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REDUCING NUTRITIONAL DISPARITIES AMONG PREGNANT AND POSTPARTUM
MINORITY WOMEN USING THE FUNDAMENTAL CAUSE THEORY

by

BISMA RAIS

Under the Direction of Jung Ha Kim, Ph.D. & Daniel Pasciuti, Ph.D.

ABSTRACT

For low-income, minority pregnant and postpartum women, meeting adequate nutritional standards is difficult due to a variety of constraints. Predispositions to a lower quality dietary intake negatively affect the overall health and wellbeing of both the mother and the baby. By utilizing the Fundamental Cause Theory as the theoretical lens of analysis, its relevance and importance are discussed and analyzed towards a content analysis of Sociological and Public Health research. The results indicate that Fundamental Cause Theory does help understand the problem of nutritional disparities in low-income, minority, pregnant and postpartum women. The study also suggests ways to refine the Fundamental Cause Theory for applicability towards both Sociological and Public Health research.

INDEX WORDS: Fundamental Cause Theory, Low income, Minority women, Pregnant women, Postpartum women, Nutritional disparities

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by

BISMA RAIS

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Masters of Arts

in the College of Arts and Sciences

Georgia State University

2020

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Bisma Rais
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August 2020

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INTRODUCTION

On a day to day basis, the average individual finds it difficult to make proper eating choices and habits due to a lack of availability, knowledge, and affordability of health food (Kotch 2013, Pechey and Monsivais 2016). These constraints may be particularly important for pregnant and postpartum women. For example, consuming unhealthy foods contributes to serious health complications, such as asthma, cancer, and death, within the fetus and remains within the mother's body through breastmilk (Kotch 2013, Pechey and Monsivais 2016).

This is especially the case for racial minority pregnant and postpartum women due to systemic inequalities, particularly on those with socioeconomic constraints (Pechey and Monsivais 2016). Adding on the layer of low socioeconomic status further negatively impacts food decisions (Pechey and Monsivais 2016). With the layer of minority race on top, racial health predispositions are perpetuated with insufficient accessible quality food (Satia 2010). Additionally, without sufficient income, access to food, and/or education on nutrition, hunger becomes a serious problem that can cause irreversible effects on the child due to the physical, mental, emotional, and psychological toll (Kotch 2013).

Although these issues have been described and defined as the problem of nutritional disparities among low income pregnant and postpartum minority women, this study advances our understanding of these issues by framing prior research and findings within the Fundamental Cause Theory (FCT). Described in more detail below, FCT states that SES can indicate disease outcomes due to the access to resources, such as knowledge and money (Phelan and Link 1995).

Here, I synthesize existing research on nutritional disparities among low income pregnant and postpartum minority women and assess the following questions as they relate to FCT: (1) To

what extent does a lower income status in minority pregnant and postpartum women influence multiple diseases to arise? (2) Does having a lower socioeconomic status create more risk factors for minority pregnant and postpartum women even with having resources and knowledge available for nutritional support? (3) With government and community interventions, are low income, minority pregnant and postpartum women showing reduction in health and nutritional disparities over time? And (4) Are low income, minority, pregnant and postpartum women with interventional support prone to repeat generational health disparities due to community cultural influence?

2.0 LITERATURE REVIEW

2.1 Nutritional Disparities and SNAP

Many studies in the fields of Public Health, Nutrition, and Policy Studies find that those of lower socioeconomic status are more prone to hunger, cheap energy foods, bad diets, and refined processed foods. This leads to a lack of essential and critical growth vitamins and minerals both mothers and babies need during and after pregnancy (Cannuscio et al. 2010, James et al. 1997, Pechey and Monsivais 2016). Pregnant and postpartum minority women are not reaching optimal nutritional standards as compared to their non-Hispanic white counterparts due to lower SES (Cannuscio et al. 2010, James et al. 1997, Pechey and Monsivais 2016).

The U.S. government established nutritional support programs in the 1970s for mothers and children that were highly effective in reducing food insecurity (Kotch 2012). These programs include the Supplemental Nutrition Assistance Program (SNAP), School Nutrition Programs, Child and Adult Care Food Program (CACFP), and Women, Infants and Children

(WIC). These programs provide low-income mothers with the proper, nutritious foods needed for a healthy pregnancy and have helped many.

SNAP participants of low-income backgrounds have been found to consume 100% fruit juice, potatoes, and red meat (Leung 2012, Morales et al. 2016). While SNAP has been proven effective in combating food insecurity, it is unclear on its impact on dietary quality due to a lack of variety in the allowed foods (Nguyen et al. 2015, Satia 2010). Although these foods may be societally deemed “healthy”, they may not be providing enough diverse nutritional benefits for low income pregnant and postpartum women. The correlation between SNAP and poor dietary quality indicating insufficient nourishment does not mean that SNAP causes poor dietary outcomes. Rather, although SNAP supports and benefits those of low income, individuals receiving the benefits do not have clear advice on *how* to use the benefits throughout the month (Leung 2012, Morales et al. 2016). As mentioned earlier, little guidance on choosing healthy foods can lead to the promotion of unhealthy habits, contributing to serious health problems (Kotch 2013, Pechey and Monsivais 2016, Satia 2010).

2.2 WIC and Food Deserts

Other government policies helped to provide more quality foods for pregnant and postpartum minority women. WIC, for example, helps to promote healthy eating and health with fruit intake increase for Hispanic mothers, increase in low-fat dairy intake for Hispanic and African-American mothers and children, and decrease in saturated fat intake for Hispanic mothers and children (Odoms-Young et al. 2014). Healthy Mothers, Healthy Babies Coalition of Georgia, a Not-For-Profit organization, centered on improving the access to healthcare and health outcomes of Georgia’s Mothers and Babies, also seeks to improve the health of pregnant and postpartum mothers. It claims that a large majority of participants in the educational

workshops report a significant increase in knowledge of nutrition from their independent research conducted by their partners (HMHBCG (n.d.)). A Farmer's Market based intervention, such as the Farmers' Market Nutrition Program of WIC, improved vegetable purchase and consumption of low-income, minority women and increased future use of farmers' markets (Grin et al. 2013).

