

SAHNA 2010: A South Asian Health Needs Assessment of the Washington, D.C. Region

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EXECUTIVE SUMMARY

The implementation of programs and policies to address disparities within racial and ethnic groups is at the core of public health solutions, and although community based organizations across the country have focused efforts on Asian Americans and specifically South Asians, there still remains a paucity of data to drive better interventions and policies for this minority group. According to 2008 census data, there are approximately 2.7 million South Asians living in the U.S.

To better understand the health needs of South Asians living in Washington D.C., a needs assessment was conducted within the community. This effort was led by Project SAHNA, a collaborative research project at The George Washington University, School of Public Health and Health Services, led by faculty, students, and alumni committed to addressing the health and well being of South Asians living in the U.S. This study recruited over 700 self-identified South Asian adult participants for a web-based or paper survey. The survey gathered information on: (1) Attitudes/Perceptions on Health Status; (2) Physical and Nutritional Habits; (3) Health Status; (4) Health Care Access; (5) Social Support; (6) Acculturation; and (7) Demographic Information.

Today in May 2010 as we celebrate Asian American month, it is without question that within this population exists a large and diverse South Asian community. As this community has grown over the last several decades, so too have the challenges faced by many, and although stereotypes such as "model minority" and "wealthy and healthy" continue to perpetuate, community organizations around the country have been tirelessly working to reduce inequities and barriers for this minority population. Project SAHNA is the first step in identifying the *health* needs of the South Asian community in the Washington D.C. region---a first step in beginning the dialogue and informing the public health conversation around policy, practice, and future research.

This report presents findings for the study and includes recommendations for policy, research, and practice including: increasing resources for public health research and community based programs; assuring that South Asian health is part of the newly passed health reform legislation; increasing advocacy and research efforts to disaggregate data to better understand differences within the community; examining the role of family dynamics, social support, and social networks in influencing physical activity and nutrition; developing culturally and linguistically appropriate health messages and interventions to be delivered via the internet and primary care providers; and integrating the health needs of South Asians into the national agenda for current local and national public health initiatives.

I. Introduction & Background

The health and well-being of all racial and ethnic groups in the United States (U.S.) is fundamental to the growth and development of individuals and communities across the country. Furthermore, the implementation of programs and policies to address disparities within racial and ethnic groups is at the core of public health solutions, and although community based organizations across the country have focused efforts on Asian Americans and specifically South Asians, there still remains a paucity of data to drive better interventions and policies for this minority group. According to 2008 census data, there are approximately 2.7 million South Asians living in the U.S. The South Asian community in the U.S. is comprised of individuals with family origins from Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka.¹ The community includes members of the South Asian Diaspora as well—past generations of South Asians who originally settled in many areas around the world, including the Caribbean (Guyana, Jamaica, Suriname, and Trinidad and Tobago); Africa (Nigeria, South Africa, and Uganda); Canada; Europe; and other parts of Asia and the Pacific Islands (Fiji, Indonesia, Malaysia, and Singapore).²

Although the South Asian population in the U.S. has significantly increased in the last several decades, there has been limited data and research on the health issues faced by this growing population. Furthermore, although the Washington, D.C. metropolitan area is the 5th largest city with South Asians, little attention has been given to both research and programmatic efforts to better understand and address the health and well being of South Asian families.

Throughout history, communities have organized themselves to serve their own interests, most often in response to gaps in public services. In fact, community based organizations (CBOs), clinics, policy makers, and other community groups play a vital role in strengthening and empowering communities through a variety of missions, including improving individual and community health through outreach and health education. Furthermore, these organizations vary greatly by structure, resources, and scale. They are a mechanism by “which individuals become more competent in their skills, attitudes, and concepts in an effort to live in and gain more control over local aspects of their communities”.³ Before these organizations can address specific health disparities, healthcare access issues, and prevention needs, they must coordinate a

¹ The World Bank. South Asian: Countries. [online]. Available: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/0,,menuPK:158850~pagePK:146748~piPK:146812~theSitePK:223547,00.html>. Accessed 7 April 2010

² South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

³ Gailbraith, Michael. Community Based Organizations and the Delivery of Lifelong Learning Opportunities. Florida Atlantic University. Available at: <http://www.ed.gov/pubs/PLLIConf95/comm.html>. Accessed March 23, 2008.

community-based and community-wide needs and health assessment, using their standing in and access to the community as their strength. This approach is central to the success of programs and organizations, yet barriers exist to gathering community information from population-specific racial and/or ethnic groups, including a lack of community-based participatory research on disenfranchised or minority populations.⁴ The public health community has only recently acknowledged the health needs of South Asian Americans and the community itself has only recently begun to understand and address the health disparities that exist. While there are various South Asian American community organizations throughout the U.S., few focus on health care and health promotion. This new understanding of South Asian American health disparities, coupled with a newfound commitment to mobilizing and creating CBOs that focus on health, is hampered by very little information being available on the health objectives, needs, and challenges of these organizations.

To better understand the health needs, behaviors, and perceptions of South Asians living in Washington, D.C., a needs assessment was conducted within the community. This effort was led by Project SAHNA. Project SAHNA is a collaborative research project at The George Washington University, School of Public Health and Health Services, led by faculty, students, and alumni committed to addressing the health and well being of South Asians living in the U.S. Project SAHNA is the first study of this magnitude in the Washington, D.C. region and provides insight and information to guide the development of further research, programs, and policies aimed at improving the health of South Asians in the Washington, D.C. metropolitan area.

Historical Context and Immigration: South Asian immigration to the U.S. is typically described as occurring in three waves. The first wave is marked by the arrival of men from the British Indian state of Punjab between the 1890s and the 1920s. These men intended to seek their fortunes and return to India; however, many remained in the U.S., settling mainly in California and working in agriculture, lumber, steamship, and railroad industries. In 1917, the growth of the South Asian community in the U.S. was severely stunted with the passage of *the Immigration Act of 1917*.⁵ The Act codified the "Asiatic Barred Zone," from which individuals from a defined geographic region of Asia, including South Asia, were prohibited entry into the U.S.⁶ Further discriminating against South Asians, the *Immigration Act of 1924* prohibited recent South Asian immigrants

⁴ Leung MW, Yen IH, Minkler M. (2004). Community-based participatory research: a promising approach for increasing epidemiology's relevance in the 21st century. *International Journal of Epidemiology*, 33(3), 499-506.

⁵ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

⁶ Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

from bringing their family members to join them in the U.S.⁷ These Acts ended the influx of South Asian immigrants that the U.S. saw during the late 19th and early 20th centuries. In total, only 13,607 persons from South Asia immigrated to the U.S. during the first wave of immigration.⁸

The *1965 Immigration and Naturalization Act* commenced the second wave of South Asian immigration to the U.S.⁹ The Act abolished the bar on immigrants from Asia and established a detailed preference system based on professional skills needed in the U.S. The result was a dramatic growth of immigrants from South Asia, particularly from urban and highly educated backgrounds.¹⁰ The majority of immigrants were professionals in the areas of science, engineering, and medicine.¹¹ For example, in a sample of 46,000 employed Indian immigrants in 1974, 16,000 were engineers, 4,000 were scientists, and 7,000 were physicians. Additionally, in 1975, 93% of Indians admitted were classified as either professional workers, technical workers, or their spouses and children. In the 1970s, South Asian immigrants were among the highest educated and most professionally advanced of any immigrant group. According to the 1980 census, they were also among the most successful immigrant groups, with the second highest-ranking income level among all ethnic groups in the U.S.¹²

The third wave of South Asian immigration to the U.S. is characterized by a demographic shift in immigrants in the 1980s that was the result of the *Family Reunification Act*. The Act allowed well-established South Asian families to sponsor their emigrating family members, resulting in a dramatic growth in South Asian communities. Between 1980 and 1990, immigrants from India were up 126% in the decade; Pakistanis up 415%; Bangladeshis up 801%; and Sri Lankans up 275%.¹³ Many of these immigrants—few of whom entered the U.S. under professional or occupational categories—tended to be less educated and more economically disadvantaged than their family members who immigrated to the U.S. in the second wave.^{14,15,16} For

⁷ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

⁸ Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

⁹ Leonard, Karen. (1997). *The South Asian Americans*, 1st edn, Greenwood Press, Westport, C.T.

¹⁰ Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

¹¹ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

¹² Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

¹³ Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

¹⁴ McAuliffe, G. 2008, *Culturally Alert Counseling: A Comprehensive Introduction*, First edn, Sage Publications, Thousand Oaks, CA.

¹⁵ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

example, in 1993, 43% of immigrants from India entered under professional or occupational categories, compared to 93% of immigrants from India who arrived in 1975.¹⁷ Additionally, in the third wave, most immigrants were employed in service sector jobs, such as taxi driving, motels, convenience stores, and gas stations.¹⁸ In total, from the period between the *1965 Immigration and Nationality Reform Act* and 1990, nearly one million South Asians immigrated to the U.S.¹⁹ The most recent influx of immigrants from South Asia has been part of what is referred to as the “IT Boom of the Information Technology Boom.” Between 1995 and 2000, a wave of well educated immigrants were sent to the U.S. to pursue higher education and employment opportunities as part of the incredible technology sector growth. In fact, 44% of all H1-B specialty occupation visas (under which large numbers of Indian IT firms sent their employees for on-site project work) were people of Indian origin. This most recent group of South Asian immigrants tended to move to more cosmopolitan areas of the country where the technology industry is more prevalent, and has resulted in significant growth for this minority community.

South Asians in the United States: Today there are approximately 2.7 million South Asians living in the U.S. The five largest South Asian community groups in the U.S. are Indians, Pakistanis, Bangladeshi, Sri Lankans, and Nepalis respectively (see Table 1).²⁰

Table 1: Population of South Asians in the U.S.	
South Asian Group	Population
Indian	1,678,765
Pakistani	153,533
Bangladeshi	41,280
Sri Lankan	20,145
Nepali	7,858
Source: South Asian Americans Leading Together, 2009	

¹⁶ Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

¹⁷ Corward, H., Hinnels, J.R. & Brady Williams, R. (eds) 2000, State University of New York Press, Albany, NY. 1st Edition.

¹⁸ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

¹⁹ McMahon, S. 1998, 06/22-last update, *Overview of the South Asian Diaspora* [Homepage of University of California Berkeley], [Online]. Available: <http://www.lib.berkeley.edu/SSEAL/SouthAsia/overview.html> [2010, 03/19].

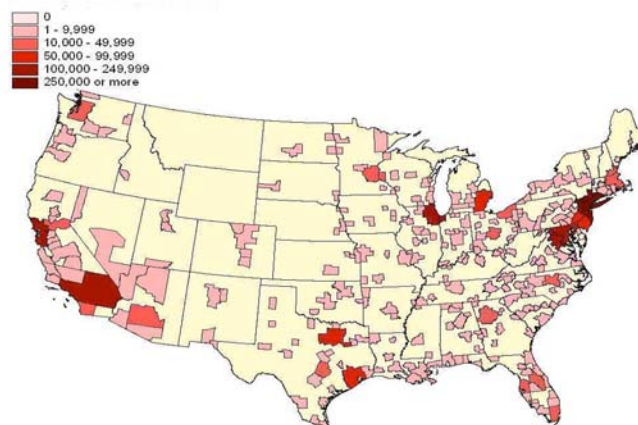
²⁰ SAALT 2010, *About the South Asian Community* [Homepage of South Asian Americans Leading Together], [Online]. Available: <http://www.saalt.org/pages/About-the-South-Asian-Community.html> [2010, 03/19].

