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Alejandra Escoto
The University of Iowa

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LATINO NATIVITY STATUS AND CANCER SCREENING BEHAVIORS WITHIN THE U.S.

by

Alejandra Escoto

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for graduation with Honors in the International Studies

Jason Daniel-Ulloa
Thesis Mentor

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All requirements for graduation with Honors in the
International Studies have been completed.

Emily Wentzell
International Studies Honors Advisor

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Abstract

Cancer is the number one cause of death for Latinos in the United States. With such a great burden being placed on this rapidly growing demographic, it is vital that the scientific and health care communities recognize the heterogeneity of the Latino community, especially in relation to data regarding cancer and cancer screening. Cancer screening, as a preventative public health tool, has the ability to be a significant factor in lessening the impact of cancer in Latinos. A number of studies have focused on the factors that contribute to cancer screening behaviors, yet very few of these studies focus on an individual's nativity status, classified as US born or foreign born. The nativity status, as well as generational status, of Latinos contribute to vastly different health outcomes, and if studies and health care professionals continue to treat this population as homogenous, cancer screening rates may plateau or decrease, continuing the socially unjust burden of preventable cancers in the Latino population.

Background***Latinos in the United States***

Latinos are currently among the youngest, largest, and fastest growing minority groups in the United States. [1] Contrary to some popular beliefs, the Latino population is not growing due to increased immigration, but is due to increased reproduction from Latinos residing in the United States. [2] The majority of the US born population is school aged, alluding to the fact that more and more children of Latino ethnicity are being born in the United States. Of the 16% of the US population that identifies as Hispanic or Latino, 37% are foreign born. [2] Further the remaining 60% of US born Latinos vary by generational status, meaning that they are not foreign born but still identify as Latino. This percentage of the population ranges from children of immigrants (2nd generation), to children born into long established Latino families (3rd or greater generation) that have resided in the United States for decades. Closely tied to acculturation, generational status has a direct impact on health. Latinos of younger generations tend to be more acculturated than those of older generations. More recent generations tend to have a better grasp of the English language and preventative health behaviors that positively impact health. [3] These individual characteristics have a significant influence on an individual and their community's health outcomes and access to health care.

Similar to nativity status, ethnicity also varies within Latino communities with some health determinants and factors differing by national origin. For example, while the smoking rate is lower than Whites for Latinos in general, Cuban Americans smoke at a higher rate than other

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Latino groups. [4] However, few studies examine within Latino group differences in health and health predictors. Each ethnicity under the umbrella that is Latino has its own culture, beliefs, and attitudes associated with health and health behaviors. For example, various studies have demonstrated that cultural awareness is crucial to the success of public health interventions, yet the scientific and health care communities do not routinely take ethnicity into account in Latino populations. This practice has the ability to result in the misunderstanding of certain health behaviors, or the lack there-of, as behaviors surrounding health are culturally rooted and vary among cultural groups and sub-groups.

Latinos, like many other minority groups, are uniquely geographically distributed. Currently, the West and South of the United States accounts for the largest and densest Latino populations. [5] There is a growing trend for Latinos to move to more rural areas, depending on the employment opportunities available there. [6] Although the majority of Latinos are located on the West Coast and in the South, there are pockets of dense Latino populations throughout the US, concentrated mostly in larger cities. [7] Ethnicity also plays a role on where Latinos settle, as minority groups are more likely to reside and settle in areas where there is a strong community of others who share similar identities as themselves. This is especially true in communities with a large proportion of newly immigrated individuals. [8]

While a strong community is an influencing factor to where Latinos migrate, economic forces are arguably more impactful. Recently, there has been a shift in where Latinos settle. These New Destination areas are largely influenced by the economy of the area, as these economies rely heavily on Latinos for labor. The majority of these New Destinations are located throughout the rural US, and Latinos have been moving in high volumes to the Midwest and South for jobs that they would not otherwise hold. [9] The economies of these New Destinations are rich in industrial agriculture, such as meat processing plants. This is due to many reasons, starting with the increase in American consumption and demand for convenience. This has in turn increased the demand for unskilled labor in this industry. Job stability and recruitment in the meat processing industry has declined in the past decade, which has also increased the demand for immigrant workers who have less overall rights than domestic employees. Lastly, meat

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processing plants have relocated to rural areas to reduce costs and risk to livestock. [10] All of these changes have ultimately contributed to the increase in the rural Latino population. In particular, national level health data about Hispanics/Latinos are homogenized. This homogenization results in the lack of information about the differences between US born and foreign born Latinos, as well as the health differences in Latino ethnic sub-groups and by geographic areas. The homogenization of Latinos, through nativity status, generational status, and ethnicity contribute to the health disparities that Latinos in the United States face. By not fully understanding an individual or community, public health interventions will not be successful in communicating and distributing life-saving information in the culturally specific way that is necessary for the improved health of this minority group.