While many researchers focus on combating food deserts as a way to improve nutrition disparity, there is little evidence that opening new stores in food desert areas improve diet and overall health. For example, researchers have found that residents with a new grocery store in a food desert experience no significant difference in fruit or vegetable intake, mainly due to their purchasing habits of prepared foods, economic failure, and unhealthy food habits (Sadler et al. 2013, Cummins et al. 2014).

2.3 Tiered Intervention

Some researchers promote nutrition education on a tiered level of intervention (Dunneram et al. 2015, Gennaro et al. 2016). Tiered interventions involve a multi-step approach to supporting a particular issue, addressing it at many levels instead of a unilateral approach (Dunneram et al. 2015, Gennaro et al. 2016). These studies indicate that educational programs improved health outcomes, and behavioral changes in women who want to conceive, currently pregnant, and postpartum. These studies also indicate that the best form of intervention resides at the community level education using multilevel strategies to help women to combat and prevent obesity and enhance mental health. Further, proper diet education allows for appropriate diet towards the child through the mother and breast milk.

2.4 Dietary Supplement Intervention

Other researchers emphasize the use of nutritional supplements as a means of intervention and promote the recommended dosage of vitamins and minerals essential to the development and health of the mother and child (Abu-Saad and Fraser 2010, Cannuscio et al. 2010, Chapman and Perez-Escamilla 2012, Yakoob et al. 2009). Without essential fatty acids, iron, and folate, the chances of a malnourished baby and mother that hinders development increases significantly. The aforementioned researchers agree that the best method of receiving these nutrients comes via food intake. However, pill supplements serve as another form of intervention in receiving an adequate amount of nutrients during a critical time especially for low-income minority pregnant women living in food deserts (Abu-Saad and Fraser 2010, Cannuscio et al. 2010, Chapman and Perez-Escamilla 2012, Yakoob et al. 2009).

3.0 THEORETICAL FRAMEWORK

3.1 Fundamental Cause Theory (FCT)

The Fundamental Cause Theory (FCT) is the central theoretical framework utilized in this study. It attempts to explain the “why” behind associations between SES and health/mortality are linked even after controlling other risk factors. Developed in 1995, FCT has engaged in multiple studies that support the association between SES, health, and mortality (Phelan and Link 1995, Phelan and Link 2004, Phelan and Link 2005, Chang and Lauderdale 2009, Phelan and Link 2013).

This theory has four key features in which it functions: (1) SES influences multiple disease outcomes, meaning it is not just limited to one disease, (2) To look at risk factors, researchers must use an interpretive framework to understand why people come to be exposed to

risk factors and determine the social conditions under which individual risk factors are related to disease, (3) With higher involvement in accessing resources, one can avoid risks or minimize the disease consequences, and (4) With interventions, disparities based on SES can be reduced over time

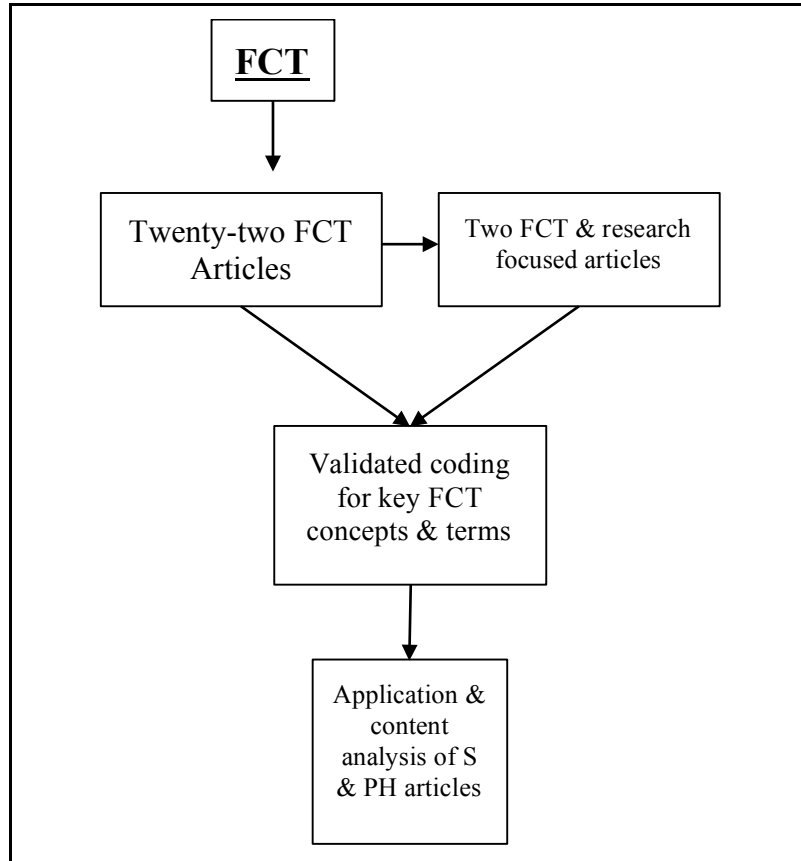
The FCT explains the SES has such deep roots in multiple disease outcomes over time due to the access to resources. The important resources include knowledge, money, power, prestige, and beneficial social connections, no matter the risk and protective factors in the circumstance. Flexible resources, such as these aforementioned, play a central role in the associations within the FCT as they operate on the individual and contextual levels. At the individual level, the flexible resource can serve as the “cause of causes,” and it can lead to chain reactions and protection from negative outside forces, such as disease, health disparities, and the like (Phelan and Link 1995).

