The Impact of Race and Culture on Vitamin D Deficiency in Muslims: What Nurses Need to Know

Module I: Culture

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Abstract

The reemergence of a worldwide epidemic of vitamin D deficiency is an example of a curable threat that carries alarming consequences for the physical health and mental health of several ethnic subgroups of American Muslims culture. Because the damage done by the deficiency rarely expresses itself in a form that is visible early in life, except in the case of childhood rickets, the debilitating effects of the deficiency are often observed only after the onset of serious illness during, the individual’s most productive years of life. School nurse are often the first professional health clinician to have consistent intimate contact with dark skinned covered Muslim girls and their mothers- the most seriously affected.

Despite a preponderance of evidence about the critical importance of vitamin D to human health, risk assessment; screening; education; and treatment for vitamin D deficiency are not widely recognized as being a priority among most healthcare clinicians (Holick, 2006, p. 369). Resultantly, hypovitaminosis D is rarely diagnosed before the onset of serious illness. This gap in services is intensified by the fact that over the past 10 years very little research has been dedicated to investigating the effects of the deficiency on populations having the greatest risk (dark-skinned or covered Muslim females and their children). The people who are at most risk are also unfortunately the world’s least studied and most underserved. For over a century, school nurses and other public health nurses have been the mainstay for these disaffected people whose race, culture and/ or language have been barriers that denied them access to quality healthcare. These nurses have an unparalleled opportunity to use the evidence presented in this course to guide health promotion, disease prevention and treatment activities that can interrupt the cultural lifestyle behavioral practices that can lead to devastating health outcomes in adulthood when hypovitaminosis D remains untreated.
The Impact of Race and Culture on Vitamin D Deficiency on Muslims: What Nurses Need to Know

The National Association of School Nurses (NASN) states, "School nursing is a specialized practice of professional nursing that advances the well-being, academic success, and life-long achievement of students. To that end, school nurses facilitate positive student responses to normal development; promote health and safety; intervene with actual and potential health problems; provide case management services; and actively collaborate with others to build student and family capacity for adaptation, self management, self advocacy, and learning (NASN, 1999)."

Despite a preponderance of evidence about the critical importance of vitamin D to human health, risk assessment; screening; education; and treatment for vitamin D deficiency are not widely recognized as being a priority among most healthcare clinicians (Abdul-Aziz, 2009; Holick, 2006, p. 369). Resultantly, hypovitaminosis D is rarely diagnosed before the onset of serious illness. This gap in services is intensified by the fact that over the past 10 years very little research has been dedicated to investigating the effects of the deficiency on populations having the greatest risk. Unfortunately, the people who have the most risk are also the world’s most underserved. In past years, America turned to school nurses and other public health nurses to reach disaffected communities that faced barriers caused by racial and ethnic discrimination, fear, a lack of resources and language to judiciously link causes of health problems with effective treatment. The below figure identifies the illnesses that have been linked with vitamin D deficiency, all known to have devastating individual and communal consequences.
According to Julia Graham Lear, Ph.D. (2003), the Director of the Center for Health and Healthcare in Schools at George Washington University, despite the success of school health programs and the support of parents, the majority of school health centers are losing funding and function with severe staffing shortages just as the need for this extra layer of support is rising. See the below results of her recent parent survey:
This web-based lecture series is set up in self-directed learning modules to accommodate the needs of school nurses. Most school nurses practice in isolation from peers in an environment that do not accommodate their need to remain abreast of changes in their fields. The vision for their health centers is usually decided by the school's academic education leader who determines the direction of healthcare programming and the decides which resources are allocated to carry out all strategic planning including healthcare (Lear, 2009).

The course was structured with that reality in mind. The format allows the school nurse enter the course site at different points in the day from different locations to accommodate a demanding work schedule. For instance, the Pennsylvania School Code mandates a ratio of one certified school nurse to 1,500 students and that nurse may be covering as many as 3–5 buildings (Ficca, 2006, p. 148, ¶ 1), which places extreme constraints on the time that nurses have to amass the requisite knowledge for providing culturally competent care. This content was also purposely selected to meet the needs of visual, auditory and kinesthetic learning styles by offering printed study materials, a link to a podcast led by an expert in the field of Vitamin D deficiency and a PowerPoint presentation. At the end of the course materials the student can take a quiz and complete a course evaluation. This lecture is also accessible online at nursesaida.com

Upon completing the course the learner should have a better understanding of:

1. Cultural practices of Muslims that might magnify the severity of vitamin D deficiency
2. Research that supports the identification of the spectrum of illnesses associated with vitamin D deficiency
3. Adult versus child specific symptomatology related to vitamin D deficiency