South Asians tend to live in metropolitan areas on the East and West coasts; and 80% of all South Asians live in 30 Metropolitan Statistical Areas (MSAs).^{21,22} The MSAs with the largest South Asian populations are New York/New Jersey, San Francisco Bay Area, Chicago, Los Angeles, and Washington, DC Metro Area.²³ Over 86% of South Asians reside in the following fifteen states: California, New York, New Jersey, Texas, Illinois, Pennsylvania, Michigan, Virginia, Maryland, Georgia, Florida, Massachusetts, Ohio, North Carolina, and Washington (see Table 2 and Figure 1).²⁴

Rank	Metropolitan Statistical Area	Total Population
1	New York/Northern New Jersey/Long Island, NY/NJ/CT/PA	468,095
2	San Francisco / Oakland / San Jose	152,045
3	Chicago / Gary / Kenosha, IL / IN / WI	132,536
4	Los Angeles / Riverside / Orange County	120,174
5	Washington/Baltimore	106,283
6	Philadelphia/Wilmington/Atlantic City, PA/NJ/DE/MD	57,276

Source: South Asian Public Health Association, 2002

Figure 1. Population of South Asians in 2000



Source: South Asian Americans Leading Together, 2009

²¹ SAALT 2010, *About the South Asian Community* [Homepage of South Asian Americans Leading Together], [Online]. Available: <http://www.saalt.org/pages/About-the-South-Asian-Community.html> [2010, 03/19].

²² South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

²³ SAALT 2010, *About the South Asian Community* [Homepage of South Asian Americans Leading Together], [Online]. Available: <http://www.saalt.org/pages/About-the-South-Asian-Community.html> [2010, 03/19].

²⁴ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

The South Asian population in the U.S. is generally viewed as an exceptionally successful immigrant group. This however, has resulted in a characterization known as the “Model Minority Myth.” The “model minority” is a term that refers to a minority ethnic, racial, or religious group whose members achieve a higher degree of success than the population average, and this success is typically measured in income, education, and related factors such as low crime rate and high family stability. Furthermore, the term is often characterized as a myth which amounts to racial stereotyping, and²⁵ as discussed above, the third wave of immigrants from South Asian countries do not reflect the same educational and income levels as those in the second wave of immigration. The “model minority myth” is problematic for the health of the South Asian community in the U.S. for two reasons. First, South Asian Americans are viewed as being healthy and wealthy, with no health or social problems. Second, this fails to show the reality that many South Asians are not proficient in English, live below the poverty line, and lack access to health care.

According to the South Asian Americans Leading Together (SAALT) organization, there are many South Asians living in the U.S. with significant disparities. Table 3 describes specific South Asian groups in the U.S. who have limited English-proficiency (LEP) and live in linguistically isolated households (LIH).

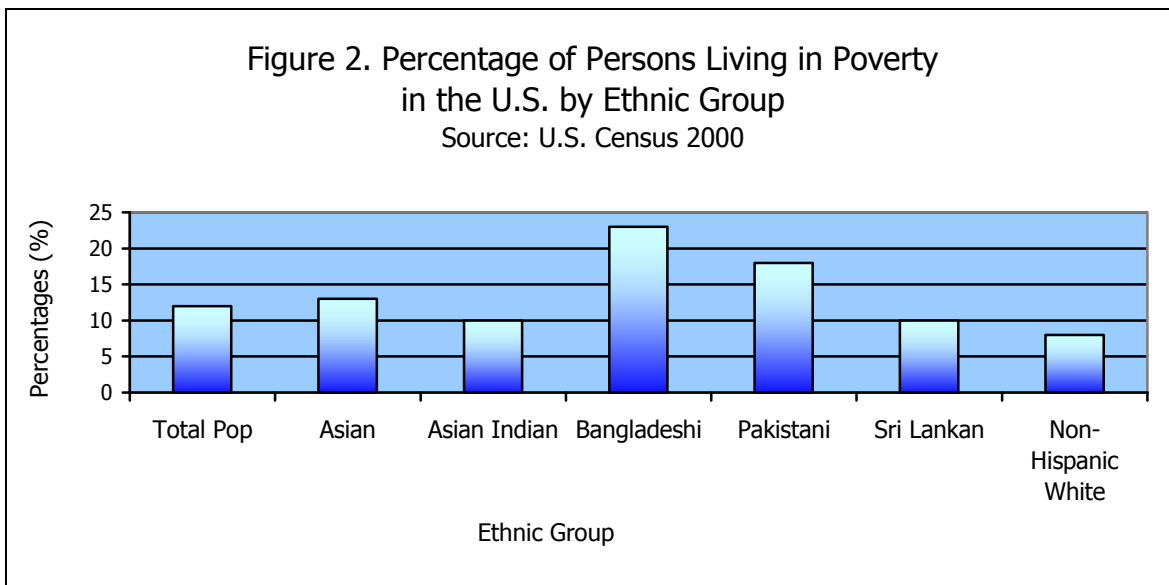
Table 3. LEP and LIH Rates of South Asians by Group, 2000		
Group	LEP Rate	LIH Rate
Bangladeshi	50%	32%
Indian	23%	11%
Pakistani	32%	15%
Sri Lankan	19%	10%
Source: South Asian Americans Leading Together, 2010		

As illustrated in Table 3, Bangladeshi’s have the highest rates of limited English proficiency and linguistically isolated households with one in every two having limited proficiency in English and approximately one in three currently living in a linguistically isolated household.²⁶

²⁵ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

²⁶ SAALT 2010, *About the South Asian Community* [Homepage of South Asian Americans Leading Together], [Online]. Available: <http://www.saalt.org/pages/About-the-South-Asian-Community.html> [2010, 03/19].

In addition to language barriers, many South Asians live at or below the poverty line. As shown in Figure 2, 13% of all Asian Americans live in poverty, and nearly one in four Bangladeshis and one in five Pakistanis live in poverty. Additionally, a regional study conducted in California found that 14% of Asian-Indian children live in poverty.²⁷ It is important to note that the aggregation of all Asian American groups masks the significant numbers of specific South Asian groups living in poverty, such as Bangladeshi Americans, who have almost twice the level of poverty when compared to national average.



Health of South Asians in the United States: Over the last decade, there has been an increased interest in both understanding the health needs of South Asian-Americans and developing services and programs to address these needs. In 2000, the groundbreaking publication “Brown Paper: The Health of South Asians in the United States”²⁸ summarized key health issues faced by this community. Throughout this compendium, health disparities were documented for specific populations including women, youth, and the elderly. Furthermore, the *Brown Paper* focused on significant health challenges faced by the entire South Asian American community including cardiovascular health and diabetes. The review indicated that the fundamental public health principle that the health needs of all Americans be addressed in health care

²⁷ Brown, E.R., *The Changing Face of American Communities: "No Data, No Problem"*, Presentation (2008). University of California Los Angeles, Los Angeles, CA.

²⁸ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

policy and public support has not been extended to all of the nearly 2.7 million members of the South Asian community. Since the publication of this report in 2000, numerous studies have been conducted in various communities to guide the development of programs and services.

Health Access & Utilization: In the U.S., access to adequate and comprehensive health care begins with health insurance, yet only one in five South Asians in the country is insured.²⁹ Access to health care remains a challenge for South Asians living in the U.S. According to SAALT, 21% of all South Asians living in the U.S. lack health insurance, surpassing the national average at 18%.³⁰ The rate of health care utilization by South Asians is less compared to other minority groups with approximately 40% of South Asians under the age of 65 reporting no regular source of care. More alarming, even among insured South Asians, 15% report no regular source of care.³¹ The recently passed health care reform legislation will enhance care for South Asians as it increases funding for community health centers and supports minority health initiatives both in data collection and service delivery through culturally appropriate modes. Nevertheless, the 5-year wait period for lawful permanent residents to access Medicaid, barriers for undocumented immigrants to purchase plans (even at full cost), and immigration status verification are going to pose barriers to increased health care access for all South Asians.

Preventive and primary care health services are vital to health and well-being, and yet poor English-language skills coupled with living in poverty can often equate to lack of access to these necessary health services and benefits. National studies have found that screening rates for breast and prostate cancer in Asian American and Pacific Islander (AAPI) groups are lower than other minority groups.³² Furthermore, a study in California found that South Asian children were the least likely out of eight minority groups to have visited the dentist—including four times less likely than Vietnamese children.³³

In California, a study assessing insurance coverage and type used among Asian Americans, revealed a wide heterogeneity in the usage and type of coverage. The

²⁹ SAALT 2010, *About the South Asian Community* [Homepage of South Asian Americans Leading Together], [Online]. Available: <http://www.saalt.org/pages/About-the-South-Asian-Community.html> [2010, 03/19].

³⁰ South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

³¹ South Asian Americans Leading Together 2009, *Health Care Issues Affecting South Asians in the United States, Online Report (2009)*. Takoma Park, MD.

³² South Asian Public Health Association 2002, *A Brown Paper: The Health of South Asians in the United States*, SAPHA.

³³ Brown, E.R., *The Changing Face of American Communities: "No Data, No Problem"*, Presentation (2008). University of California Los Angeles, Los Angeles, CA.

number of uninsured Asian Americans increased from 16.5% to 17.9% for the fiscal year 2004-2005.³⁴ Insurance type varied from public to private, and employer-based coverage was the highest type of coverage used by Asian-Indians and other South Asians. This analysis also found that current economic conditions have resulted in greater unemployment and increases in the number of under and un-insured.³⁵ Access and utilization of health services are not only dependent on health insurance but quality of care as well. South Asian Americans living in the U.S. face several barriers when trying to access quality health care.³⁶ Linguistic barriers, interpersonal communication, and cultural competency challenge both providers and patients as the interaction of patient, provider, and system-related factors play a key role in the quality of care received. Communication is an important factor in health care, ensuring patients and providers can communicate effectively and respectfully with each other; that patients and health care systems can communicate to ensure the logistics of accessing and financing health care can be completed; and the transmission of medical information over different languages and cultures are all salient to good health. Compromises in any of these communication systems or pathways can lead to reduced health care or health outcomes for the patient. Lack of cultural competency among providers continues to be a major reason for poorer outcomes faced by minority populations. A recent article in the *Journal of the American Medical Association*, found that resident physicians' self-reported preparedness to deliver cross-cultural care lags well behind training in other clinical and technical areas, and although cross-cultural care was perceived to be important, there was little clinical time allotted during residency to address cultural issues.³⁷ With significant segments of the South Asian population speaking limited English at home, the language barrier experienced when seeking care can result in many patients relying upon family members to interpret or avoiding health care visits entirely.³⁸ South Asian women are particularly vulnerable to cultural barriers because they traditionally play the role of primary caregiver for both their family and community; therefore, they tend not to give their own health and well-being the same due attention as their family members. Additional factors that influence women's attitudes and behaviors toward health care services are fear of establishment, embarrassment of body, low self-esteem, isolation, and difficulty with adherence, coping, and communication skills.

³⁴ Denavas-Walt C., Proctor B. D., & Lee C. H. (2006). Income, poverty and health insurance coverage in the United States: 2005. Washington, DC: US Census Bureau.

³⁵ Kao, D. (2009). Factors Associated with Ethnic Differences in Health Insurance Coverage and Type Among Asian Americans. *Journal of community health*, 1-14.

³⁶ South Asian Americans Leading Together 2009, *Health Care Issues Affecting South Asians in the United States, Online Report (2009)*. Takoma Park, MD.

³⁷ Weisman, JS., Betancourt, J., Campbell EG., Park, ER., Kim, M., Clarridge, B., Blumenthal, D., Lee, KC., Maina, AW. (2005). Resident Physicians' Preparedness to Provide Cross-Cultural Care. *Journal of the American Medical Association*, 294(9), 1058-1067.

³⁸ South Asian Americans Leading Together 2009, *Health Care Issues Affecting South Asians in the United States, Online Report (2009)*. Takoma Park, MD.