Using the evaluation methods of the fundamental cause theory, discussing the impact of SES on health disparities can be examined in the following areas: 1) SES influence on diseases, 2) SES that connects to risk factors and mortality, 3) interventions and the giving of resources serve critically in the connection between SES and health disparities, and 4) SES and health disparities are duplicated over time due to interventions. I offer these discussions by focusing on pregnant and postpartum minority women as cases in point and thereby documenting how “a superior collection of flexible resources would use their higher SES to avoid disease and death in widely divergent circumstances” (Phelan et al. 2010). And in turn, at any given time, greater resources will produce better health, and consequently, inequalities in health and mortality will persist as long as resource inequalities exist.

4.0 METHODS

In order to conduct the analysis, I took these steps: broke down the four FCT components, validated FCT to create a code mechanism to use it towards a content analysis, and applied FCT to Sociology and Public Health articles pertaining to nutritional disparities in minority, low-income, pregnant and postpartum women. FCT code is deemed 'valid' through the deductive validation method, with more detail further along (Potter and Levine-Donnerstein 2009). Validating research and code suggests that the research is trustworthy and can be replicated in a methodologically sound manner. That is, in Part I of this methodology, I created a matrix of concepts from FCT literature. Going from a broad literature search to narrow, I applied my specific research focus to FCT literature in order to determine what key words and phrases would best fit the new validated code I developed. In Part II of this methodology, I performed a content analysis of prior research based on FCT. After creating an adjusted code fit to apply FCT tenets to Sociological and Public Health literature focusing on my research topic, I gathered and analyzed a data set of twenty-seven to determine if FCT would be beneficial to understanding the nutritional disparity in minority, low-income, pregnant and postpartum women.

Figure I: Methodology Conceptualization



4.1 Content Analysis and the Tenants of FCT

Due to the specificity of my study population and interest in low-income minority nutritional disparities, and the paucity of related studies that utilized FCT as the main theoretical construct, I conducted a content analysis that connects sociological and public health research to the fundamental cause theory. Using the Georgia State University library database and Google Scholar, I found articles that support the validity of FCT. I searched English terms in both search engines such as: “fundamental cause theory”, “validity of fundamental cause theory”, “fundamental cause theory Phelan and Link”, “review of fundamental cause theory”, “analysis of fundamental cause theory”, and “content analysis using fundamental cause theory”. From this

search, 22 articles were selected to build a theoretical framework to understand how FCT is applied in different studies.

List of selected 22 FCT articles: (Phelan and Link 1995, Phelan and Link 1998, Smedley and Syme 2000, Gottfredson 2004, Phelan and Link 2004, Phelan et al. 2004, Phelan and Link 2005, Kwate 2008, Link et al. 2008, Chang and Lauderdale 2009, Willson 2009, Phelan and Link 2010, Williams and Sternthal 2010, Phelan and Link 2013, Cerdá et al. 2014, Goldberg 2014, Pierce et al. 2014, Rubin et al. 2014, Phelan and Link 2015, Williams and Collins 2016, Carrico 2017).

The selected articles were further categorized around different aspects of FCT. Specifically, a subset of the literature discusses some aspects of the FCT with regards to nutritional disparities (Phelan and Link 1995, Phelan et al. 2004, Williams and Sternthal 2010, Hatzenbuehler et al. 2013, Pierce et al. 2014, Williams and Collins 2016). However, only a select number from this group can be relevant to supporting the specificity of my study group intertwined with nutritional disparities - low income, minority, pregnant and postpartum women (Williams and Sternthal 2010, Pierce et al, 2014). Even then, these two articles apply generally to the subject matter and not specifically.

Using these two articles, I organized the keywords and concepts I look for during my research to establish a set of mutually exclusive and exhaustive concepts and terms used by FCT to examine minority and low-income women, see Table 1. I display my coding methodology from the general concepts and themes of FCT as a whole. I establish my key concepts and terms using the sections on Results and Findings, as well as the Conclusions section of each FCT article. I validate the concepts of Table 1 by using the FCT literature identified in my literature

search to establish the accuracy of the framework. These categories help me narrow down my literature database relevant to my study for further analysis.

Table 1: Key Concepts of FCT Tenants

SES and Social Conditions	Risk Factors
<ul style="list-style-type: none"> ● Barriers ● Community Factors ● Neighborhood Factors ● Disease Factors and Outcomes 	<ul style="list-style-type: none"> ● Social Conditions ● Relation to Disease ● SES
Access to Resources	Interventions
<ul style="list-style-type: none"> ● Knowledge ● Resource Type ● Education ● Geography (Local, Regional, National) 	<ul style="list-style-type: none"> ● Local Interventions ● Regional Interventions ● National Interventions ● Type of Intervention ● Focus of Intervention ● Reduction of Disease

4.2 Validating FCT

To *validate* FCT and the key search terms, I used a deductive validation method to support my methodology and design (Potter and Levine-Donnerstein 2009). Accordingly, based on FCT, I developed a coding scheme from characteristics of the theory and inferences. The code must reflect close to the theory components to be considered towards validation (Potter and Levine-Donnerstein 2009). To validate an article/study, I first developed a code guided by my theory of choice, FCT. Second, I tested the developed code against a “standard” (Potter and Levine-Donnerstein 2009). For this study, I will utilize a face validity standard, that requires consistency in logic and categories with the operationalized concepts of selected theory (Potter and Levine-Donnerstein 2009). Table 2 shows the coding scheme derived from FCT and my study focus from specific literature. Table III shows face validity, illustrating the consistency in logic and tenants of FCT that allowed for coding schemes.