Cancer in Latinos

Cancer itself can be defined as a group of diseases characterized by the uncontrolled growth and spread of abnormal cells, and if left untreated, can result in death. [11] While both internal and external factors contribute to the occurrence and spread of cancer, this thesis will be examining the external factors. This includes health behaviors that contribute to cancer prevention, screening, and the stage of diagnosis of cancer in Latinos. External factors and health behaviors are strongly influenced by cultural and societal beliefs, and therefore will be the focus of this project. In addition, while not all cancers can be prevented, there are a number that can be prevented by changes in health behaviors. These health behaviors, such as dietary choices, physical activity, engagement of risky behavior, and routine use of cancer screening methods have the ability to influence both the morbidity and mortality rates of preventable cancers. [11]

After heart disease, cancer is the second leading cause of death in the United States, affecting 470.1 out of every 100,000 people. [12] One of every four people affected by cancer in the US will die from the condition, making it a very significant issue, both for those involved and the health systems that need to support the vast quantity of people affected by it. [12] Cancer is currently the health condition responsible for the greatest number of deaths in Latinos. [12] Much like the total population, Latinos are affected by all types of cancer, but there are very prominent disparities in the kinds of cancer that Latinos are affected by when compared to other ethnicities. Latinos are disproportionately affected by cancers caused by infectious agents, such as cancers of the cervix, stomach, and liver. [12] Cancers caused by infectious agents are

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typically the result of poor or dangerous living environments, which increase the risk of transmission of the infectious agent. Cancers caused by infectious agents may also have the ability to be caused by risky behaviors, which could be contributed to lack of knowledge regarding the maintenance of one's health. Latinos also carry the burden of cancer in their younger population as compared to other racial and ethnic groups in the United States. While older age is typically a risk factor for cancer in the general population, Latinos are diagnosed with cancer at a younger age than other demographic groups in the United States. Only 12% of non-Hispanic whites cancer diagnoses are in individuals under the age of 50, compared to 26% of cancer diagnoses in Latinos being under the age of 50. [12] Latinos also tend to have higher rates of mortality from cancer, and lower cancer incidence rates than other demographic groups. This has to do with the low levels of screening for preventable cancers, which result in a diagnosis at a later stage, decreasing chances of survival. [13]

Cancer Burden in Latino Communities

Cancer in Latinos not only affects the individual, but the community as a whole. Within this rapidly growing demographic, there are close-knit pockets of Latinos throughout the United States, forming strong and economically fruitful communities. Greater numbers of younger individuals with cancer can have detrimental effects on an already discriminated group. This reduces the number of people who can join the work force, as well as causing strain to the already limited health care systems in these communities. [14] A younger population with cancer also impacts the family, as it forces some family members to become caregivers, when they otherwise would be working to support the family. Therefore, the financial burden of cancer not only affects the individual and their economic futures, but also the family and community's potential for economic success.

While there are very large Latino communities in the United States living in metropolitan areas, those living in more rural areas are likely to feel the burden of cancer in their communities more, as health care services are scarcer and more difficult to access than those surrounded by already established infrastructure. [15] The large prevalence of cancer in Latinos is ultimately a social justice issue, and access to care, specifically culturally aware care, is an important factor to consider in this rapidly growing population. The homogeneity of Latinos in scientific literature

and in health care settings has the ability to be detrimental to the health of those from this ethnic group.

Cancer Screening in Latinos

Cancer screening is imperative for the early detection of cancer and to decrease mortality from this health condition. Cancer screening has the ability to detect certain precancerous lesions that would lead to colorectal and cervical cancers as well as early stages of other types of cancer. Cancer screening not only allows for health care professionals to examine parts of the body that are prone to cancer, but it also allows for the immediate care of pre-cancerous lesions or polyps. Without cancer screening, abnormal cell growth would continue, and a late diagnosis would result in limited choices on how to treat the cancer in the most efficient and cost effective way possible in order to increase the chances of survival. In addition, routine cancer screening not only increases the chances of survival from preventable and treatable cancers, but also disseminates knowledge about cancer screening and other preventative health behaviors to individuals and communities that are affected by this health condition.