Health Information and Social Support: Social support is considered to be one of the most effective means to cope with stressful events of life. Culture has always played an important role in determining an individual's perception and utilization of social support for health related issues. Furthermore, research has consistently approved the beneficial effects of social support for stressful conditions irrespective of culture.³⁹

Although there have been few large-scale studies specifically exploring South Asian communities, there is evidence to suggest that Asians and Asian Americans tend to seek less social support than European Americans. There are three different reasons which have been offered to explain this cultural difference.⁴⁰ First, Asians and Asian Americans have unsolicited social support available, which has resulted in less tendency to seek support from others as compared to their European counterparts. Second, Asian Americans have stronger beliefs to solve problems on their own instead of seeking help from others. Third, Asian Americans are more concerned about the disclosure of their stress and receiving criticism than European Americans.

A few small-scale studies have found significant relationships between social support and health in the South Asian community. According to a study conducted among Asian Indian immigrants, women were more at risk for negative health outcomes due to a lack of social support in host countries, and constructs such as having good friendships and a strong cultural identity were associated with more positive health outcomes.⁴¹ In a qualitative study of cardiovascular risk among Asian-Indians conducted by Kalra and colleagues, study participants reported greater levels of stress due to transitioning to a new culture in the U.S.⁴² This is particularly noteworthy given that heart disease is the leading cause of death in the U.S.⁴³

Health Status, Health Behaviors & Acculturation: South Asians have higher rates of chronic diseases such as cardiovascular disease, hypertension, and type II diabetes compared with other racial and ethnic groups. South Asians have three to five fold higher risk of *coronary heart disease* (CHD) and cardiovascular mortality compared to other populations^{44,45} and the risk of mortality related to cardiovascular disease remains higher in South Asians whether they are living in their native countries or are immigrants.^{46,47} The INTERHEART study conducted in 52 countries found that risk

³⁹ Kim HS, Sherman DK, Taylor SE. (2008). Culture and Social Support. *American Psychologist*, 09; 63(6):518-526.

⁴⁰ Kim HS, Sherman DK, Taylor SE. (2008). Culture and Social Support. *American Psychologist*. 09; 63(6):518-526.

⁴¹ Diwan, S., Jonnalagadda, S. S., & Balaswamy, S. (2004). Resources predicting positive and negative affect during the experience of stress: A study of older Asian Indian immigrants in the United States. *Gerontologist*, 44, 605-614.

⁴² M. Sharma (2006). Designing Effective Health Education Interventions for Preventing Obesity in South Asian Americans. *Californian Journal of Health Promotion* 2006, Volume 4, Issue 1, 119-128

⁴³ Centers for Disease Control and Prevention Heart Disease is the Number One Cause of Death, 2010. Retrieved March 28, 2010 from http://www.cdc.gov/DHDSP/announcements/american_heart_month.htm

⁴⁴ Harding S. (2003). Mortality of migrants from the Indian subcontinent to England and Wales: effect of duration of residence. *Epidemiology*, 14:287-292.

⁴⁵ Harding S. (2003). Mortality of migrants from the Indian subcontinent to England and Wales: effect of duration of residence. *Epidemiology*, 14:287-292.

⁴⁶ Ramaraj R, Chellappa P. (2008). Cardiovascular Risk in South Asians. *Postgraduate Medical Journal*, 84(996):518-523.

factors for heart disease (particularly early onset of acute myocardial infarction), in South Asians included smoking, hypertension, diabetes, high waist to hip ratio and lack of physical exercise.⁴⁸ Furthermore, the prevalence of cardiovascular disease and its risk factors were found to be higher among first generation Asian Indian immigrants in the U.S. as compared to the native Caucasian population.⁴⁹

Hypercholesterolemia is also common in South Asians due to high risk genetics, lack of physical activity and poor diet. South Asian immigrants in the U.S. have premature heart disease at three to four times the rate of other Americans^{50,51} and twice the risk of developing heart disease even when there is a lower or equal occurrence of traditional risk factors such as smoking, hypertension, high cholesterol, and obesity. In a study conducted in California,⁵² it was noted that 33% of all deaths among Indian women are due to coronary artery disease compared with 11% among Japanese, 16% among Chinese, and 20% among Hispanics, Blacks, and Caucasians. More alarming, coronary artery disease risk factors are present in South Asians at a younger age compared to other populations, resulting in early onset of the condition.^{53,54} Several studies are examining how smaller coronary arteries could be the reason for high rates of coronary artery disease among this minority population^{55,56,57} and recent studies in the U.S. have also questioned if there is a role of dysfunctional high-density lipoprotein among South Asians.⁵⁸ Although High Density Lipoproteins (HDLs) are considered protective, studies have indicated that this may not be the case for South Asians. It is not clear if the HDL acts negatively, and can increase arteriosclerosis in South Asians.

⁴⁷ Joshi P, Islam S, Pais P, Reddy S, Dorairaj P, Kazmi K, et al. (2007). Risk Factors for early myocardial infarction in South Asians compared with individuals in other countries. *Journal of the Medical Association*, 297(3):286-294.

⁴⁸ Yusuf S, Hawken S, Ounpuu S, on behalf of the INTERHEART Study Investigators. (2004). Effect of potentially modifiable risk factors associated with myocardial infarction in 52 Countries (the INTERHEART study): case-control study. *Lancet*. 2004; 364: 937-952.

⁴⁹ Harding S. (2003). Mortality of migrants from the Indian subcontinent to England and Wales: effect of duration of residence. *Epidemiology*, 14:287-292.

⁵⁰ Enas EA. How to Beat the Heart Disease Epidemic Among South Asians: A Prevention and Management Guide for Asian Indians and Their Doctors. Downers Grove.

⁵¹ Joshi P, Islam S, Pais P, et al. (2007). Risk Factor for early myocardial infarction in South Asians compared with individuals in other countries. *JAMA*, 297:286-94.

⁵² Klatsky AL, Tekawa I, Armstrong MA et al. (1994). The risk of hospitalization for Ischemic Heart Disease Among Asian Americans in Northern California. *American Journal of Public Health*, 84:1672-5.

⁵³ Joshi P, Islam S, Pais P, et al. (2007). Risk Factor for Early Myocardial Infarction in South Asians Compared with Individuals in Other Countries. *Journal of American Medical Association*, 297:286-94.

⁵⁴ Enas EA, Garg A, Davidson MA, Nair VM, Huet BA, Yusuf S. Coronary heart disease and its risk factors in first-generation immigrant Asian Indians to the United States of America. *Indian Heart Journal*. 1996; 48: 343-353.

⁵⁵ Makaryus AN, Dhama B, Raince J, et al.(2005). Coronary Artery Diameter as a risk factor for Acute Coronary Syndromes in Asian-Indians. *American Journal Cardiology*. 2005; 96:778-780. □

⁵⁶ Lip GY, Rathore VS, Katira R, Watson RD, Singh SP. Do Indo-Asians have smaller coronary arteries? *Postgraduate Medical Journal*. 1999; 75:463-466. □

⁵⁷ Dhawan J, Bray CL. Are Asian coronary arteries smaller than Caucasian? A study on angiographic coronary artery size estimation during life. *International Journal of Cardiology*. 1995; 49:267-269.

⁵⁸ Navab et al 2000; Fogelman 2004; and Ansell et al 2006.

Type II diabetes is a rapidly growing threat to South Asians worldwide. South Asians are four to five times more likely to develop type II diabetes than Caucasians.⁵⁹ A handful of small scale studies have found a high prevalence of glucose intolerance in this community and in a study conducted in San Francisco, South Asians were found to have a higher age-adjusted prevalence of diabetes, 26% vs. only 7% in Whites; 14% in Chinese Americans; and 19% in African American and Latinos.⁶⁰ Further compounding the health of South Asians is the role diabetes plays in increasing cardiovascular risk. Diabetes and cardiovascular disease share common modifiable health behaviors and lifestyle factors that play a key role in prevention, and will become increasingly more important for the South Asian community.

Health behaviors and lifestyle factors vary among South Asians. A 2004 report from the Centers for Disease Control and Prevention (CDC) found that only 41% of Asian American & Pacific Islander (AAPI) men and 35.8% of AAPI women actively participated in physical activity more than the recommended level. This was lower than the overall average for U.S. men and women, which was 48.4% and 43.3% respectively.⁶¹ A more recent study which included minority and immigrant groups, found that South Asian groups had lower levels of leisure physical activity and increased sedentary behavior as compared to the general resident population.⁶² A needs assessment conducted in 2007 by the American Asian Health Initiative (AAHI) at the Montgomery County Department of Health and Health Services in Maryland, suggests that the South Asian culture places a greater emphasis on the treatment of health conditions rather than seeking preventative care.⁶³ While it has been noted that ailments such as cardiovascular disease, diabetes, and cancer are the most commonly cited health concerns among South Asian immigrants, data from this same study found that most Asian American communities perceive a variety of lifestyle factors that increase the risk for these chronic diseases. These lifestyle factors include high stress, lack of physical exercise, and inadequate diet.⁶⁴

Acculturation has been cited as a significant determinant of health risk behaviors among immigrant communities. According to a survey conducted among South Asian and Hispanics 6th and 7th graders, acculturation resulted in poor dietary habits, lack of

⁵⁹ Chowdhury T, Grace C, Kopelman P G. (2003). Preventing diabetes in south Asians: too little action and too late. *British Medical Journal*, 327 (7423): 1059-1060.

⁶⁰ Kanaya, A., Mathur, D., Ranpura, V., Byri, S. Wassel, C. South Asians and Diabetes: Higher Risk with Traditional Beliefs. 2008.

⁶¹ Bowman SA, Vinyard BT. Fast Food Consumption of U.S. Adults: Impact on Energy and Nutrient Intakes and Overweight Status. *J.Am.Coll.Nutr.* 2004; 23(2):163-168.

⁶² Duffey KJ, Gordon-Larsen P, Ayala GX, Popkin BM. (2008). Birthplace is associated with more adverse dietary profiles for US-born than for foreign-born Latino adults. *Journal of Nutrition*, 138(12):2428-2435.

⁶³ Joshi P, Islam S, Pais P, et al. (2007). Risk Factor for Early Myocardial Infraction in South Asians Compared with Individuals in Other Countries. *Journal of American Medical Association*, 297:286-94.

⁶⁴ Joshi P, Islam S, Pais P, et al. (2007). Risk Factor for Early Myocardial Infraction in South Asians Compared with Individuals in Other Countries. *Journal of American Medical Association*, 297:286-94.

physical activity, and substantial increases in fast food intake.⁶⁵ It has been posited that first and second-generation immigrants adopt unhealthy behaviors as they acculturate and deviate from their cultural norms. Adolescents and young adults involved in a health assessment revealed that cultural norms such as parental pressure to achieve academic success and expectations for their children to attain certain career paths have led to higher rates of stress and psychological disorders among the younger immigrant Asian community. This study also reported strong peer pressure in school with respect to racial and cultural discrimination, and the difficulty of balancing two different cultures.⁶⁶ According to a study of Asian immigrants, men and women reported mental health as an important health concern due to acculturation and acculturative stress. Additionally, women who did not work in their home country were working in the U.S. to contribute to the family income resulting in increased stressors among these women. For men, they reported difficulties in communicating with children at home due to lack of time, language barriers, and trying to adjust to a different work culture. Most seniors in the study complained of isolation and lack of social support as they spent most of their time inside the home.⁶⁷

South Asians in the Washington D.C. Metropolitan Region: Washington, D.C. is home to a significant and steadily increasing population of persons of South Asian origin. Between 2000 and 2007, the D.C. metropolitan area has seen a 25% increase in Asian Americans, and now has the fifth largest population of South Asians in the U.S.⁶⁸ South Asians living in D.C. most heavily are of Indian descent (57.45%), and in smaller proportions Pakistani, Bangladeshi, Nepali, and Sri Lankan.⁶⁹ South Asians in this region reside in parts of D.C., Maryland and Virginia, and more than half are naturalized American citizens. Forty-one percent of South Asians in the Washington, D.C. metropolitan area earn incomes of more than \$100,000, while about 11% have incomes of less than \$29,000 despite high levels of educational attainment from their home country.⁷⁰

In 2009, SAALT published a report, *Washington Desi*, which described the needs and concerns of South Asians living in the Washington, D.C. metropolitan area and

⁶⁵ Sharma M. (2006). Designing Effective Health Education Interventions for Preventing Obesity in South Asian Americans. *Californian Journal of Health Promotion*, 4(1): 119-128.