Divided into the 4 tenants, I examined the 22 FCT-relevant articles to see if there are any mentions or discussions of the concepts to help validate my FCT search terms. Through this process, I will validate key terms and concepts used within FCT literature but also identify synonyms and the potential for multiple meanings of words and ideas. Here, I am building my ideas from a broader, more general scale to more specific and tailored research. With Table 2, I concluded key terms and concepts that connect FCT directly to my research specific study group. Generally, all of these articles discuss FCT more broadly. Due to the specificity of my research, I synthesize from the 22 FCT articles to validate my concepts and terms that are found in the 2 articles most closely relating to my topic.

With this, I analyzed Sociological and Public Health literature in my dataset to build a solid understanding of the current work and subject as defined above and with the below tables. First, I created a data set of sociological and public health research relevant to my study group. I analyzed the study group according to the code I created, shown in Table 2. I divided it per the 4 tenants of FCT, organizing it by key terms found in the article pertaining to the concepts that fit the tenants. For SES and Social Conditions, Access to Resources, and Interventions, I used the terms that appeared the most in the articles found (mode). For Individual Risk Factors, I specified it per my subject group with Social Condition being minority women and Pregnant and postpartum women and Relationship to disease being nutrition. I tested to see if FCT would be a valid theory to understand nutritional disparities in low income, minority, pregnant and postpartum women.

Table 2: 4 Tenants of FCT Directly Applied to my Study Group

SES and Social Conditions	Individual Risk Factors
<ul style="list-style-type: none"> ● Barriers ● Community Factors ● Neighborhood Factors 	<ul style="list-style-type: none"> ● Pregnant and Postpartum ● Minority Women ● Nutrition
Access to Resources	Interventions
<ul style="list-style-type: none"> ● Knowledge ● Resource Type ● Education ● Geography (Local, Regional, National) 	<ul style="list-style-type: none"> ● Type of Intervention ● Focus of Intervention ● Implementation

4.3 Coding FCT

The coding method is a cross between emergent and a priori coding. I used emergent coding, where I identified emerging themes and ideas within a group of data, to analyze FCT literature. From this, I established a set of a priori terms and concepts that will be applied to Database 2, which looks at sociological and public health research. Table 1 displays my coding methodology from general discussion of FCT concepts and themes. After analyzing the two FCT articles that closely relate to my study group, I narrowed the concepts and terms that would be relevant to my overall study in Table 2. The first column remains the same across both tables, but the second table indicates where I made changes. I specified the Risk Factors since FCT articles discuss those broadly. For my research, I applied my study group to risk factors. For Interventions, both of the FCT articles discuss interventions as a whole and not specifically regarding region. I also added in the concept of implementation to see if FCT helped their particular study after the intervention was studied and applied.

4.4 Content Analysis of FCT

Table III displays the key concepts and terms related to FCT that I looked for. Here, we can see that 100 percent of the articles mention SES impact on health disparities. Fifty-four percent (13/24) generally mention some or all terms or concepts that fall within the Individual Factors. Ninety-two percent (22/24) of the articles do not specifically discuss my study group of low income, minority, pregnant and postpartum women. The 8 percent (2/24) that discusses low income, minority, pregnant and postpartum women only generally and not specifically related to my topic, as aforementioned. Resources or any discussion of resources is mentioned in 83 percent (20/24) of articles. For interventions, 71 percent (17/24) mention some of all key terms or concepts of interventions.

Table 3: Articles Discussing FCT

	Articles	SES and Social Conditions	Individual Factors	Access to Resources	Interventions
Articles Discussing FCT and Nutritional Disparities	Phelan and Link 1995	-SES influence on health -Community -Neighborhood	-Pregnant women -Brief nutrition	-Knowledge -Education -National resources	-Medical interventions -Development of interventions
	Smedley and Syme 2000	-SES influence on health -Barriers -Community -Neighborhood	-Nutrition -Minority -Pregnant women	-Knowledge -Education -National resources	-Interventions
	Hatzenbuehler et al. 2013	-SES influence on health -Community -Neighborhood	-Brief nutrition -Minority	-Knowledge -Education	-Health interventions
	Williams and Collins 2016	-SES influence on health -SES Barriers -Community -Neighborhood	-Brief nutrition	-Community resources -Education	-Racial interventions

Articles Discussing FCT (No overlap to my study topic)	Phelan and Link 1998	-SES influence on health	n/a	-Knowledge -Educational rank	n/a
	Phelan et al. 2004	-SES influence on health -Neighborhood	n/a	-Knowledge -Education -National resources	-Medical interventions
	Gottfredson 2004	-SES	-Minority population	-Knowledge -Education -Local	n/a
	Phelan and Link 2004	-SES on health	n/a	-Education	n/a
	Phelan and Link 2005	-SES on health -Neighborhoods	n/a	-Knowledge -Education -Resources	n/a
	Kwate 2008	-SES influence on health -Barriers -Neighborhood	-Discusses fast food and food quality (not keyword nutrition)	-Education -Knowledge -Local	-Individual Interventions
	Link et al. 2008	-SES on health -Neighborhood	n/a	-All points	n/a
	Chang and Lauderdale 2009	-SES on health	n/a	-Knowledge -Resources -Education	-General interventions
	Willson 2009	-SES on health	n/a	-Resources -Education	n/a
	Phelan and Link 2010	-SES on health -Neighborhood	-Pregnant general	-Resources -Knowledge -Education	n/a
	Phelan and Link 2013	-SES on health -Neighborhood	n/a	-Resources -Knowledge -Education	-Intervention proposed and discussed (health)
	Cerdá et al. 2014	-Basic SES discussion -Neighborhood	n/a	-Basic discussion	-All points of intervention
Goldberg 2014	-SES on health -Communities	-Minor mention of nutrition	-Resources -Minor Education	-PH Interventions	