When compared to other ethnic groups, Latinos have low levels of cancer screening. As a population, about 77% of Latinas have been screened for cervical cancer and 64% have been screened for breast cancer. [12] For colorectal cancer screening, only 44% of Latinos over the age of 50 have been screened. [12] The screening rates in Latinos, when compared to non-Hispanic whites is significantly lower. 83% of non-Hispanic whites have had a Pap smear, 69% have had a mammogram, and 61% have been screened for colorectal cancer. [12]

There are several factors that increase or decrease cancer screening behaviors. These include demographic factors such as higher levels of education, being older, being married, having health insurance, and visiting a primary care provider on an annual basis. [16] There are also social and environmental issues, beliefs, and attitudes that influence cancer screening behaviors. Social issues include the lack of social support in traditional health education methods. [17] Addressing health education in a way that is heavily influenced by culture and knowledge may have the ability to positively influence cancer screening rates in this community. [17] Environmental issues that affect cancer screening in Latinos include the built environment, such as the access to health care services. Especially with the recent migration to rural areas, access to health care

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services has become increasingly difficult. Issues associated with this include the possible lack of transportation to clinics, as well as the inability to take off work in order to seek medical care.

There are various barriers that Latinos face when it comes to practicing the health behavior of being screened for cancer. One of these barriers is lack of access to health care. Around 21% of Latinos in the United States lack health insurance. [18] Among those uninsured, immigrant status plays a significant role in accessing affordable and quality health care. Immigrants tend to face more obstacle than nonimmigrants when attempting to purchase and receive government-sponsored health insurance. These obstacles may include working for an employer that does not offer health insurance coverage for themselves and their families, not being eligible for government aid, and not being able to purchase insurance. [19] English-language skills are also a strong predictor of immigrant insurance coverage, as many health care settings in the United States do not cater to non-English speakers, as they lack the human resources to offer culturally competent translators to all of the individuals in need of one. [18] The absence of insurance means that cancer screenings are often difficult to obtain, a financial burden, and not included in the annual primary care visits that insured populations have access to. Also, without insurance cancer treatment is impossible to pay for. Culture also plays a role in cancer screening. Cultural barriers can include, but are not limited to ideologies surrounding fatalism. [20] Fatalism is the idea that a higher being is punishing an individual for a sin that they have committed, and that there is nothing that the individual can do to alter their fate. [20] Barriers to cancer screening may also be influenced by beliefs that cancer only effects certain demographics or individuals that participate in specific behaviors. An example of this is cervical cancer screenings through the use of Pap smears. It has been shown that many Latino communities are reluctant to take part in cervical cancer screening interventions due to the stigma surrounding cervical cancer, and ideas that only young, sexually active women are at risk. [21]

Latino Migration and Health

The United States has experienced waves of migrants from Latin American destinations, but this new wave of immigrants has several unique characteristics. The most recent wave of Latino immigrants are more educated than previous waves, which has narrowed the education gap between foreign born and US born Latinos. [22] Unlike previous immigrants, new Latino

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immigrants are coming from Central and South America instead of from Mexico. [22] This has changed the ethnic mixture of the Latino population in the United States.

The journey of migration is unique to the individual, but involves a general theme of being dangerous. The dangers associated with migration are not unique to those who are migrating from Latin American countries, but the recent wave of Latin American immigrants to the United States has exemplified this danger. The majority of migrants from Latin American may be leaving behind poor living and working conditions, as well as political unrest that results in a dangerous and life threatening environment. The journey from their home country to the United States is also a journey that takes a toll on all aspects of a migrant's health, including their physical, mental, and social well-being. While there is the strong possibility that Latino immigrants may face physical hardship during their journey, including instances of sexual assault, the mental health of immigrants is something that is many times overlooked and not only affects the individual, but the community as well. [23] Communities of Latino immigrants that have experienced previous political unrest tend to suffer from more mental health issues in comparison to their white, nonimmigrant counterparts. [23]

The job opportunities that many newly immigrated Latinos hold are many times also very dangerous and negatively impact health. Jobs with high occupational hazards, such as migrant farmworker positions, are not only physically demanding, but also many times do not provide workers with job security, as well as benefits such as health insurance. [24] The lack of opportunity even within the jobs is not advantageous to the individual, and also does not allow the individual's family to benefit from their hard work.

Acculturation and Latino Health Outcomes

Acculturation is typically measured by level of English language proficiency in immigrants, but has also been measured by the number of years spent in the United States. [25] Generally speaking, acculturation in Latinos can be defined as the Hispanic Paradox. The Hispanic Paradox is the epidemiological outcome that Latinos tend to be healthier than their US born or non-Hispanic white counterparts, although they have lower income and education levels. [26]. The opportunity for a more active lifestyle and access to more nutritious and less processed foods in their home country tend to account for this. [26] As a Latino immigrant spends more time in the

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United States, they become more at risk for negative health outcomes, such as cancer. [26] The greater availability of processed foods and a more sedentary lifestyle increases the risk for negative health outcomes in this population. In addition, Latinos in the United States, especially Latino immigrants, tend to have lower socioeconomic statuses than their racial and ethnic counterparts. [27] Lower socioeconomic status in Latinos and other ethnic minorities increases overall stress, especially acculturative stress. [27] Acculturative stress occurs when Latinos try to assimilate to the majority culture, which many times includes the increase of smoking and drinking, known to contribute to health conditions such as cancer. [27] Additionally, the greater amount of time that Latino immigrants are in the United States tends to result in more negative health outcomes.