⁶⁶ Joshi P, Islam S, Pais P, et al. (2007). Risk Factor for Early Myocardial Infraction in South Asians Compared with Individuals in Other Countries. *Journal of American Medical Association*, 297:286-94.

⁶⁷ Wolin KY, Colditz G, Stoddard AM, Emmons KM, Sorensen G. (2006). Acculturation and Physical Activity in a Working Class Multiethnic Population. *Preventative Medicine*, 42(4):266-272.

⁶⁸ South Asian Americans Leading Together (SAALT). *Washington DeSI: South Asians in the Nation's Capital (July 2009)*. Takoma Park, MD.

⁶⁹ South Asian Americans Leading Together (SAALT). *Washington DeSI: South Asians in the Nation's Capital (July 2009)*. Takoma Park, MD.

⁷⁰ South Asian Americans Leading Together (SAALT). *Washington DeSI: South Asians in the Nation's Capital (July 2009)*. Takoma Park, MD.

emphasized the need for a strong and sustainable community framework to help provide services and resources for the community as a whole.⁷¹ The report highlights access to health care, job training, and legal services as the top unmet priorities of Washington, D.C.'s South Asian community.⁷² One of the most salient and pertinent findings in the SAALT report reflected a need for better health care. Twenty-three percent of South Asians reported that access to health information and health services was an unmet priority. The report found that cultural barriers, affordability, and lack of information about health are the most common barriers to utilization of health services. Moreover, social stigma and taboos associated with specific health issues, such as mental and reproductive health, have made it challenging for South Asians to access and utilize services. For limited English-proficient South Asians in particular, language becomes an enormous challenge in accessing health services. Additional concerns were amongst South Asian small business owners who cited difficulties in affording private health insurance for themselves and their families.⁷³

The increased visibility and diversity of South Asians in the Washington, D.C. region has spurred many organizations such as SAALT to address the needs of this community. However, with respect to health and well being, there is very little known about this minority group in the region, and even fewer services aimed at addressing the health needs of this community. Although there is significant evidence of the increased health risks faced by South Asians, there is less known about the modifiable and preventive health behaviors and lifestyle factors in this group. Successful policies and programs are based on sound evidence and a clear understanding of the health risks and needs for a target population. Project SAHNA is the first health study in the Washington, D.C. region to collectively examine health care access and utilization, sources of health information and social support, and health and health related behaviors.

⁷¹ South Asian Americans Leading Together (SAALT). *Washington DeSI: South Asians in the Nation's Capital (July 2009)*. Takoma Park, MD.

⁷² South Asian Americans Leading Together (SAALT). *Washington DeSI: South Asians in the Nation's Capital (July 2009)*. Takoma Park, MD.

⁷³ South Asian Americans Leading Together (SAALT). *Washington DeSI: South Asians in the Nation's Capital (July 2009)*. Takoma Park, MD.

II. METHODS

Project SAHNA recruited South Asians living in the Washington, D.C. metropolitan area to participate in a self-administered anonymous survey on-line and in-person. This study was reviewed and approved by The George Washington University Internal Review Board (IRB 080920). An informed consent (without respondent signature) was used for both online and in-person data collection. No risks were associated with this study. The health needs assessment has been designed to be culturally appropriate and no sensitive information was collected. Only age and county of residence were collected. No other personal identifying information was collected.

Study Sample: Study participants include male and female adults 18 years of age and older. In addition, participants had to be English-proficient and live in the Washington, D.C. metropolitan area (see Appendix A). Respondents who self-identified their origin to be from South Asia regardless of where they were born were also included. For the purposes of this study, South Asian is defined as individuals from the following countries: Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka.

Survey Instruments: A web-based and paper survey tool was developed to gather information on the health needs of South Asians living in the Washington, D.C. region. Additionally, information was garnered to further understand health-related challenges and to develop and present recommendations on strategies that will enable further allocation of resources. The survey gathered information on: (1) Attitudes/Perceptions on Health Status; (2) Physical and Nutritional Habits; (3) Health Status; (4) Health Care Access; (5) Social Support; (6) Acculturation; and (7) Demographic Information. Please refer to Appendix B for the Survey Instrument. Both the web-based and paper surveys were anonymous and participants were not required to sign the consent form. Personal identifiers were not collected (i.e., name, SSN, address, etc). The web-based survey was developed in Survey Monkey, a secured on-line survey vendor that was password protected. For both the web-based and paper surveys, participants were able to stop taking the survey at anytime. The survey included a combination of questions that were open- and closed-ended questions, taking approximately 10-15 minutes to complete. Survey participants could also skip any questions they did not feel comfortable answering or could not answer.

Data Collection Procedure: Prior to data collection, preliminary research was conducted by soliciting various South Asian associations and network groups to identify various segments within the South Asian community in the Washington, D.C. metropolitan area. This provided an initial listing of places to reach out to for administering the survey. Between October 2009 and February 2010, the web-based survey was sent to hundreds of South Asian individuals living in the Washington, D.C. region, including numerous listservs over email. To see a complete list of listservs the health needs assessment was emailed to please see Appendix C. In addition to the on-line survey, a group of

volunteers, comprised of GW alumni and students, went to various faith-based institutions, retail stores, and restaurants to administer the paper survey in person, reaching populations that may not have access to computers (see Appendix D).

Data Entry and Cleaning: All data was entered using SPSS software. Twenty percent of the data was randomly checked for accuracy. Some of the variable categories were collapsed to increase the usefulness of the information.

Data Analysis: The analysis was based on a synthesis of results obtained from the web-based and paper surveys. The analysis primarily focused on six domains: (1) Attitudes/Perceptions on Health Status; (2) Physical and Nutritional Habits; (3) Health Care Access; (4) Social Support; (5) Acculturation; and (6) Demographic Information. Descriptive quantitative analysis using SPSS 18.0 allowed for subthemes under each domain to be identified and described. Chi-square tests and analysis of variance were conducted to explain relationships between variables. In the case of small samples, Fisher's exact test was used to analyze the contingency table. Significance levels were tested at 0.05, 0.01, and 0.001.



III. Results

Socio-demographic Information and Acculturation

Project SAHNA surveyed 709 participants from the Washington, D.C. metropolitan region. Study participants represent a convenience sample of adults who took the survey via the web or in-person at various locations including temples, mosques, community centers, retail and grocery stores, and restaurants (See Table 5).

Table 5: Overview of Sample Outreach	
Overview of Sample Outreach (N= 709)	
Survey Type	Percent (n)
Web Based	63.8 (452)
Paper Based	36.2 (257)
Survey Location	
Temples, Mosques, Community Centers	33.0 (234)
Retail Stores, Restaurants, Grocery Stores	3.2 (23)
Web Based	63.8 (452)

As shown in Table 6 below, the mean age of respondents is 34.3 and the study sample includes slightly fewer males (44.9%) than females (55.1%), and those who are predominantly married (58.5%). Approximately, 43% of the study participants have children, and the majority of participants live outside the District of Columbia (D.C.) in Maryland or Virginia (78.6%). Overall, most of the respondents (77.6%) stated that their country of origin is India; 55.7% reported being a US citizen, of which only 29.3% reported being born in the U.S and 32.5% are green card holders. The data collection methodology may have lent itself to recruiting a higher socio-economic status sample. More than half of respondents (53.3%) reported household incomes over \$100,000 and 70.1% work full-time or are self-employed.

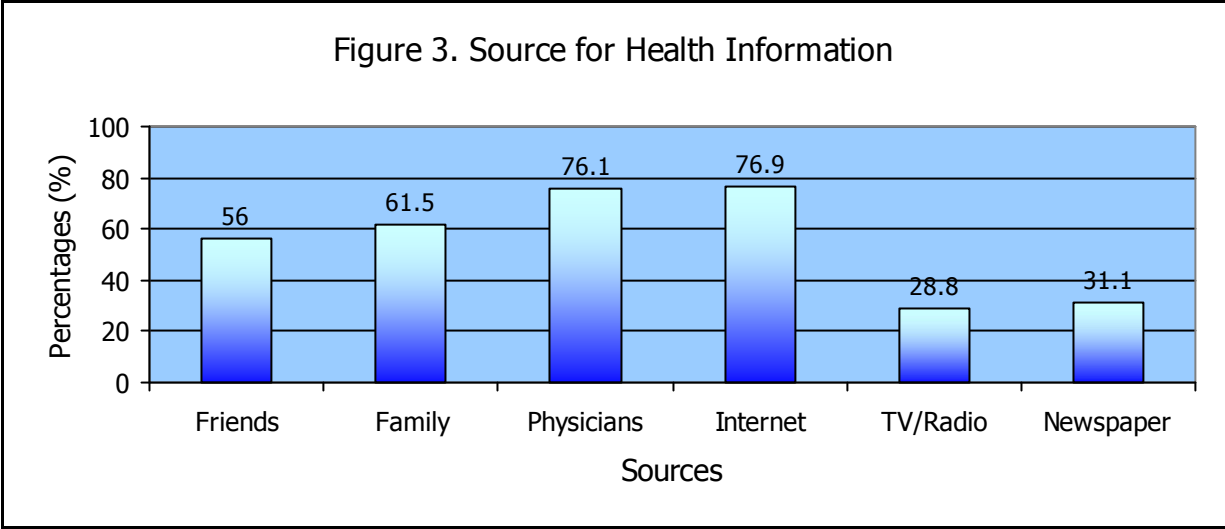
Table 6: Socio-demographic Characteristics	
Socio-demographic Characteristics	
Age: Mean = 34.3 Years	
Gender	Percent (n)
Male	44.9 (303)
Female	55.1 (372)
Marital Status	
Single	39.8 (268)
Married	58.5 (394)
Divorced/Separated/Widowed	1.8 (12)
Children	
Yes	42.8 (289)
Current Residence (State/County)	
Northern Virginia	39.9 (269)
Montgomery County/Howard County/ Prince George's County	38.7 (261)
District of Columbia	15.0 (101)
Others	6.4 (43)
Country of Origin	
India	77.6 (523)
Pakistan	4.7 (32)
Bangladesh	3.0 (20)
Nepal	3.0 (20)
Sri Lanka	1.6 (11)
United States	6.7 (45)
Afghanistan	0.6 (04)
Others	2.8 (19)
Household Income (thousands)	
Under 50K	18.7 (120)
50K-100K	28.0 (180)
100K+	53.3 (342)
Current Employment Status	
Student	15.8 (106)
Full-Time or Self-Employed	70.1(469)
Part Time	7.0 (47)
Not Employed	7.0 (47)
Immigration Status	
U.S. Born	29.3 (198)
U.S. Citizen	55.7 (259)
Green Card Holder	32.5 (75)

The survey included questions to examine levels of acculturation. National studies have used language spoken and language of music as proxy measures to determine levels of acculturation, and for purposes of this study, “speaking English at home all/most of the time” and listening to “English only” music reflect greater acculturation. As shown in Table 7, more than half of the respondents (65.3%) speak English all or most of the time at home, while only 39.1% report listening solely to South Asian language music. Interestingly almost half (45.3%) stated that they watch South Asian TV and therefore, this may not be a salient proxy measure for acculturation.

