Pinterest has its faults, it has the potential to be used by health care providers to reach women with trustworthy health information. If done effectively, Pinterest could become a useful and credible resource for those who are seeking guidance during pregnancy and through parenting. One important idea to keep in mind, however, is the demographics of Pinterest. Those who use Pinterest are predominately middle-to-upper class, white females. People of color would be better reached on platforms such as Facebook or Instagram, according to Krogstad. In order for Pinterest to better reach

people of color, they might implement features of other websites that are more popular among people of color.

One advantage Pinterest has is the ability to reach those in rural areas and those with lower socioeconomic status. As mentioned in Chapter 2, Pinterest has been increasing its reach to these populations. This note can be helpful for health care providers and businesses who are searching for ways to reach these communities.

While there has been research performed on both natural childbirth and Pinterest separately, this paper is one of the first to examine their intersection. This allowed great freedom in determining research methods, but also contributed to limitations of the study. Without a determined research method, some interpretations were left up to the researcher.

The ideas found through this study are important for several reasons. First, they support existing ideas regarding who opts for natural childbirth and the fact that it is growing in popularity. They also introduce new ideas such as books being widely discussed and text as the preferred image. These ideas are critical for understanding how to reach current Pinterest users. Finally, the point that many of the sources of the pins came from blogs illustrates the type of information consumed by Pinterest users. As Guidry et al. suggest in their 2015 study, “health educators and public health campaigns should consider using more narrative information to tell the stories” of childbirth in medical settings or to convey other helpful information.

Overall, this paper provides new insight to the growing trend of natural childbirth in America by examining it through the lens of Pinterest. These results are important going forward as they confirm the trend and introduce new ideas about content posted on

social media. While there were some limitations to the study, the information found is valuable to academics, healthcare professionals, and other industries.

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