Nativity Status and Health

The health risk of Latinos depends greatly on whether or not they were born in the United States, and if they are foreign born, how long they have been living in the US. Nativity status plays a role in the health risk of all diseases and conditions, and cancer is no exception. In addition to nativity status playing a role on if a Latino does or does not acquire cancer, it is also a predictor on lifelong cancer screening behaviors. In terms of cancer screening, the CDC has found that Latinos tend to be lower than whites when it comes to getting colon cancer screening, with 28% less screening than their non-Latino counterparts. [28] Colon cancer screening also varies depending on age, ethnicity, and gender, with older Puerto Rican women having the greatest number of cancer screening. [29]

Health risk is impacted in different ways depending on if a Latino is U.S. born or foreign born. For example, foreign born Latinos that reside in the United States are at a greater risk for cancers caused by infections, such as cancers of the cervix, stomach, and liver. [12] This may have to do with the lack of access to health care and opportunity in their home country, reasons that may have influenced their migration to the United States. Although rates for cervical, stomach, and liver cancer are greater in foreign born Latinos, US born Latinos ultimately have an overall higher risk of developing cancer. [30 31] Being a foreign born Latino in the United States tends to be a protective factor for a variety of health conditions, including cancer. [30] Being foreign born is protective until the foreign born Latino has resided in the United States for 13 years, and then their risk of a variety of health conditions increases. [30] This means that the more

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acculturated an immigrant is to the culture of the United States, the more health conditions they will be at risk of. Acculturation, which can be defined as the level of English language proficiency or number of years residing in the US, can have the ability to increase the preventative measures that are necessary to avoid more preventable cancers, such as cancers of the cervix and colon. Overall, cancer in US born Latinos is two times more likely than in their foreign born counterparts. [30] The two most significant risk factors that contribute to this discrepancy in generational status include greater rates of obesity and cigarette smoking in U.S. born Latino populations. [30] For Latinos born and raised in the United States, risk of developing disease is much higher, due to the participation in unhealthy behaviors believed to increase cancer risk. Eating a highly processed diet and having a more sedentary lifestyle are just a few examples of behaviors that cause negative health outcomes.

Generational Status and Health

Much like ethnicity and national origin, the generational status of Latinos impacts the health of the individual and community. While nativity status impacts the health of immigrants and Latinos as a whole, generational status is important as it affects the growing population of U.S. born Latinos in the United States. Previous studies have focused greatly on how generational status impacts a generation's access to mental health care and beliefs surrounding mental health, with those further removed from being immigrants being more accepting and understanding of mental health care issues. [32] This acceptance also tends to translate onto other health behaviors, such as cancer screening, with those of greater generations being more likely to have been screened. [31] Understanding and evaluating generational status in scholarly work is important, especially in the growing population of U.S. born Latinos, and will assist in decreasing the homogenization that this population currently faces.

Purpose

The purpose of this paper is research that examined cancer screening studies, published between 2000 and 2017 that include nativity status (U.S. born or foreign born) as a factor in cancer screening decision making in Latinos residing in the United States. This topic was chosen as a result of my own personal, academic, and professional interests in the Latino health. I am also interested in chronic diseases, such as cancer, as well as preventative health behaviors that can be used to minimize the burden of the condition on the individual and the community as a whole.

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While addressing nativity status is an individual factor that contributes to disparities in health outcomes among Latinos, nativity status also plays a significant role in the health of a community. With nativity status also comes a variety of beliefs regarding health and the necessary actions required in order to live a healthy lifestyle. Nativity status is also a significant predictor of factors such as socioeconomic status, income level, and acquired level of education. Understanding, evaluating, and analyzing nativity status's role in cancer screening outcomes is important for the future of cancer incidence and diagnosis rates in Latino populations. Latinos, while being the largest minority group in the United States, are also unique in the sense that a large proportion of this population is impacted by factors such as nativity status, a characteristic that not many other minorities need to consider at such a scale as Latinos.