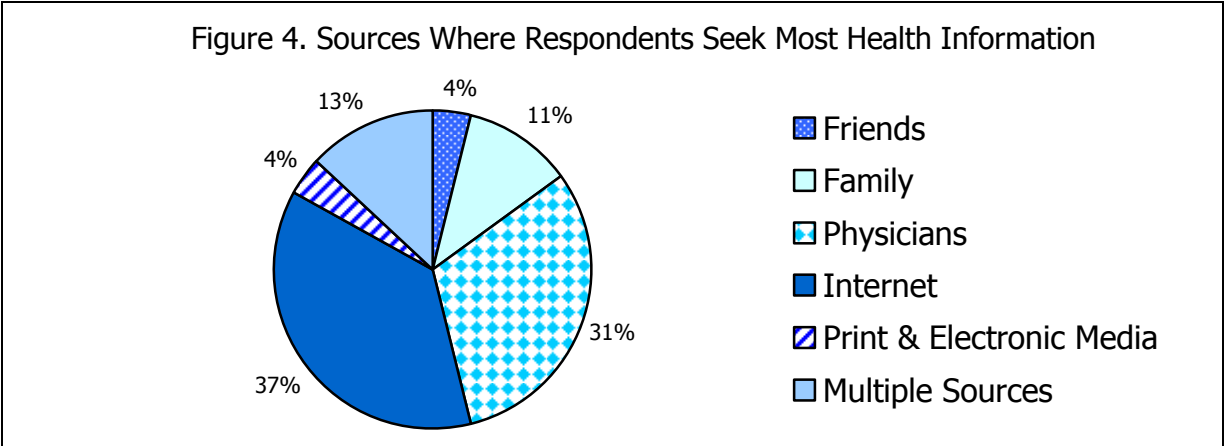
Table 7: Examining Levels of Acculturation	
Listening to Music in Different Languages	
English Only	42.7 (276)
South Asian Languages Only	39.1 (253)
English and South Asian Languages	18.2 (118)
Speak English at Home	
All or Most of the time	65.3 (442)
Half of the time	23.8 (161)
Rarely or Never	10.9 (74)
Watch South Asian TV	45.3 (305)

Health Information & Social Support

Sources of health information and social support are important determinants of health. Minority and immigrant populations often lack access to credible and consistent sources of health information, which is pivotal to health behavior decision-making and access to preventive and primary health care services. Given that most adults obtain health information from multiple sources, the survey included two distinct questions on sources of health information including: (1) where do you get health information from (respondents could choose multiple sources); and (2) where do you get MOST of your health information (respondents could only choose one source). Overall, the Internet (76.9%), physicians (76.1%), and family (61.5%) were the top three sources for health information (Figure 3).



When asked to choose one source, respondents chose the Internet (38%) as their predominant source of health information. Physicians were identified slightly behind at 31.4% (see Figure 4). Family, friends and other sources were significantly lower and interestingly, people had a difficult time choosing one single response as 12.5% reported “multiple sources” for health information. To examine differences by socio-demographics and acculturation, bi-variate analyses found that the Internet and physicians are main sources of health information irrespective of gender, age, income level, and acculturation (see Appendix E).



Study participants were asked to report on three types of social support including: (1) how often someone is available to understand health problems; (2) how often someone is available to help with chores; and (3) how often someone is available to get together for relaxation. Overall, the majority of respondents reported high levels of social support for understanding health problems (73.3%). Moreover, more than half of the respondents reported social support for daily chores and relaxation at 61.2% and 64.1%, respectively.

Table 8: How Often Someone is able to Provide Social Support			
Social Support	Availability of Social Support from a Someone		
	No One Available (%)	Someone Available Sometimes (%)	Someone Available Mostly (%)
Understand Health Programs	4.2	22.5	73.3
Help with Daily Chores	10.2	28.6	61.2
Get Together with for Relaxation	5.2	30.7	64.1

Taking a closer look by socio-demographic characteristics and acculturation, income level was found significant across all three types of social support. Specifically, respondents with lower income levels reported less social support.

Perceptions of Community Health

Study participants were asked to rank on a scale of 1 to 5 how important specific health issues are to the South Asian American community, with 1 as less important and 5 as very important. The health issues identified for the survey were based on previous studies and anecdotal evidence in the South Asian community. As shown in Table 9, all of the health issues ranked above 3.0 and were considered very important/important. Not surprisingly, heart disease (mean=4.59), blood pressure (mean=4.58), cholesterol (mean=4.56), and diabetes (mean=4.53) ranked highest among all health issues.

Analysis of variance found that across every single health issue, gender is significantly related to the mean scores (see Table 9). Specifically, female means scores are significantly higher across all health issues and therefore women are more likely than men to perceive these health issues as important to the South Asian community.

Table 9: Overall Means for Disease by Gender			
Disease/Illness	Gender		Total
	Males	Females	
Anemia***	3.00	3.73	3.44
Arthritis***	3.71	4.13	3.95
Asthma*	3.67	3.84	3.77
Breast Cancer**	3.85	4.09	3.99
Cholesterol**	4.45	4.64	4.56
Cervical Cancer***	3.35	3.79	3.61
Colon Cancer**	3.53	3.81	3.69
Depression***	3.69	4.06	3.90
Diabetes**	4.42	4.62	4.53
Gestational Diabetes*	3.92	4.12	4.04
Heart Disease***	4.46	4.68	4.59
Lung Cancer*	3.57	3.77	3.69
Mental Health**	3.69	3.97	3.85
Obesity***	3.77	4.12	3.97
Oral Health**	3.72	3.97	3.87
Osteoporosis***	3.63	4.24	3.99
Skin Cancer**	2.98	3.30	3.16
Throat Cancer**	3.21	3.51	3.38
Blood Pressure***	4.44	4.69	4.58
Chi Square p value ***<0.001; **<0.05; *<0.01			

Health Utilization and Access

Access to healthcare and utilization of services were examined in a few ways. Respondents were asked about the type of healthcare coverage they currently have. As shown in Figure 5, 83% have private insurance or participate with a health maintenance organization (HMO), 3% receive Medicaid and/or Medicare, and 6% reported not having any type of health insurance. Of those who reported not having insurance, most were male, single, and have household incomes less than 50K.

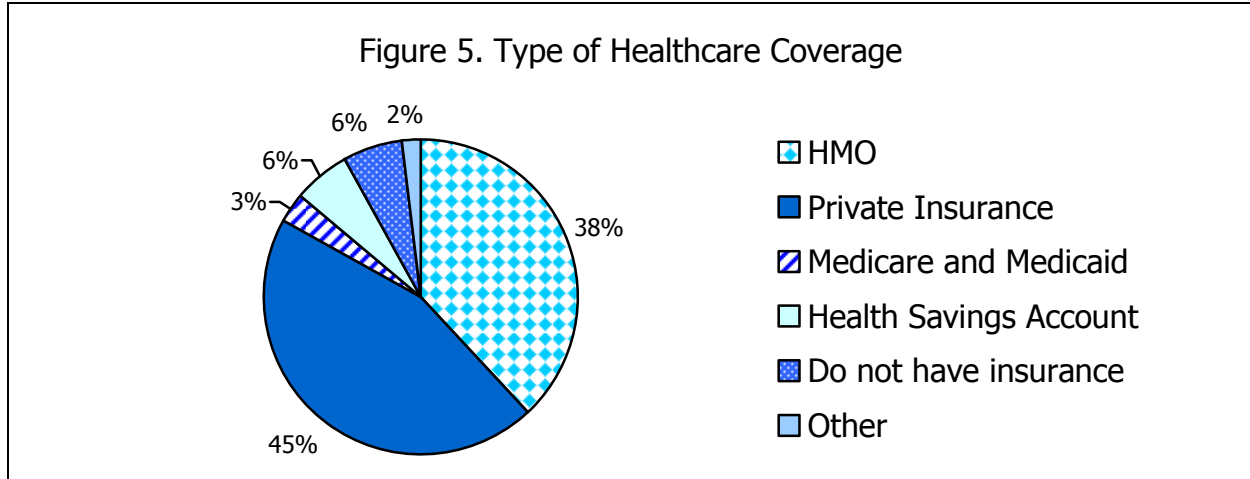


Table 10 illustrates health service utilization. Respondents were asked about (1) if they have a primary care physician (2) when they had their last routine visit for a physical, (3) dental visit in the last year, and (4) where they sought care in the last 12 months. As shown, almost 70% reported a routine physical in the last 12 months and less than 4% have never had a routine physical. A little over 70% reported seeing a dentist in the past year and 80% of respondents reported that they have a primary care doctor (General Physician).

Table 10: Frequency of Visits for a Routine Physical and a Dental Visit in the Past Year		
	Frequency	Percent
How long since you visited a doctor for a routine physical?		
Last year	530	78.9
1-2 years	57	8.5
2 or more years	60	8.9
Never	25	3.7
Have you visited a dentist in the past year?		
No	196	28.8
Yes	484	71.2

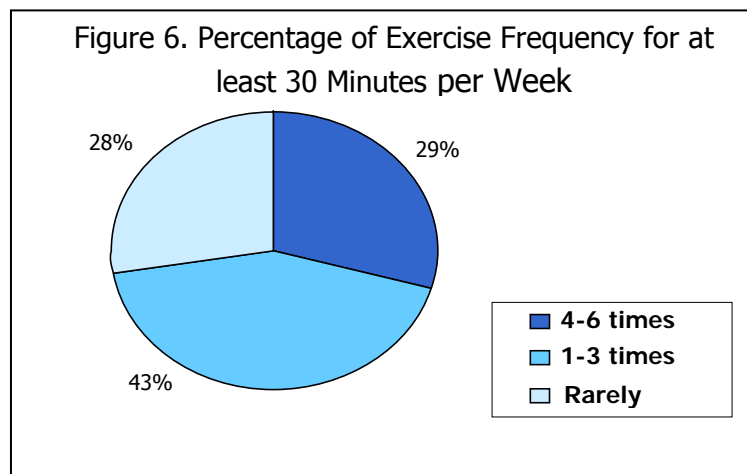
Bi-variate analyses were conducted to examine time lapse of routine physical examination by socio-demographic and acculturation differences (See Appendix F). As shown, women are significantly more likely than men to have had a routine physical in the last 12 months (84.9% vs. 72.1%, respectively); U.S. citizens are significantly more likely to have had a routine physical in the last 12 months (85.8% vs. 68.8%, respectively); and those who mostly/always speak English in the home are significantly more likely to have had a routine physical than those who rarely or never speak English at home (82.7% vs. 66.7%, respectively).

Similarly, women are significantly more likely than men to have had a dental visit in the last year. Not surprisingly, adults having an income of \$50K or less are significantly more likely to report not seeing a dentist in the past year (42.5%); U.S. citizens are significantly more likely to have visited a dentist than non U.S. citizens (80.4% versus 57.1%); and those who speak english always/mostly are significantly more likely to have had a dental visit versus those who rarely/never speak English at home (75.6% versus 55.4%).

Health Risk Behaviors

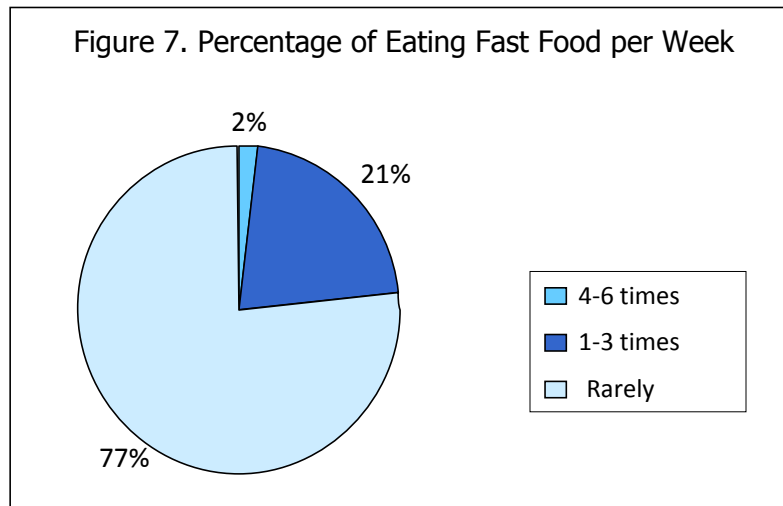
Previous research on the increased risk of type II diabetes and cardiovascular disease among South Asians further compels the need to better understand modifiable health risk behaviors. The survey assessed physical activity, nutrition habits, and smoking.