	Rubin et al. 2014	-SES on health	n/a	-Resources -Knowledge -Education	-PH Interventions
	Phelan and Link 2015	-SES -Community -Neighborhood	-Nutrition	-All Resource Key Terms	-General Intervention Discussion
	Carrico 2017*	-SES on health -Barriers -Community	n/a	-Resources -Knowledge -Education	-Intervening mechanisms

Table 4: Articles with All Key Terms and Concepts Met

Articles	SES and Social Conditions	Individual Factors	Access to Resources	Interventions
Williams and Sternthal 2010	-SES influence on health -Barriers -Neighborhood	-Pregnant (not postpartum) -Minority Women -Nutrition	-Resources -Education -Geography	-Institutional Intervention -Types of Intervention -Implementation
Pierce et al. 2014 (international article)	-SES influence on health -Community	-Pregnant (not postpartum) -Nutrition	-Knowledge -Resource Type -Education -Geography (Local, National)	-National Interventions -Focus of Interventions -Implementation

4.5 Applying FCT on Sociological and Public Health Research

Further, I analyzed sociological and public health articles that discuss my study group. I analyzed the broad range of sociological and public health research on low-income minority nutritional disparities. By searching for key terms and concepts within sociological and public health literature, I built a general conceptual basis for understanding the validity and applicability of FCT literature to my topic. Linking all of my findings to the theoretical questions matters as the differences in each of these categories make up the essential components of FCT but also the key factors of understanding the population under investigation. After compiling my dataset based on these categories, I synthesized and compared the findings and discussions according to

the 4 aforementioned tenants of FCT. I analyzed my findings in accordance with the outline described by Phelan and Link in the FCT. The 4 tenants will be the structural method of the findings and discussion section of this paper, which illustrates the applicability of FCT to my topic

My second data set focuses on sociological and public health articles that will be used to conduct my analysis. This dataset will be bounded by research that focuses on low-income minority women and nutritional disparities conducted in the last 20 years primarily focused in North America. Using the extensive Georgia State University library literature base and Google Scholar, I used English search terms such as “pregnant and postpartum nutritional disparities”, “pregnant and postpartum nutritional disparities public health”, “pregnant and postpartum nutritional disparities sociology”, “low income minority pregnant women”, “low income minority pregnant women public health”, “low income minority pregnant women sociology”, “low income minority nutritional disparities”, “low income minority nutritional disparities public health”, “low income minority nutritional disparities sociology”, “policies for low income pregnant and postpartum women”, “nutritional disparities among low income minority women”, “nutritional disparities among low income minority women public healthy”, “nutritional disparities among low income minority women sociology”, “nutritional disparities among low income minority pregnant and postpartum women”, “nutritional disparities among low income minority pregnant and postpartum women public healthy”, and “nutritional disparities among low income minority pregnant and postpartum women sociology”.

I refine the terms to get true positive results instead of false positives, making the results specific to my study group. Through the search, the results did not pertain to my subject area, fell within a broad subject area, entered into the medical research realm, and/or were too focused on

dietician research. By specifying the subject matter (sociology, public health), the search result brought forth articles relevant and tailored to the study focus by going from six to seven articles being false positive to one to two articles. This reduced the presence of false by seventy-one percent. The final search strings resulted in a database of twenty-seven sociological and public health articles relating to the issues of pregnant and postpartum women to analyze.

From this dataset, I conducted a content analysis of the database using emergent and a priori coding to determine the key terms and concepts as I did with the FCT literature. I mainly focused on the Results/Findings sections and/or the Conclusion in the datasets based on the key terms and concepts which emerged from the FCT literature.

5.0 DATA

Table V illustrates the data of sociological and public health articles from 2000 to 2020 with the FCT Table 2 code applied. A total of twenty-seven articles make up the data set, with six sociological and twenty-one public health. The four tenets of FCT are displayed in the columns in order from left to right per row of Table 2. The cells show the key terms/concepts found within the articles that relate to the themes specifically unless otherwise mentioned. If the theme or concept is not met, it is not written in the cell. The first six articles include Sociology articles and the remainder twenty-one articles include the Public Health.

Table 5: Sociological and Public Health Articles Illustrating FCT

	Articles	SES and Social Conditions	Individual Factors	Access to Resources	Interventions
Sociological Articles Within Key	Ostrove et al. 2000	-SES influence on health	-Brief nutrition -Minority -Pregnant Women	-Education	n/a

Search Terms (6)	Watt et al. 2015	-SES Barriers -Community -Neighborhood	-Pregnant and Postpartum -Minority Woman -Nutrition	-Resources -Education -Geography	-Intervention -Implementation
	Williams & Sternthal 2010	-SES in Community -Weakened Community -Neighborhood factors and markers	-Minority but not specific to women -Nutrition	-Education -Some local and national discussion	-Suggestion of interventions and implementation
	Lee et al. 2005	-Low SES -Some community and neighborhood discussed	-Pregnant & Postpartum -Minority women -Nutrition	-Education -Resources -local and national	-Suggestion of interventions and implementation
	Paul et al. 2013	-Low SES -Community	-Pregnant & postpartum -Minority women -Nutrition	n/a	-Community based intervention
	Watt et al. 2012	-Neighborhood (food deserts)	-Pregnant & postpartum -Minority women -Nutrition	n/a	-Community based intervention
Public Health Articles Within Key Search Terms (21)	Bodnar et al. 2017	-SES inequalities	-Pregnant & postpartum -Minority women -Nutrition	-Knowledge -Education -Local -National	-Structural intervention
	Brawarsky et al. 2005	-SES	-Pregnant & postpartum -Minority women -Nutrition	-Education	-Intervention to prevent weight gain
	Briley et al. 2002	-SES on health	-Pregnant & postpartum -Minority women -Nutrition	-Education	n/a
	Cannuscio et al. 2010	-Communities -Barriers -Neighborhood	-Minority population -Nutrition	-Local	n/a
	Chapman et al. 2012	-SES on health	-Pregnant & postpartum -Minority women -Nutrition	-Knowledge -Education -National	-In depth discussion on intervention
	Da Silva Lopes et al. 2017	-SES	-Pregnant & postpartum -Nutrition	-Education	-Nutrition interventions
	Dunneram & Jeewon 2015	-Barriers	-Pregnant & postpartum -Nutrition	-Education -Knowledge	-Nutrition interventions