In addition to understanding the frequency of recent cancer screening studies including nativity status as a factor in understanding cancer screening behavior, this thesis will also attempt to understand if recent cancer screening studies are taking into account generational status as a factor in understanding cancer screening behaviors in Latinos. Generational status, much like nativity status, is a significant predictor for certain health behaviors, and cancer screening is one of these behaviors that is impacted by one's generational status. Differing generational status means possible differences for education, socioeconomic status, and cultural beliefs and values related to health. This population should be targeted in a unique way in order to improve their cancer screening behaviors for the better.

Ultimately, the larger purpose of this thesis is to provide a study for future research and health care practice that analyzes and evaluates the most recent studies surrounding cancer screening in Latinos, and brings attention to the lack of research done relating nativity status and cancer screening behaviors. Preventative measures are not only cost-effective, but have the potential to save millions of lives, and measures such as cancer screening are a valuable weapon in combating cancer incidence and mortality rates in Latinos residing in the United States. This will hopefully be the start of studies that focus on the nativity status of Latinos and the associated risks, barriers, and prevalence of cancer screening, resulting in the increased knowledge and empowerment of this rapidly growing minority group.

Literature Review Methodology

A University of Iowa student conducted a literature review to evaluate the current academic work that focused on cancer screening behaviors in Latinos. More specifically, the data that was being evaluated from this literature review was if published academic articles about cancer screenings in Latinos included nativity status as a factor that contributes to cancer screening behaviors.

The literature review was conducted on the search engine GoogleScholar, as it tends to house more recently published academic work when compared to other scientific databases. Only academic work published between the years 2000 to 2017 were included in the study in order to have the results focus only the most recent academic work. The search terms used to obtain the academic articles were: *cancer screening AND Latinos AND Latinas AND Hispanic*. These search terms were chosen due to their ability to give a wide variety of articles that all have to do with cancer screening in Latinos.

Only scholarly, peer reviewed articles with a combination of the words *cancer screening, Latinos, Latinas, Hispanic* would have the ability to qualify for this review. Articles titled with specific ethnicities, such as Mexican, will also be included if the title also includes *cancer screening*. Having this inclusion criteria would narrow down the search results, and ensure that only articles that are directly related to Latinos and cancer screening would be read for their use of nativity status as a factor in cancer screening behavior. Studies following this criteria will be added to the results regardless of the type of study that they are (surveillance, intervention, pilot study, etc.). Articles containing all types of cancer and cancer screening will be included, as they will provide a comprehensive look into the different types of cancer screening behaviors of Latinos. Only studies that focus on Latino populations that were residing in the United States at the time of the study will be included, as it populations residing outside of the United States fall outside of the scope of this project.

A second database, PubMed, was also reviewed with the same key words in case there were results associated with Latinos and cancer screening that GoogleScholar did not produce.

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Any article that fit the inclusion criteria was added to an Excel sheet, and was evaluated on a variety of different factors. The factors that were looked at were the types of cancer screening that the study focused on; if the study included ethnic differences as a factor that contributed to cancer screening behaviors; if the study included nativity or generational status as a factor that contributed to cancer screening behaviors; the area of the United States that the study population resided in; and if the study included acculturation as a factor that contributed to cancer screening behaviors.

Articles that fit the inclusion criteria will also be analyzed by the type of research study. The articles in each research study will also be evaluated by the number of articles that did and did not include nativity status. This will help gain a better perspective in how different study designs use nativity status as a factor in cancer screening behaviors in Latinos. The study designs that the articles will be categorized into include the following: surveillance studies, literature reviews, validation of scale studies, cross-sectional studies, qualitative studies, randomized control trials, and interventions.

Articles were selected if their title included information on cancer screening behaviors in Latinos. The title of the article had to specifically include information that related cancer screening and Latinos that resided in the United States. The articles that were analyzed fit the inclusion criteria for title and publishing year. In addition, a variety of study designs were included.

A broader literature review was done to gain insight on background information about cancer in Latinos, cancer screening, Latino immigration, and the health status of Latinos as a whole. There was no exclusion criteria for the literature review on the background information, as articles found during this literature review process were not used in the results.

Results

After a GoogleScholar search using the key words *cancer screening*, *Latinas*, *Latinos*, *Hispanic* and only looking at articles published after the year 2000, the search totaled 17,600 articles. From the 17,600 articles in the search results, 43 fit all of the inclusion criteria. [28 29 33-71]

Nativity status by type of study

The 43 articles that fit the inclusion criteria were separated out into categories based on the type of study. Each category was then evaluated by the number of articles that used nativity status as a factor that influences cancer screening behavior in Latinos residing in the United States. Of the 43 articles, 19 included nativity status.