Physical Activity: Participants were asked how often they exercise for at least 30 minutes per week. Only 29.1% reported engaging in physical activity four to six times a week for 30 minutes, while 28% reported that they rarely participate in physical activity (Figure 6).

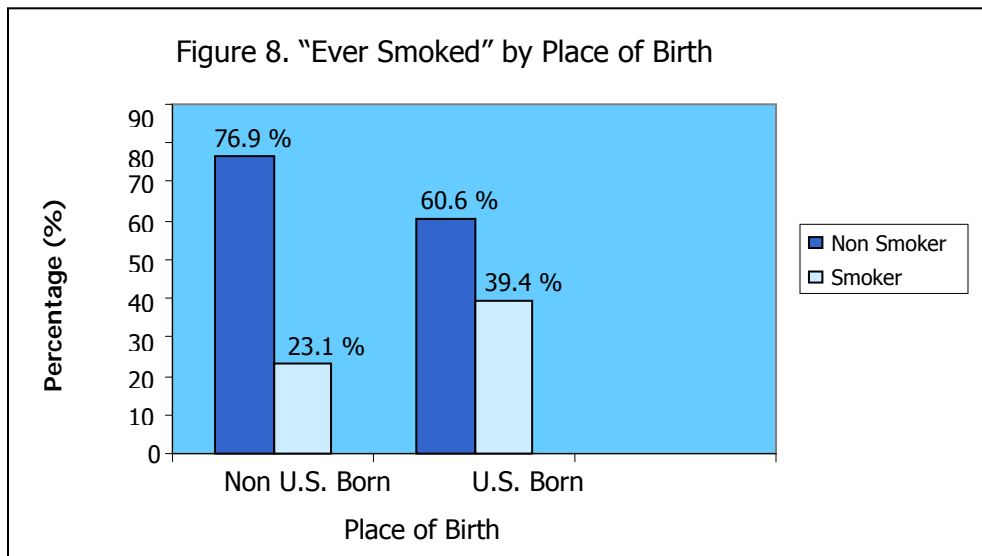


Further examination of socio-demographic characteristics and acculturation found significant relationships for gender, U.S. born, U.S. citizen, and acculturation. With respect to gender, males are significantly more likely than females to engage in physical activity 4 to 6 times per week (31.5% versus 27.4%). Respondents born in the U.S. (34.3%) are significantly more likely to engage in exercise four to six times per week than non-U.S. born respondents (26.3%); U.S. citizens (31.0%) are significantly more likely to exercise four to six times per week than non-U.S. citizens (22.0%); respondents who speak English at home most/all of the time (31.3%) are significantly more likely to engage in exercise four to six times per week than those who rarely speak English at home (20.3%); and respondents who report listening to English music only (34.9%) are significantly more likely to exercise four to six times per week than those who listen to South Asian music only (20.6%) (Appendix G).

Nutrition: Participants were asked how often they eat fast food. The majority of respondents, 76.7%, reported that they never eat fast food and 21.3 % eat fast food for 1 to 3 times per week (Figure 7).



Smoking: The majority (88.7%) of study participants are currently non-smokers. Male respondents reported higher smoking (13.1%) than female (9.0%). Furthermore, 28% of respondents reported “ever smoking.” Among “ever smokers,” males (37.9%) are significantly more likely to report smoking than females (28.1%); respondents who are married (22.3%) are significantly less likely to report “ever smoked” versus single respondents (36.0%). Bivariate analyses are shown in Appendix I. As illustrated in Figure 8, U.S. born South Asians (39.4%) are significantly more likely to smoke than non-U.S. born (23.1%); respondents who report speaking English all/most of the time (31.3%) are significantly more likely to smoke than those who rarely speak English at home; and respondents who mostly listen to English music (36.7%) are significantly more likely to smoke than those who primarily listen to South Asian music (22.8%).



IV. Discussion & Recommendations

In 1946, the World Health Organization proclaimed that the “enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being.” It is through this lens that the public health community has made significant efforts in eliminating health disparities through policy, advocacy, science, and practice. In more recent years, considerable interest and work has gone into identifying and raising awareness related to health disparities for specific minority populations in the U.S. However, for those groups and others, much more needs to be done.

It has been largely assumed that immigrants fare better than U.S. born residents across health domains. This belief is attached to the “immigrant paradox,” which is described as the paradox of better health status among immigrants despite lower socioeconomic status, limited access to healthcare, and increased likelihood of discrimination based on racism, and language behaviors. This paradox has been observed in some areas of health, including low birth weight, cardiovascular disease, and suicide. Reasons for this paradox include resiliency factors within immigrant communities (e.g., more cohesive social networks), cultural factors promoting healthier behaviors (e.g., negative attitudes toward substance use and multiple sex partners in females, strong cultural support for maternity and a healthy traditional diet), and increased likelihood that healthier individuals are more likely to migrate. However, research also documents that these paradoxes are not observed across all areas of health and are not consistently or equivalently seen across all racial/ethnic and socioeconomic groups.

In 1978, Congress passed a joint Congressional Resolution to commemorate Asian American Heritage Week during the first week of May. According to Wikipedia, this date was chosen because two important anniversaries occurred during this time: 1) the arrival of the first Japanese immigrants in America on May 7, 1843 and 2) the completion of the transcontinental railroad (by many Chinese laborers) on May 10, 1869. In 1990, Congress voted to expand it from a week to a month long celebration and in May 1992, the month of May was permanently designated as “Asian/Pacific American Heritage Month.”

Today in May 2010, as we celebrate Asian American month, it is without question that within this population exists a large and diverse South Asian community. As this community has grown over the last several decades to now 2.7 million, so too have the challenges faced by many, and although stereotypes such as “model minority” and “wealthy and healthy” continue to perpetuate, community organizations around the country have been tirelessly working to reduce inequities and barriers for this minority population. Project SAHNA is the first step in identifying the *health* needs of the South Asian community in the Washington D.C. region---a first step in beginning the dialogue and informing the public health conversation around policy, practice, and future research.

First, it is important to note that there are several methodological *limitations* to this study including: 1) the study was limited by its cross-sectional sample, prohibiting causal inferences and therefore the findings are primarily descriptive in nature, 2) the sampling procedures and recruitment for the study posed challenges because the sample is not heterogeneous and consists mostly of Asian Indian and higher socioeconomic status participants, 3) social and environmental factors that play a significant role in influencing health were not assessed due to time constraints to take the survey, and 4) the questionnaire was developed in English only and, therefore, non-English speaking South Asians were not included in the study. Although these limitations caution the interpretation of the results, this report provides important insights that will guide the next series of studies to assess the health and well-being of the South Asian community in the Washington, D.C. region.

Health Information and Social Support

- Access to health information is critical to increasing awareness about one's health and to better understanding preventive behaviors. This study found that the Internet and physicians are key sources of health information for South Asians across all levels of socio-demographic characteristics.
- Social support is an important protective factor for many health conditions. This study found that people with lower income levels are less likely to report social support, which is consistent with studies focused on other minority groups.

Perceptions of Community Health

- The community perceives many of the salient health issues as important for South Asians. Of particular importance is the gender difference---across all health conditions, women were significantly more likely to perceive these issues as more important.

Health Utilization and Access

- Recent estimates on uninsured rates among South Asians range between 12% and 20%, reflecting the diversity within the South Asian community. This study had a lower uninsured rate of 6%, most likely due to the study's selection bias.
- The vast majority of South Asians in this study (over 70%) have had a routine physical exam and dentist visit in the last year. However, non-U.S. citizens and less acculturated adults were less likely to have had a routine visit.

Health Risk Behaviors

- One of the broadly defined goals of 2010 national health objectives was to increase the prevalence of recommended levels of physical activity in the U.S. The results from this study showed that *only* 29% of South Asians are engaging in the recommended amount of physical activity per week.
- The present analysis on acculturation and physical activity was consistent with previous studies on immigrant and minority communities. South Asians who were less acculturated were less likely to engage in physical activity. It is quite possible that less acculturated people are less likely to engage in physical activity because of increased workload and less desire to be active during leisure time.
- The present analyses found that males were more likely to eat fast food when compared to females. These findings are consistent with previous studies in the U.S. which have found that females were consuming less fast food than men.

Recommendations

Project SAHNA provides guidance for future work in addressing the health and well-being of South Asian communities in the United States. Given the findings in this report, several recommendations are suggested:

Policy

- Although significant strides have been made to increase funding sources to eliminate health disparities, greater attention must be given to the growing and diverse South Asian community. Resources, including funding for public health research and community organizations/programs, must be made available to address the health and well-being of this community.
- The historic passage of health reform this year is an opportunity to address barriers to healthcare and prevention efforts tailored to the diverse South Asian community. Health reform must specifically address the needs of South Asians who currently don't have access to affordable quality care. Furthermore, as health reform begins to operationalize prevention efforts in local communities, specific funds must be set aside to reach low-income South Asian communities.
- Advocacy efforts focused on collecting and analyzing disaggregated data on specific South Asian populations must continue in order to gain a better local and national understanding of this community's health. The unique differences between South Asian groups must also be examined more carefully in surveillance data and other reporting systems.

Research

- This study found acculturation to be a protective factor with respect to physical activity. Given the risks of type II diabetes and cardiovascular disease in the South Asian community, future research efforts should further explore this relationship to better understand how and why this relationship exists within the community. In particular, the role of family dynamics, social support, and social networks in influencing physical activity and nutrition must be examined in a methodologically sound way.
- Community-based research methods are important tools in understanding and addressing health equity for minority and immigrant populations. It is imperative that community based organizations collaborate with one another, as well as with the research community. Future research must reach out to segments of the South Asian community who are more "at-risk" or vulnerable.

- Prior research on adolescent and adult health has illustrated the need to prevent “risky” behaviors during adolescence as they have significant influence on adult health later in life. Future research must include South Asian children and adolescents to gain a better understanding of family, social and environmental factors that influence their health related behaviors. This level of research will inform tailored interventions for this community of children and adolescents.
- Future research efforts must focus on the role of providers in delivering culturally competent preventive and primary care to South Asian communities.
- Gender played a significant role in perceptions of community health issues in this study, and therefore further studies ought to examine the role of gender disparities and cultural norms in the South Asian community.
- Significant research has gone into developing measures of acculturation for specific minority and immigrant populations over the years, given the unique cultural and social norms that exist within different groups. Research efforts must develop and test more in-depth and sound acculturation measures that will adequately capture the dynamic and complex acculturative process for South Asians.
- Future research must utilize a social ecological approach and assess multiple levels and factors that play a significant role in influencing the health and well-being of South Asians.
- More in-depth examination of research on nutrition, dietary patterns, and access to healthy foods is needed. Additionally, social and cultural norms and practices must be better understood as they relate to nutrition related behavior.
- Given the data collection methodology for this study, sensitive health issues such as violence, substance use, mental health, and sexual and reproductive health were not assessed. However, future studies should focus on these areas to provide a fuller understanding of the health needs in the South Asian community.