Gennaro et al. 2016	n/a	-Pregnant & postpartum -Minority women -Nutrition	-National -Knowledge -Education	-Interventions (CBT, COPE)
Groth & Morrison-Breedy 2013	-SES on health -Neighborhood	-Pregnant & postpartum -Minority women -Nutrition	-Brief lack of knowledge -Education	-Education Intervention
Krishnan et al. 2010	-SES on health -Neighborhood	-Minority women -Nutrition	-Minor Education	n/a
Laraia et al. 2010	-SES on health	-Pregnant & postpartum -Minority women -Nutrition	-Education	-Nutritional Interventions for Obesity
Leung et al. 2012	-SES	-Nutrition	-Education	-SNAP Intervention
Lovasi et al. 2009	-SES on health -Barriers -Neighborhood	-Minority women -Nutrition	-Resources -Education -Local and National	-Intervening mechanisms
Macera 2003	-Barriers -Neighborhood -Community	-Nutrition	-Knowledge -Resources -Education -Local and National	-Intervening mechanisms -Implementations
Morales et al. 2016	-Neighborhood	-Nutrition -Minority women	n/a	-Interventions (SNAP, WIC) -Implementation
Nguyen et al. 2015	-SES -Barriers -Neighborhood -Community	-Nutrition -Minority women	-Lack of knowledge -Local and National -Education	-Intervention (SNAP)
Odoms-Young et al. 2013	-SES	-Pregnant & postpartum -Minority women -Nutrition	-Education	-Intervention (WIC) -Implementation
Satia 2009	-SES -Barriers -Community	-Nutrition -Minorities	-Knowledge -Education	-Interventions (diet related)
Walker et al. 2010	-SES -Neighborhood -Community -Barriers	-Nutrition -Minority	-Knowledge -Education -Resources -Local -National	-Community intervention -Seacroft intervention

	Yakoob et al 2009	-Community	-Nutrition -Pregnant and postpartum women	-Knowledge -Education -Resources -Local	-Nutritional interventions -Implementation
	Zagorsky & Smith 2009	-SES	-Nutrition -Pregnant and postpartum women	-Education -Local -National	-Intervention

6.0 RESULTS

As my extensive search shows, there is a lack of sociological articles discussing my specific study focus. What does this mean? This subject matter is researched more from a public health lens as compared to from a sociological lens, which highlights the importance and value of this research and utilizing the FCT.

6.1 FCT Tenant I: SES and Social Conditions

Eleven percent (3/27, 11%) of articles illustrate *all* four of the components of Factor I of FCT, SES and Social Conditions. Twenty-two percent (6/27, 22%) articles illustrate three of the components of Factor I of FCT. Eleven percent (3/27, 11%) articles illustrate two of the components of Factor I of FCT. Fifty-two percent (14/27, 52%) of the articles illustrate one of the components of Factor I of FCT. Four percent (1/27, 4%) of the articles illustrate none of the components of Factor I of FCT.

6.2 FCT Tenant II: Risk Factors

Individual Factors, Factor II of FCT, contains three risk factor key terms. Forty-eight percent (13/27, 48%) illustrates all three of the risk factor key terms. Forty-four percent (12/27, 44%) illustrate two of the risk factor key terms. Seven percent (2/27, 7%) illustrate one of the key terms. All of the articles discuss nutrition to some extent.

6.3 FCT Tenant III: Access to Resources

Access to Resources, Factor III of FCT, contains four key terms. Eleven percent (3/27, 11%) articles discuss all four key terms. Thirty percent (8/27, 30%) discuss three key terms. Fifteen percent (4/27, 15%) discuss two key terms. Thirty-three percent (9/27, 33%) articles discuss one of the key terms. Eleven percent (3/27, 11%) did not have anything that met the key term requirements.

6.4 FCT Tenant IV: Interventions and Implementations

Interventions, Factor IV of FCT, contains three key terms, interventions and implementations. Fifty-two percent (14/27, 52%) discussed specific interventions in-depth. Eleven percent (3/27, 11%) articles discussed interventions generally. Twenty-six percent (7/27, 26%) discuss both intervention and implementation techniques to some extent. Fifteen percent (4/27, 15%) articles do not discuss any interventions or implementation.

7.0 ANALYSIS AND DISCUSSION

7.1 SES Influence on Diseases

The first tenant of FCT looks at how SES influences disease outcomes, beyond just one particular disease. Looking at results, we see only eleven percent of the articles address all the components of Tenant 1. This illustrates that the majority of articles lack a discussion of having multiple social conditions contributing to nutritional disparities. From looking at these articles, there is a theme that the articles mostly hit all the components of the remaining Tenet's (II-IV) except for one per tenet. Twenty-two percent (6/27, 22%) articles illustrate three of the components of Factor I of FCT. Eleven percent (3/27, 11%) articles illustrate two of the components of Factor I of FCT. Fifty-two percent (14/27, 52%) of the articles illustrate only one

of the components of Factor I of FCT. This shows that FCT helps to understand the impact of low SES on possible disease, in this case of nutritional disparities, all the way to discussing interventions to help combat the issue at hand because almost every aspect covered FCT Tenets II-IV despite the small percentage of articles showing lackings in Tenet I.