Table 1 displays the type of research study that each of the articles that fit the inclusion criteria can be categorized into, as well as the number of articles in each category that included nativity status as a factor in Latino cancer screening. Out of the 43 total articles that were analyzed, 18 were cross-sectional studies. Of the 18 articles that were cross-sectional studies, 10 studies included nativity status, while 8 did not. There were 7 interventions, with 2 of the articles including nativity status. There were also 7 surveillance studies, with 4 of the articles including nativity status. Qualitative studies included 5 articles, with 1 of those articles including nativity status. Three studies were literature reviews, with 1 including nativity status. There were also 2 randomized control trials, and none of these studies included nativity status as a factor. Lastly, there was one validation of scale study, which did include nativity status as factor in Latino cancer screening behavior.

While a number of studies did not explicitly state their participant's nativity status, there were 5 that only recruited immigrant participants. In cases in which nativity status was not explicitly taken, 10 articles did take into account the acculturation level of their study's participants. Acculturation is traditionally measured by level of English-language proficiency, but studies that fit the inclusion criteria also measured acculturation by the amount of time, typically in years, spent in the United States. The articles that measured acculturation by number of years spent in the United States were included in the total number of articles that were classified as including nativity status as a factor in cancer screening behavior, as it can be assumed that participants that reported spending a certain amount of time in the United States were born or raised outside of the US.

Table 1: Nativity Status and Cancer Screening Behavior Based on Type of Study

| Type of Study | Number of articles in study category | Number of articles with nativity status as a factor in Latino cancer screening | Number of articles that did not include nativity status as a factor in Latino cancer screening |
|---------------------------|--------------------------------------|--|--|
| Surveillance Study | 7 | 4 | 3 |
| Literature Review | 3 | 1 | 2 |
| Validation of Scale Study | 1 | 1 | 0 |
| Cross-sectional Study | 18 | 10 | 8 |
| Qualitative Study | 5 | 1 | 4 |
| Randomized Control Trial | 2 | 0 | 2 |
| Interventions | 7 | 2 | 5 |
| Totals | 43 | 19 | 24 |

Ethnicity

In addition to nativity status in Latino cancer screening behavior, the collection of participant's self-reported ethnicity was also evaluated. The majority of the articles that fit the inclusion criteria did include the ethnicity of their participants. Out of the 43 articles that fit the inclusion criteria, there were 27 that included ethnicity.

There were also instances in which all of the study participants were from a single ethnicity, and this was typically specified in the title of the article. Out of the 43 articles there were 4 that specified a single ethnicity in their title. This single ethnicity was always Mexican. The articles that specified ethnicity were included in the total number of articles that included ethnicity as a variable. The rest of the articles did not state a specific ethnicity, or had participants with varying ethnicities. The 23 articles that did not state a single ethnicity all had a combination of ethnicities. These ethnicities were Mexican, Puerto Rican, Dominican, Cuban, or "other". All 23 articles included Mexicans, 10 of those included Puerto Ricans, 4 of those included Dominicans, and 2 of those included Cubans.

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As far as the relationship between reported participant ethnicity and nativity status, it was common to see articles that reported ethnicity to also report nativity status. 100% of studies that reported studies that reported nativity status also reported ethnicity.

Geographical Area

Area of the United States that study participants resided in was also taken into account, as it many times influences the nativity status and ethnicity of the participants that were recruited. Geographical area determines the environment that participants reside in, and in turn, impacts their health outcomes, as many times these are closely related to one's surrounding environment. The southwest of the United States was the geographical area which had the greatest number of articles that fit the inclusion criteria, with 25 articles. Due to the large population of Latinos residing in that area, it was expected that the majority of studies involving this population would come from that geographical area. There were also 10 studies that recruited participants from the Northeast United States. This observation was also to be expected, as this region has a dense population of Latin American immigrants.

Cancer Screenings Studied

The only cancer screenings that were studied in the 43 articles were Pap smears, mammograms, clinical breast exams, and colonoscopies. There were 27 articles that included Pap smears as one of the cancer screenings studied. This accounted for 63% of total articles. There were 22 articles that included mammograms and clinical breast exams as cancer screenings studied. All articles that included mammograms also included clinical breast exams as a cancer screening. The cancer screening with the lowest prevalence in the 43 total articles was colonoscopies, with 18 articles. Most studies focused on multiple types of cancer screenings, while 21 only focused on one type of screening in the population that was studied.