Practice

- Given the findings on sources of health information in this report, culturally and linguistically appropriate health messages and interventions should be developed and implemented via the internet and primary care providers.
- Although only 11% of South Asians in this study speak a South Asian language all/most of the time, almost half of all respondents reported watching South

Asian television. South Asian television viewership may not be an adequate measure of acculturation, but it may be a powerful mode by which health and health-related messages can be disseminated to the South Asian community. Media use among South Asians ought to be explored, and health communication interventions should be developed and evaluated for this community.

- Across all measures of social support, lower income levels were related to less social support. Given the important relationship between social support and health, reaching out to isolated South Asians to create better social networks and ties could be protective for many.
- Providers play a crucial role in primary and preventive health services, and therefore cultural competency training is a crucial component of addressing South Asian health. Furthermore, educating providers in the Washington, D.C. region about the increased risk of type II diabetes and cardiovascular disease is an important component of addressing the health needs for this population.
- The health needs of South Asians must become part of the national agenda and integrated into current and future local and national public health initiatives. For example, organizations working in the area of type II diabetes and cardiovascular health should reach out to the South Asian community to better understand their needs and how they can be met through programs and interventions.

V. Appendices

Appendix A – Definition of Washington, DC Metro Region

Appendix B – Survey Instrument

Appendix C – Organizations Participating in Web-Based Survey

Appendix D – Organizations Participation in Paper-Based Survey

Appendix E - Main sources of health information by Socio-Demographics & Acculturation

Appendix F - Time Lapse Since Last Physical Examination by Socio-Demographics & Acculturation

Appendix G - Frequency of Exercise (at least 30 minutes) by Socio-Demographics and Acculturation

Appendix H– Frequency of Eating Fast Food per Week by Socio-Demographics and Acculturation

Appendix I - Smoking by Socio-demographics and Acculturation

Appendix A. Definition of Washington, DC Metropolitan Region

The **Washington Metropolitan Area** includes the District of Columbia and parts of the states of Maryland, Virginia, and West Virginia. The following counties/cities were included in this study:

Maryland

- Calvert County
- Charles County
- Frederick County
- Montgomery County
- Prince George's County

Virginia

- Arlington County
- Clarke County
- Fairfax County
- Fauquier County
- Loudon County
- Prince William County
- Spotsylvania County
- Stafford County
- Warren County
- City of Alexandria
- City of Fairfax
- City of Falls Church
- City of Fredericksburg
- City of Manassas
- City of Manassas Park

West Virginia

- Jefferson County

Appendix B. Survey Instrument

Section I: Attitudes/Perceptions on Health Status

1. Thinking about your own health: Would you say that in general your health is:

- Excellent
- Very good
- Good
- Fair
- Poor
- Don't know

2. For the following questions, please indicate whether the condition is important (many South Asians are affected by these health conditions) to your community:

Disease/Illness	1 Not Important	2 Neutral	3 Somewhat Important	4 Important	5 Very Important	6 Don't Know
Anemia						
Arthritis						
Asthma						
Breast Cancer						
Cholesterol						
Cervical Cancer						
Colon Cancer						
Coronary Artery Disease						
Depression						
Diabetes – General						
Diabetes – Gestational						
Heart Disease						
Blood Pressure						
Lung Cancer						
Mental Health						
Obesity						
Oral Health						
Osteoporosis						
Skin Cancer						
Throat Cancer						

Section II: Physical and Nutritional Habits

3. Please provide the following:

Height: ____ Feet & ____ Inches

Weight: ____ Pounds

4. How often do you exercise for at least 30 minutes?

- Everyday
- 4-6 times a week
- 1-3 times a week
- Rarely
- Never
- Don't know

5. Have you ever smoked?

- Yes
- No (If "No", skip to question 7)

6. Do you smoke cigarettes now?

- Yes. If "Yes", on average, how many cigarettes do you smoke a day? _____
- No

7. Do you *currently* drink alcohol?

- Yes
- No (if "No", skip to question 10)

8. How many drinks per week, on average? (one drink equals one can of beer, one glass of wine, or one shot of hard liquor)

- 5 or more drinks
- 3 - 4 drinks
- 1 - 2 drinks
- Less than 1 drink
- None
- Don't know

9. How many years have you been drinking alcohol? _____ years

Was this:

- Continuous
- On and off

10. Do you eat the following? (check **All** that apply)

- Dairy
- Chicken
- Pork
- Beef
- Eggs
- Fish

11. How often do you eat fast food (i.e., McDonalds, Burger King, Taco Bell, etc)?

- Everyday
- 4-6 times a week
- 1-3 times a week
- Rarely
- Never
- Don't know

Section III: Health Status

12. Please indicate (✓) if you **CURRENTLY** have any of the following conditions/illness:

Disease/Illness	Yes	No	Not sure
Anemia			
Arthritis			
Asthma			
Breast Cancer			
Cholesterol			
Cervical Cancer			
Colon Cancer			
Coronary Artery Disease			
Depression			
Diabetes – General			
Diabetes – Gestational			
Heart Disease			
Blood Pressure			
Lung Cancer			
Mental Health			
Obesity			
Oral Health			
Osteoporosis			
Skin Cancer			
Throat Cancer			

13. In the past two years, have you had the following tests/screenings?

Test	Have you had the following tests? (Yes/No/Not Sure)	Were the Test Results Normal? (Yes/No/Don't know)
Tuberculosis (TB) Test		
Blood Sugar Screening		
Cholesterol Screening		
Blood Pressure		
Pap Smear – in the past year [WOMEN ONLY]		
Mammogram – Yearly for women after the age 40 [WOMEN ONLY]		
Breast Exam [WOMEN ONLY]		
Prostate Cancer Blood Test [MEN ONLY]		
Colonoscopy		

14. Have you ever taken cholesterol medications?

- Yes
- No (SKIP to question #16)
- Don't Know (SKIP to question #16)

15. Are you currently taking cholesterol medications?

- Yes
- No
- Don't know

Section IV: Health Care Access

16. What kind of health care coverage do you have? (check all that apply)

- HMO
- Private Insurance
- Medicare
- Medicaid
- Health Savings Account
- I do not have health insurance
- Don't Know
- Other: _____

17. Do you have a primary care doctor (general physician)?

- Yes
- No
- Don't know

18. Have you visited a dentist within the last year?

- Yes
- No
- Don't know

19. Approximately how long has it been since you last visited a doctor for a routine check-up? A routine check-up is a general physical exam, not an exam for a specific injury, illness, or condition.

- Within the past year (anytime less than 12 months ago)
- Within the past two years (anytime between 12-24 months)
- 5 or more years ago
- Never
- Don't know

20. In the last 12 months, if you needed medical attention, where did you seek care?

- Doctor's office
- Clinic
- Emergency Room
- Family or Friend
- Urgent Care Center
- I was sick but did not need medical attention
- I wanted to seek medical attention but was not able to
- Other (Please specify): _____

21. Do you currently receive assistance from any of the following government programs?

Type of Assistance	Yes	No	Don't Know
Temporary Assistance to Needy Families (TANF)			
Food Stamps			
WIC – The Special Supplemental Nutritional Program for Women & Infant Children			
SSI – Supplemental Security Insurance			
Rental Assistance or Section 8			
Prescription Drug Assistance			

Section V: Social Support

22. Where do you get health information from? (Check all that apply)

- Friends
- Family
- Physicians
- Internet
- TV/Radio
- Newspaper
- Other (please specify): _____

23. Where do you get **MOST** of your health information from? (Check **ONLY** one)

- Friends
- Family
- Physicians
- Internet
- TV/Radio
- Newspaper
- Other (please specify): _____

24. Please answer the following questions:

	No one is available	Someone is available a little	Someone is sometimes available	Someone is mostly available	Someone is always available
How often is someone available to understand your health problems?					
How often is someone available to help with daily chores if you are sick?					
How often is someone available to get together with for relaxation?					

Section VI: Acculturation

25. How often do you speak English at home:

- All the time
- Most of the time
- Half of the time
- Rarely
- Never

26. What language do you mostly listen to music in? _____

27. Do you watch South Asian Television channels?

- Yes
- No
- Don't know

Section VII: Demographic Information

28. Gender: Male Female

29. How old are you?_____

30. Are you currently a student (includes part-time and full-time)?

- Yes
- No

31. Please indicate the county in which you live:

- Alexandria City, VA
- Arlington County, VA
- Fairfax County, VA
- Loudon County, VA
- Howard County, MD
- Montgomery County, MD
- Prince George's County, MD
- District of Columbia
- Other: _____

32. Please indicate your marital status:

- Single
- Married
- Divorced
- Widowed

33. Do you have any children?

- Yes, how many____?
- No

34. Were you born in the U.S.?

- Yes (If "Yes", SKIP to question #37)
- No

35. Are you a U.S. Citizen but was NOT born in the U.S?

- Yes (If "Yes", SKIP to question #38)
- No

36. Are you a Green card Holder?

- Yes
- No

37. How long have you lived in the U.S?

- 5 years or less
- 6 -10 years
- 11-20 years
- 21 years or more

38. What is your country of origin?

- India
- Pakistan
- Bangladesh
- Bhutan
- Nepal
- Sri Lanka
- Maldives Island
- United States
- Other _____

39. What is your TOTAL household income?

- Under \$25,000
- \$25,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$100,000
- \$101,000 - \$200,000
- over \$200K

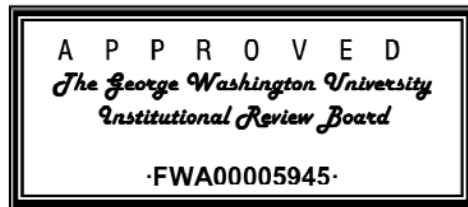
40. What is your current employment status?

- Employed Full-Time
- Employed Part-time
- Self-employed
- Not employed
- Student
- Unable to work due to a physical and/or mental disability
- Temporarily laid off
- Retired
- Other _____

41. Please indicate your profession? (check **ALL** that apply)

- Academic/Research
- Consultant
- Chief Executive Officer
- Engineer
- Hospitality Management
- Physician
- Other Health Care Provider
- Lawyer
- Taxi Driver
- Technology
- Store Owner (restaurant, liquor store, grocery Store, etc)
- Teacher
- Retired
- Finance
- Scientist
- Politician
- Other (please specify): _____

Thank you for taking the time to complete the survey.