Four percent of the articles illustrate none of the components of Factor I of FCT, yet discuss other components of Factors II-IV, including specific interventions. Considering only one article, within public health, of the group presents no discussion of SES influencing disease despite in-depth discussion of other factors. Rather, there is an analysis of risk factors and disease outcomes with the suggestion of interventions, but a lack of understanding of the very thing that perpetuates the disease. This brings into question and undermines the efficacy and impact of the suggested intervention for implementation.

Seventy-four percent of the article discusses the negative impact of SES on minority women health with regards to nutrition disparities. This indicates that low SES can be indicative of multiple diseases arising in minority pregnant and postpartum women; however, articles discussing other factors (Neighborhoods, Communities, Barriers) can also highlight the indirect impact of SES on health outcomes. This agrees with the FCT Tenet that SES does influence multiple disease outcomes and attempts to explain the “why” between the association of SES and health disparities like these. It shows that out of all the research and Tenet components, the factor of SES is most shared by all of the articles and explains the predisposition that it puts social groups in by preventing them from resolving health disparities.

7.2 SES Connecting to Risk Factors and Mortality

The second tenant of FCT looks at risk factors, determining the social conditions under which individual factors are related to diseases. Individual Factors, tenet II of FCT, contains three risk factor key terms. Forty-eight percent illustrates all three of the risk factor key terms. For my particular research, this is relevant to understanding my specific study focus as the risk factors highlight the social conditions, minority, pregnant and postpartum women. Further, these women show nutritional disparities. By looking at the articles that address all components of Tenet II, we can use the other Tenets to understand a possible “why” behind their situation. This particular tenant is not influenced by the other tenants as it varies on an individual basis. All of the articles discuss nutrition to some extent. Of these risk factors, the common thing determined by the fundamental cause in this situation is nutritional disparities. As reported in Section 6.3, all articles highlight that pregnant and postpartum and/or minority women are more susceptible to nutritional disparities. Fundamental cause further determines that pregnant and postpartum and minority women fall within social conditions where nutritional disparities are perpetuated over generations. The results indicate as such, with any combination of the components coming together of Tenet II illustrated in Section 6.3.

7.3 Resources Serve in the Connection between SES and Health Disparities

The third tenant of FCT focuses on accessing resources, which can potentially reduce disease consequences and avoid risks. Eighty-five percent of the articles discuss education, or the lack thereof, as the main and common resource. FCT pushes knowledge to be at the forefront, especially at an individual level. However, thirty-seven percent of the data shows that knowledge is not the main component, rather education or lack thereof shows more in the articles. This outcome from my analysis then potentially challenges the FCT statement and proposes that

instead of knowledge, *education* and access to proper education regarding nutritional disparities, or any disease outcome, is, the “cause of causes”.

In accordance with the FCT, results indicate an association of interventions and resources. Eleven percent of articles discuss all four key terms. These are localized only within public health and are not all focusing on low SES populations. Those articles that discuss all of the access to resources share the commonality of a in-depth discussion of interventions and implementation methods. They also discuss innovative implementation suggestions. Thirty-three percent of articles discuss at least one of the key terms. These articles discuss either no interventions/implementation or discuss government-based interventions, such as SNAP and WIC. Forty-four percent of the articles that discuss two and three key terms mention interventions that make no reference to an implementation focus. Three out of the six Sociology articles, eleven percent, did not have anything that met the key terms or concepts in this tenet. Despite this, there is no major negative connotation towards sociological articles except that there should be a discussion or mention of resources due to the deep-rooted perpetuation of disease due to the lack of access to resources.

7.4 SES and Health Disparities are Duplicated Over Time Due to Interventions

The fourth and final tenant of FCT focuses on interventions and implementation reducing SES related disease outcomes. The same articles that did not connect to Tenet III are mentioned again for Tenet IV, with eleven percent articles discussing interventions generally, all from sociological articles. However, this comes with no surprise as public health focuses more on interventions for a policy due to the underlying disciplinary focus of public health. The public health articles discuss or describe specific interventions while the sociological discusses it conceptually. Seventy-eight percent discussed specific interventions in-depth and both

intervention and implementation techniques to some extent, such as WIC (Women, Infants, and Children), SNAP (Supplemental Nutrition Assistance Program), nutritional interventions, education interventions, and COPE (Creating Opportunities for Personal Empowerment), in addressing the problem of nutritional deficiencies, food deserts, and food insecurities among pregnant and postpartum women. It's important to mention that barriers still exist that prevent the successful implementation of these interventions.

This begs the question - With government and community interventions, are low income, minority pregnant and postpartum women showing a reduction in health and nutritional disparities over time? With government-funded assistance programs, there are limitations to adequately address nutritional disparities. Because of the prevalence and negative effects of obesity and nutritional disparities, nutritional interventions have shown to work effectively in returning minority, pregnant and postpartum women to a healthier state as highlighted in Section 6.3 (Brawarsky et al 2005, Da Silva Lopes et al. 2017, Dunneram & Jeewon 2015, Laraia et al 2010, Satia 2009, Yakoob et al 2009). However, barriers exist preventing proper implementation. Most of these barriers appear more among low-income, minority neighborhoods/communities, and locations as compared to those of high income, the majority (Brawarsky et al 2005, Da Silva Lopes et al. 2017, Dunneram & Jeewon 2015, Laraia et al 2010, Satia 2009, Yakoob et al 2009).