4. An algorithm that supports clinical decision-making regarding student and/or family referral for education, diagnostics or treatment

Module I: Culture

Culturally competent healthcare has been defined as care that is delivered effectively and appropriately to culturally diverse populations and individuals (Tucker, Mirsu-Paun, van den Berg, & et al, 2007). The influence of race and culture pervades how individuals, families and communities think about, access, and use healthcare services. By tapping the historical strengths that sustained certain cultures over years, nurses and other healthcare providers are far more likely to achieve compliance with treatment recommendations and improve health outcomes. A discussion of the impact of culture and race on vitamin D deficiency in aggregate Muslim populations as well as some tools for assessing patient risk and provider knowledge will ensue in the following modules.

At the end of module I, the learner is expected to have:

1. Enhanced self-awareness about personal attitudes

2. Increased knowledge about Muslim culture and how that culture impacts their views on healthcare and healing

3. Improved skills to communicate more effectively with Muslims
Race, Culture and Healthcare of Muslims

The United States has drastically changed as a result of the influx of a wide range of ethnic and linguistic cultural groups over the last century. However, despite the increased diversity, American healthcare practitioners have remained approximately 85% non-Hispanic whites; whose heritages and backgrounds have provided them with little if any of the knowledge, skills, and experiences that are necessary to effectively communicate with the vastly differing patient populations that make up this new culturally rich healthcare frontier (Tucker, Mirsu-Paun, A., van den Berg, & et al, 2007). Healthcare providers need to understand that cultural diversity extends far beyond having knowledge about the beliefs, values, and traditional practices of a specific racial or ethnic aggregate group. A few of the other faces of cultural diversity include religious affiliation, sexual orientation, age, language, gender, socio-economic status, disability (both physical and mental), and geographic region (Campinha-Bacote, 2003, ¶ 1). Although most programs that educate registered nurses provide some level of instruction on the need to include culture in practice, minority patients continue to report untimely and inappropriate responses to requests for care that include cultural preferences, especially if the patient making the request lacks health insurance or identifies with a lower socioeconomic class. The negativity encountered by patients in association with their culture impacts their decisions to continue, follow up or comply with treatment recommendations (Chapman, Bates, O’Neil, Chan & Donini-Lenhoff, 2008). In acknowledgment of the shifting worldwide trend towards diversity, the American Nurses Association (ANA) published a statement recommending that each nurse achieve the ability to “practice with compassion and respect for the inherent dignity, worth, and uniqueness of every individual” (Flowers, 2004).
Becoming culturally competent is a commitment to self exploration that throughout one’s life (Campinha-Bacote, 2003, ¶ 1). Like any other investment of such a significant amount of personal resources the journey of cultural competence should start with an assessment. Please take a moment to use the below tool to take a personal inventory of your individual level of cultural awareness.

**Table 3 Cultural awareness assessment tool**

*Directions: Circle the number that best reflects your honest response to the statement. When you are finished, add up the total number of points and compare them to the Cultural Awareness Scale below.*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel comfortable when discussing different lifestyles with clients.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I support the use of traditional cultural healing practices for hospitalized clients.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I know the limits of my communication skills with clients from different cultures.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Outside the work setting, I make an effort to be involved with people from different cultures.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>When assessing clients, I recognize the biologic variations of different ethnic groups.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I accept that there is a strong relationship between culture and health.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I consider the race, sex and age of my clients when administering medications.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>When caring for clients from different cultures, I consider the specific diseases common among their group.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Openly acknowledge my own prejudices and biases when working with clients from different cultures.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I seek out and attend in-service classes that deal with cultural and ethnic diversity.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I remain calm when my healthcare values or beliefs clash with those of a client.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I practice culturally competent nursing when dealing with all clients, not only those from different ethnic groups.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>When assessing clients initially, I consider their geographic origins, religious affiliation, and occupation as important elements of the care plan.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I have a high level of knowledge about the beliefs and customs of at least two different cultures.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I use standardized cultural assessment tools when performing admission assessments on clients from different cultures.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I take into consideration the policies of my institution that serve as barriers for the effective provision of culturally competent care.</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I recognize the cultural differences between the members of the same culture.</td>
<td>3</td>
<td>2</td>
<td>1</td>
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**Cultural Awareness Scale**

- **40 to 61 points** = High degree of cultural awareness
- **30 to 39 points** = Average degree of cultural awareness
- **17 to 29 points** = Low degree of cultural awareness

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(Flowers, 2004, p. 51)
Health Beliefs