Appendix C. Organizations Participating in Web-Based Survey

Organization	Website
AAPI – South Atlantic Region	http://aapiusa.org/
ABCD Lady	http://www.abcdlady.com
American University	http://www.american.edu
American Nepal Society	http://www.ansdc.org/
American Nepal Women's Association of Great Washington, DC	http://www.anwa-dc.org
American Society of Nepalese Engineers	http://www.asnengr.org
Aroma Restaurant	http://aromarestaurant.com/
Art of Living	http://us.artofliving.org
ASHA for Women	http://ashaforwomen.org
Asian American Hotel Association	http://www.aahoa.com
Association of Physicians of Pakistani Descent of North America	http://www.appna.org/
Bangladesh Association of America	http://www.baaidc.com/
Bombay Club	www.bombayclubdc.com
Bombay Palace	
Capital Area Muslim Bar Association of Washington, DC	http://www.namlnet.org
CHAI	http://www.chaicounselors.org
Chinmaya Mission	http://www.chinmayamission.org
Dal Al-Hijra	http://www.hijrah.org/
Darul Huda	http://www.darulhuda.org
Federal Asian Pacific American Council	https://www.fapac.org
Georgetown - Undergrad Student Assoc	http://gustudentassociation.com/
GMU - Undergrad Student Assoc	http://sa.gmu.edu/
Guru Gobind Singh Foundation	http://www.ggsfusa.com
Guru Nanak Foundation of America	http://www.qnfa.org
GWU - Undergrad/Grad Student Assoc	http://www.gwstudentassociation.com/
Haandi Restaurant	http://www.haandi.com/
Hare Krishna Temple	http://www.iskcondc.org
Heritage	http://www.heritageindiausa.com
Himalyan Heritage Restaurant & Bar (nepalese)	http://himalayanheritagedc.com/
Hindu Temple	http://www.hindutemplemd.org
Howard Univ	http://www.howard.edu
India School in VA	http://www.indiaschool.org
Indian American Leadership Initiative	http://www.iali.com
Indus Women Leaders	http://groups.yahoo.com/group/IWL

	_WashingtonDC/
Jain Temple	http://www.jsmw.org
Khush DC	http://www.khushdc.org/
Mangal Mandhir	http://www.mangalmandir.org
Masjid Al-Islam	http://www.mswdc.org
Mehak Indian Restaurant	http://www.mehak.com/
Metropolitan South Asian Deaf Association	http://www.msada-dc.org
Muslim Association of Virginia	http://www.daralnoor.org
Muslim Community Center	http://mccmd.org/
Muslim Women's Coalition	http://www.mwcoalition.org/id10.html
National Gurdwara	http://www.thesikhculturalsociety.org/
Network of South Asian Professionals (NetSAP)	http://www.netsap.org/netsapdc
NOVA	http://www.nvcc.edu
Pakistan American Leadership Center	http://www.pal-c.org/
Rasika	http://www.rasikarestaurant.com/
SAALT	http://www.saalt.org
SAPHA	http://www.sapha.org
Sikhcess DC Chapter	http://www.sikhcess.org
Sikh American Legal Defense & Education Fund	www.saldef.org
Society of Health Policy Young Professionals	http://dchealthpolicy.org/
South Asian Bar Association of Washington, DC	www.saba.org
South Asian Journalist Association	http://www.saja.org/
South Asian Philanthropy Project	http://southasianphilanthropy.org/
Sri Lankan Ranga Kala Kavaya (Cultural Center)	http://www.rangakalakavaya.org/
The Association of Nepalis in America	http://anaonline.org
The Sikh Foundation of Virginia	http://sfova.org/
Tie DC	http://dc.tie.org/
Yellow Cab DC	http://www.dcyellowcab.com

Appendix D. Organizations Participating Paper-Based Survey

Establishment	City, State
Aroma (Restaurant)	Washington, DC
Bollywood Bazaar	Langley Park, MD
Bombay Bistro (Restaurant)	Rockville, MD
Dana Bazaar (Grocery Store)	Rockville, MD
India Sari Palace	Takoma Park, MD
Liquor Store	Washington, DC
Mirvana Indian Cuisine (Restaurant)	Gaithersburg, MD
Mosque	Silver Spring, MD
Patel Brothers (Grocery Store)	Rockville, MD
Sri Shiva Vishnu Temple	Laurel, MD
Subway (3 locations)	Washington, DC
Udupi Palace (Restaurant)	Takoma Park
Woodland Indian Vegetarian Restaurant	Hyattsville, MD

Appendix E. Sources of MOST Health Information by Socio-demographics and Acculturation

Socio-demographics		Sources of Health Information					
		Friends	Family	Physicians	Internet	Print & Electronic Media	Multiple Sources
Gender	Male	4.2	10.4	29.9	35.8	3.1	16.7
	Female	3.6	10.7	32.8	39.1	4.9	9
Marital Status***	Single	3.5	16.9	34.6	33.8	5	6.2
	Married	4.2	6	29.1	40.4	3.4	16.8
	Divorced/Separated/Widowed	0	16.7	50	8.3	8.3	16.7
Country of Origin**	India	3.5	9.6	30.2	38	3.7	14.9
	Pakistan	6.7	16.7	30	40	3.3	3.3
	Bangladesh	0	17.6	41.2	35.3	0	5.9
	Nepal	5.6	5.6	38.9	33.3	5.6	11.1
	Sri Lanka	18.2	9.1	18.2	36.4	18.2	0
	United States	2.2	22.2	33.3	37.8	2.2	2.2
	Afghanistan	0	0	0	33.3	0	67.7
Other		5.3	5.3	57.9	26.3	5.3	0
Household Income	Under 50K	5.3	16.8	32.7	35.4	3.5	6.2
	50K-100K	4	11.3	31.6	34.5	3.4	15.3
	100K+	3.3	7.5	31.4	41.3	3.6	12.9
Employment Status	Student	2.9	18.1	28.6	42.9	3.8	3.8
	Full-time/ Self-Employed	3.3	9.3	31.7	38.1	3.5	14.1
	Part-Time	8.9	13.3	33.3	26.7	4.4	13.3
	Not Employed	2.3	6.8	34.1	36.4	6.8	13.6
U.S. Born*	Yes	4.1	13.8	39	36.4	4.6	2.1
U.S. Citizen**	Yes	3.6	8.7	32	34.8	5.9	15
	No	3.1	10.3	23.7	44.3	1	17.5
Green Card Holder*	Yes	2.9	11.6	31.9	37.7	0	15.9
	No	2.7	8.7	19.3	43.3	1.3	24.7
Speaks English at Home**	All or Most of the Time	2.8	10.6	34.9	37.9	5.1	8.8
	Half of the Time	4.5	11	27.7	36.8	1.9	18.1
	Rarely/Never	8.7	10.1	20.3	34.8	2.9	23.2
Listens to Music*	English Only	1.9	12.6	40.7	35.6	5.2	4.1
	South Asian Only	6.5	9.4	23.7	40	4.9	15.5
	English and South Asian	3.5	7.1	28.3	34.5	0.9	25.7
South Asian TV Viewer	Yes	3.4	9.8	32	37.7	3.4	13.8

Note: Pearson χ^2 test for difference among groups *p< 0.05, ** p<0.01, *** p<0.001
Fisher's Exact test has been used to report p- value in cases where cells have expected count less than 5.

Appendix F. Time Lapse Since Last Physical Examination by Socio-Demographics & Acculturation

Socio-demographics		Time			
		Within the last 12 months	12-24 months	24 months+	Never
Gender***	Male	72.10	12.10	10.40	5.40
	Female	84.90	5.20	7.40	2.50
Marital Status	Single	78.80	6.90	10.00	4.20
	Married	79.20	9.00	8.20	3.60
	Divorced/ Separated/ Widowed	75.00	25.00	0.00	0.00
Country of Origin	India	78.30	9.60	8.40	3.70
	Pakistan	80.60	0.00	16.10	3.20
	Bangladesh	60.00	20.00	10.00	10.00
	Nepal	73.70	15.80	5.30	5.30
	Sri Lanka	90.90	9.10	0.00	0.00
	United States	83.70	0.00	14.00	2.30
	Afghanistan	75.00	0.00	0.00	25.00
	Other	94.70	0.00	5.30	0.00
Household Income	Under 50K	75.20	6.80	12.00	6.00
	50K-100K	79.30	10.30	6.90	3.40
	100K+	80.80	8.00	8.60	2.70
Employment Status	Student	77.90	5.80	11.50	4.80
	Not-Employed	82.60	6.50	8.70	2.20
	Full-Time/Self-Employed	78.80	10.10	7.70	3.50
	Part-Time	83.00	2.10	12.80	2.10
U.S. Born***	Yes	82.30	1.60	13.00	3.10
U.S. Citizen***	No	68.80	14.90	8.90	7.40
	Yes	85.80	7.50	5.10	1.60
Green card Holder	No	66.20	17.90	7.30	8.60
	Yes	74.70	12.00	10.70	2.70
How Often Speak English at Home**	All or Most of the Time	82.70	5.50	9.90	1.80
	Half of the Time	74.80	11.90	7.50	5.70
	Rarely/Never	66.70	16.70	5.60	11.10
Listens to Music	English Only	82.80	2.60	11.90	2.60
	South Asian Only	76.30	11.20	8.00	4.40
	English and South Asian	75.20	14.50	5.10	5.10
South Asian TV Viewer	Yes	80.70	7.00	9.30	3.00

Note: Pearson χ^2 test for difference among groups *p< 0.05, ** p<0.01, *** p<0.001
Fisher's Exact test has been used to report p- value in cases where cells have expected count less than 5.

Appendix G. Frequency of Exercise (at least 30 minutes per week) by Socio-Demographics and Acculturation

Socio-demographics		Frequency of Exercise per Week (%)		
		4-6 Times	1-3 Times	Rarely
Gender*	Male	31.5	36.6	31.9
	Female	27.4	47.6	25.0
Country of Origin***	India	30.1	41.6	28.3
	Pakistan	10.0	46.7	43.3
	Bangladesh	10.0	50.0	40.0
	Nepal	45.0	30.0	25.0
	Sri Lanka	18.2	36.4	45.5
	United States	44.4	40.0	15.6
	Afghanistan	25.0	0.0	75.0
	Other	5.3	84.2	10.5
U.S. Born**	No	26.3	41.5	32.1
	Yes	34.3	46.0	19.7
U.S. Citizen***	No	22.0	36.0	42.0
	Yes	31.0	45.5	23.5
Speak English at Home***	All or Most of the Time	31.3	45.7	23.1
	Half of the Time	28.8	39.7	31.4
	Rarely/Never	20.3	28.4	51.4
Listens to Music***	English Only	34.9	44.7	20.4
	South Asian Only	20.6	41.7	37.7
	English and South Asian	35.3	40.5	24.1

Note: Pearson χ^2 test for difference among groups *p< 0.05, ** p<0.01, *** p<0.001
Fisher's Exact test has been used to report p- value in cases where cells have expected count less than 5.

Appendix H. Frequency of Eating Fast Food per Week by Socio-Demographics and Acculturation

Socio-demographics		Eat Fast Food per week (%)		
		4-6 Times	1-3 Times	Rarely
Gender*	Male	3.3	23.1	73.6
	Female	1.1	18.9	80.0
Marital Status***	Single	3.0	28.8	68.2
	Married	1.5	15.3	83.2
	Divorced/ Separated/ Widowed	0.0	16.7	83.3
Employment Status**	Student	2.8	36.8	60.4
	Not-Employed	2.1	14.9	83.0
	Full-Time/Self-Employed	1.7	18.4	79.9
	Part-Time	4.3	19.1	76.6
U.S. Born*	No	2.1	18.1	79.8
	Yes	2.0	27.8	70.2
Speak English at Home*	All or Most of the Time	1.4	21.1	77.5
	Half of the Time	2.5	23.6	73.9
	Rarely/Never	5.4	10.8	83.8
Listens to Music*	English Only	1.1	26.8	72.1
	South Asian Only	3.2	17.0	79.8
	English and South Asian	2.6	15.4	82.1

Note: Pearson χ^2 test for difference among groups *p< 0.05, ** p<0.01, *** p<0.001
Fisher's Exact test has been used to report p- value in cases where cells have expected count less than 5.

Appendix I. Smoking by Socio-demographics and Acculturation

Socio-demographics		Smoking (%)	
		No	Yes
Gender***	Male	62.1	37.9
	Female	79.9	28.1
Marital Status***	Single	64.0	36
	Married	77.7	22.3
	Divorced/ Separated/ Widowed	58.3	41.7
Country of Origin*	India	75.1	24.9
	Pakistan	67.7	32.3
	Bangladesh	70.0	30.0
	Nepal	60.0	40.0
	Sri Lanka	54.5	45.5
	United States	55.6	44.4
	Afghanistan	25.0	75.0
	Other	73.7	26.3
U.S. Born***	No	76.9	23.1
	Yes	60.6	39.4
Speak English at Home*	All or Most of the Time	68.7	31.3
	Half of the Time	79.4	20.6
	Rarely/Never	78.4	21.6
Listens to Music**	English Only	63.3	36.7
	South Asian Only	77.2	22.8
	English and South Asian	77.1	22.9
Note: Pearson χ^2 test for difference among groups *p< 0.05, ** p<0.01, *** p<0.001 Fisher's Exact test has been used to report p- value in cases where cells have expected count less than 5.			