According to the FCT, despite these aforementioned interventions, nutritional disparities will still exist and be perpetuated by the very interventions trying to help prevent and heal. Because these are accessed by a select group for a select group and not those of high SES, it will not permanently reduce nutritional disparities due to the many factors that make up the disparity. These interventions will help improve health, but will not completely rid the disparity. Its source

relies on the influence of SES and lack of education, in which low SES communities do not have proper access compared to their counterparts.

7.5 What does this mean as a whole?

As a whole, these results show that FCT does help to understand and explain nutritional disparities in low income, pregnant and postpartum minority women. Their low-income status is the root of health disparities, specifically nutritional disparities in this topic. Further, access to education or lack of education is a better fit as the “cause of causes” instead of the FCT proposed knowledge. However, significant results indicate a counter-argument to FCT literature in almost all tenet categories and components, for both sociological and public health research. I propose modifying FCT to better fit the current times while also advocating for the expansion of its use in research, especially within sociology.

From a sociological standpoint, this study highlights the need for more sociological studies done with FCT on this particularly disadvantaged group. Despite an extensive search, six sociological articles compared to twenty-one public health articles show an understudied area that would be advantageous for better understanding and in turn helping with strategies other than interventions. With many brilliant interventions discussed and outlined in the data, FCT shows us that these interventions are nearing borderline useless at helping the disadvantaged mothers step out of the perpetuation of nutritional disparities and deficiencies. This demands sociologists to think of other ways to reduce nutritional disparities that are practical and effective towards an implementation.

With this gathered information and data, some questions still remain -

- a) Does having a lower socioeconomic status create more risk factors for minority pregnant and postpartum women even with having resources and knowledge available for nutritional support?

According to the data, risk factors are created and/or perpetuated even with having resources and knowledge available for nutritional support. Intervention results intended to help those with low SES, yet still had barriers preventing them for successful implementation. Being pregnant and postpartum alone creates a slew of risk factors, no matter the SES. Adding on the layer of low SES, according to the data, shows that seventy-four percent of the article discusses the negative impact of SES on minority women's health with regards to nutrition disparities.

- b) Are low income, minority, pregnant and postpartum women with interventional support prone to repeat generational health disparities due to community cultural influence?

In order to properly implement these programs to reduce nutritional disparities among pregnant and postpartum women, the one important component of educating pregnant women about the importance of nutrition, the available programs, what choices to make to promote a healthy life, and delicious healthy food options with the food they receive could greatly help alleviate the barriers. However, according to FCT, they are still prone to repeating generational health disparities due to the lack of availability of the source that differentiates the low income from the high income - money. Even with the help of governmental support interventions, fifty-six percent of the data shows neighborhood/community cultural influence affecting the individual factors.

CONCLUSION

Using the FCT theory as my lens for understanding the current sociological and public health literature, I examined the problem of food access and food education that cause nutritional disparity among low-income minority pregnant and postpartum women using the FCT theory as my lens for understanding the current sociological and public health literature. This study analyzes and discusses the use of FCT in Sociological and Public Health research, emphasizing the importance of incorporating it in studying it with nutritional disparities in low-income, minority pregnant and postpartum women. To restate, by looking specifically through a theoretical framework of the Fundamental Cause Theory, I answered the following questions to test the tenants of FCT through theoretical discussion and content analysis – To what extent does a lower income status in minority pregnant and postpartum women influence multiple diseases to arise? Does having a lower socioeconomic status create more risk factors for minority pregnant and postpartum women even with having resources and knowledge available for nutritional support? With government and community interventions, are low income, minority pregnant and postpartum women showing the reduction in health and nutritional disparities over time? Are low income, minority, pregnant and postpartum women with interventional support prone to repeat generational health disparities due to community cultural influence?

With an independent analysis of the interventions, the resources, and the present health disparities, I applied the tenets of FCT to see if there's support towards the aforementioned premise of FCT. This study adds to the literature to examine and provide suggestions towards if FCT works and should be applied to future research for nutritional disparities in low income, minority, pregnant and postpartum women. Further, a validated FCT framework can help contribute to possible academic research enhancement that could better improve the lives of low

income, minority pregnant and postpartum women, who are already overwhelmed with a disadvantaged state. By understanding these groups of women through this research and framework, we can help bring them out of a perpetual unhealthy and systemic cycle that gets passed down genetically through generations.

Results indicate that FCT works well in understanding and addressing nutritional disparities in low-income, minority pregnant and postpartum women as high percentages of low SES, education, and risk factors help to explain their significant influence on the disparity within minority pregnant and postpartum women. However, limitations to FCT for both Sociological and Public Health literature emerged that highlights a need for an update to current times. The outcome from my analysis potentially challenges the FCT emphasis on ‘knowledge’ and proposes that instead of knowledge, *education* and access to proper education regarding nutritional disparities, or any disease outcome, is, in fact, the “cause of causes”. Further, a significant amount of the results indicate there needs to be a revision in all of the tenet categories to have it be applicable for all literature. The FCT does highlight the importance of socioeconomic status being the main influencer of multiple diseases, helping explain the ‘why’ behind nutritional disparities in low-income, minority pregnant and postpartum women. I propose Sociologists and Public Health specialists come together and refine the FCT to include in a design of a framework to apply to research as such or other discussing health outcomes in understudied populations.

Of course, with any study brings forth limitations. This study holds two limitations. First, culturally, it may be difficult to influence and/or educate low income, minority pregnant and postpartum women to change their diet without changing the SES circumstance they find themselves in. Secondly, I am aware that there are many other lenses to approach nutritional

disparity among pregnant and postpartum minority women, such as through religion, family structure, and mental health. And many theoretical frameworks that can be applied in this study as well, such as critical race and gender theories. However, this study focuses on the significance of SES impacts on nutritional disparity and how to combat it by examining existing policies. I hope to address other relevant and comprehensive determinants of health disparities in my future studies.

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