Discussion

While there was a number of articles in the pooled results that included nativity, ethnicity, geographical area, and type of cancer screening, there were only 19 studies (44%) that looked at all of these factors simultaneously as variables that affect cancer screening behaviors in Latinos. Although each of these factors are important to consider individually, they are all interrelated and significantly impact the health of Latinos. The majority of articles in the literature of cancer

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screening in Latinos did not include nativity status, but did include either the participant's ethnicity or their geographic location. The ethnicity that each study had data on was "Mexican", and this was presented as either the only ethnicity in the sample or as sample with a variety of ethnicities. The lack of acknowledgement of nativity status in the majority of the literature on cancer screening in Latinos homogenizes this group into a population that is assumed to have the same lived experiences and socioeconomic qualities. It also assumes that all Latinos have the same health behaviors and beliefs, regardless of the previously mentioned variables. This is problematic, especially when interventions and community based work attempt to work and interact with Latino populations. This absence of information on how this population understands preventative health measures such as cancer screenings is important to this community's overall success.

The relationship between nativity status and the study design of the included articles is important, as it shows how the scientific community utilizes data on cancer screening in Latinos. It demonstrates a disconnect between large scale, data analysis and how that information is being used in application, such as in cases of interventions. This thesis demonstrates how nativity status as a factor in Latino cancer screening behaviors is mostly being taken into account in large, population based studies. These large studies many times include the information that interventions are based on, but interventions seem to not be using nativity status as a way to tailor the information that is being distributed to the communities they are evaluating. The nativity status of a population is important, especially in smaller scale interventions, because it gives researchers another facet to the identities that define a community. If nativity status is known, researchers will have the ability to tailor their interventions to those who are at greater risk for not having been previously screened, such as foreign born Latinos. Information about nativity status would also assist in tailoring health education sessions in a way that takes into account the background of those who will be receiving the program.

None of the studies that fit the inclusion criteria compared cancer screening behaviors between U.S. born and foreign born Latinos. This is especially problematic in communities in which there is a mixture of U.S. born and foreign born Latinos, as many have a mixture of status. As the majority of the literature on cancer screening in Latinos did not include nativity status, and none included generational status, there can be a disconnect between intervention participants and

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those who are implementing the intervention. In cases of health education for example, the information being presented may not be delivered in the most effective way for the demographics of the population that is being served. This may then have the possibility to not make any significant changes in the number of individuals in a community that have been screened for various types of cancer. There may also be issues in delivering information to multiple generations, as one group may relate to the delivery method while others may disregard it.

Ethnicity was evaluated in conjunction with nativity status as a way to understand the systematic homogenization of Latinos in the scientific community. About 63% of the included articles used ethnicity as a variable. While this was more than half of the included articles, a large proportion of studies still do not use ethnicity as a variable. Taking ethnicity into account will allow for better understanding of the cultural beliefs surrounding cancer screening behaviors in Latinos. It may also help with wording and language usage during health education sessions or public health interventions.

The homogenization of Latinos in U.S. health care settings may be due to the research that they are based off of that treat all Latinos the same, regardless of nativity status, ethnicity, and other cultural backgrounds. Without solid scientific evidence of how variables influence preventative health behaviors like cancer screenings, vulnerable groups within this population, such as recent immigrants, will not receive the care that they deserve. With recent immigrants being the group that is most likely to never have had a cancer screening, it is imperative that nativity status be considered in all cancer screening studies regarding Latinos. Being aware of nativity status will allow for more personalized and culturally aware interventions, which will in turn lead to a greater number of Latinos screened for preventable, yet life threatening, cancers.

While there was a substantial amount of literature on Latino's cancer screening behaviors for breast, cervical, and colorectal cancer, there is very little literature on cancer screenings specific to men. While breast, cervical, and colorectal cancer do have accessible and widely known cancer screening procedures, cancer screenings specific to men, such as prostate cancer screening, is not widely discussed in cancer screening literature. This also is especially true in Latino populations, as there were no studies in this literature review that included Latino prostate

cancer screening. The study of Latinos and their screening behaviors for cancers specific to men will significantly benefit this population, as Latino men are disproportionately affected by male-specific cancers when compared to other races and ethnicities. [72]

Conclusion

Nativity status was not used as a variable in the majority of published cancer screening studies that focused on Latinos residing in the United States. This variable is routinely disregarded in the current literature of cancer screening in Latinos. The absence of knowledge on the relationship between nativity status and cancer screening behaviors may have the possibility to hinder the decline of preventative cancers that Latinos are burdened with. Cancer is not only an issue that is isolated to the individual experience, but also has a negative effect on the community in which the individual lives and interacts. While Latinos do not get diagnosed for cancer at a higher rate than other ethnicities, this population is diagnosed at a later stage when compared to the general population. [8] In addition, Latinos are also getting cancer earlier in their lifetimes, and as a result, tend to die earlier from cancer than their ethnic counterparts. [8] A Latino diagnosed with cancer earlier in their lifetime will result in a significant number of years of life lost, in addition to a decrease in their quality of life. A younger age of diagnosis results in an individual being affected by cancer during the prime of their working life. The middle of a person's life is when they have the potential to have the greatest economic impact to themselves, their family, and their community. A cancer diagnosis during this crucial time in a person's life, versus later in life, can have the potential to cause a negative economic impact to their community. This can be especially true in Latino communities. Those diagnosed with cancer at an earlier age many times have to leave work in order to receive treatment, resulting in the decrease of economic gain for themselves and their families. This will in turn result in a decrease in family income, and they will not be able to support their surrounding community due to the lack of funds. If cancer rates in Latino communities continue to rise, there can be significant impacts on the viability of these thriving communities.

Future research should include how nativity status directly impacts cancer screening behavior in Latinos, since there is currently not a substantial amount of research on this topic. In addition, there should be an increase in the number of studies that analyze how generational status impacts

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cancer screening behaviors. Both of these research topics would be helpful in the development and implementation of interventions with participants who have mixed generational and nativity statuses. Future research should also include how Latinos view and utilize cancer screenings that are not for breast, cervical, or colon cancer. There is already a large pool of data that focuses on these cancer screenings, and other preventable cancers and their screenings should be assessed. There is also a strong emphasis on cancer screenings for female-specific cancers yet there were no studies in the literature that focused on male-specific cancer screenings. Men's health, especially minority men's health, is disregarded in the current literature. This is a population that experiences severe health disparities, and it would be beneficial to understand how Latino men view and experience cancer and cancer screenings. This population is many times critical to the success of Latino communities, and without the proper preventative health measures, the economic and social success of the community may suffer.

Appendix A: Cancer Incidence and Mortality Rates Based on Ethnicity and Type of Cancer**All Cancers**

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|-------|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 470.1 | 504.1 | 314.9 | 356 | 297.6 | 477.5 |
| Mortality Rate per 100,000 | 192.1 | 238.8 | 115.5 | 129.1 | 160.4 | 190.7 |

Breast Cancer

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|-------|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 127.8 | 118.3 | 89 | 89.3 | 69.8 | 132.5 |
| Mortality Rate per 100,000 | 25.5 | 33.8 | 12.6 | 16.1 | 16.1 | 25 |

Cervical Cancer

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|-----|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 8.7 | 11.4 | 8 | 13.8 | 6.6 | 8.5 |
| Mortality Rate per 100,000 | 2.6 | 4.9 | 2.4 | 3.3 | 4 | 2.3 |

*Latino Nativity Status and Cancer Screening Behaviors within the U.S.***Prostate Cancer**

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|------|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 168 | 255.5 | 95.6 | 140.8 | 68.2 | 161.4 |
| Mortality Rate per 100,000 | 27.9 | 62.3 | 11.3 | 21.2 | 21.5 | 25.6 |

Colon Cancer

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|------|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 51.6 | 62.1 | 41.6 | 39.3 | 40.8 | 51.2 |
| Mortality Rate per 100,000 | 19.4 | 26.7 | 12.3 | 13.6 | 17 | 18.9 |

Lung and Bronchial Cancer

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|------|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 64.5 | 76.6 | 39.4 | 33.3 | 44 | 65.7 |
| Mortality Rate per 100,000 | 54.7 | 62 | 26.9 | 23.6 | 39.9 | 55 |

Liver and Bile Duct Cancer

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|-----|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 6.2 | 7.6 | 13.9 | 9.7 | 9.7 | 5.2 |
| Mortality Rate per 100,000 | 4.9 | 6.5 | 10.6 | 7.6 | 8.4 | 4.6 |

*Latino Nativity Status and Cancer Screening Behaviors within the U.S.***Stomach Cancer**

| | All | Black/African American | Asian/Pacific Islander | Hispanic/Latino | American Indian/Alaskan Native | White |
|----------------------------|-----|------------------------|------------------------|-----------------|--------------------------------|-------|
| Incidence Rate per 100,000 | 8.1 | 12.5 | 14.3 | 12.3 | 11.5 | 7.1 |
| Mortality Rate per 100,000 | 4.2 | 8.2 | 8 | 6.8 | 7.2 | 3.7 |

Appendix B: Cancer Incidence and Mortality Rates in Latinos

| Type of Cancer | Incidence Rates for Each Cancer per 100,000 | Death Rates for Each Cancer per 100,000 |
|---------------------|---|---|
| All Cancers | 356 | 129.1 |
| Breast | 89.3 | 16.1 |
| Cervix | 13.8 | 3.3 |
| Prostate | 140.8 | 21.2 |
| Colorectal | 39.2 | 13.6 |
| Lung and Bronchus | 33.3 | 23.6 |
| Liver and Bile Duct | 9.7 | 7.6 |
| Stomach | 12.6 | 6.8 |

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