The beliefs that influence health behaviors in most people are often carried in their culture’s folktales and passed down over centuries through family health and healing practices regardless of race or ethnic origin. Certainly, Muslims who descend from African, African American, Arab, Jewish, African, Asian and Native Indian ethnicities are examples of American cultural groups that still use natural remedies to maintain health as well as different types of poultices to cure some illnesses before turning to modern medicine, regardless of their professional occupation or level of education. Instead of capturing the essence of the health practices that have provided these minority groups with resilience in the face of continued barriers to quality healthcare services, most American clinicians reject traditional healing practices as baseless and suspicious. A clash between the differing value systems that guide traditional healing versus Western scientific inquiry increases healthcare disparities for minority people; especially children, who are left feeling ashamed and even isolated after realizing that their cultural mores regarding health maintenance, illness prevention and even death are neither accepted nor respected by the dominant, mainstream healthcare industry. School and community health education programs will only be able to positively impact lifestyle and behavioral practices of Muslims if they seek to understand and include the cultural self-care knowledge proposed by their patients in all healthcare activities (Ben-David & Amit, 1999, ¶ 1).

Impact of Religion and Culture on Accessing and Using Healthcare

Muslims are one of the largest and most unique cultures in America, but few healthcare clinicians possess adequate knowledge and experience to interact appropriately with the various aggregate ethnic subgroups that make up Muslim culture. The majority of Muslims descend from generations of people who passed their traditional self-healing practices down to subsequent generations.
through family and community stories. These stories can provide clinicians with a realistic glimpse into cultural practices that reinforce and strengthen health habits associated with specific ethnic groups within Muslim culture (Ben-David & Amit, 1999, ¶ 7). Though generally thought of in terms of its application to politics and worship, culture of Islam is really a way of living that covers every aspect of a Muslim’s daily life including marriage, birth, burial rites at death, health and most social discourse. Western healthcare practitioners often mistakenly limit the culture of the Muslims to the mores of the people from the Arabian Gulf, which will limit their reception and the effectiveness of any treatment options or interventions devised. Cultural beliefs about getting sick, getting better and staying healthy are intertwined and enmeshed with the religion of Islam through language and centuries of social exchange based on the ethnic subcultures and the regions from which the Muslims’ originated. For instance, almost all Muslims believe that no practice considered authentic by the majority can ever be erroneous. Healthcare personnel should be cautious about assumptions in providing Muslims care, the most prudent course of action is to start with principles that are common to all Muslims regardless of their ethnicity or country of origin and then build upon those commonly shared values by exploring ethnically specific traditions.
Exploring the Shared Values of Muslim Cultural Traditions

How Muslims view and seek healthcare can be clustered around several cultural themes, but the one that they refer to most often which confronts healthcare professional who try to intervene in their lifestyle choices is qadr or destiny. When viewed from a Western perspective, qadr is considered fatalistic. However, the Muslim considers this belief a defining idea about the power of man versus the power of God. Through qadr, the Muslim understands that after one has done everything possible, if circumstances do not lead to a desired outcome, then that outcome was not ordained by God who knows best about all things. Such a belief seems contradictory for a people who value education in order to improve and better manage individual and community life. However, for every principle in Muslim culture there is a balancing principle that seeks to establish and reinforce, centrist living and thinking, as the prescription for maintaining health and facilitating healing. For qadr, the balance is individual responsibility to strive to achieve the best possible outcome in all that is undertaken. A saying goes, if you knew you would die tomorrow and intended to plant a tree, plant the tree.

Foundation for Cultural Practices

The foundation for every Muslim’s lifestyle is the traditional Islamic value system taught in the Holy Qur’an and exemplified in the lifestyle of Prophet Muhammad (عليه السلام [Peace Be Upon him-AS]) as explained in collected works called Hadith. Muslims believe that the Holy Quran is the unaltered word of God, protected because it has been passed down over centuries through memorization and oral recitation with a similar tradition protecting the Hadith. Insulting any aspect of those scaffolding beliefs will shut all doors that might allow the development of a respect/trust bond, an essential ingredient in the patient-provider relationships.
While the clinician is not expected to share the beliefs of the Muslim, he or she is expected to avoid behaviors that demonstrate disrespect. One example of demonstrating respect is to maintain respect towards their Holy Book, which they themselves only touch in a state of ritual cleanliness. Healthcare personnel should be careful to avoid touching the Qur’an or placing objects on top of any religious books except as requested by the patient. Many Muslims believe that the prayers and activities legislated in this book offer miraculous powers for healing when applied under the correct circumstances.

Touch

American nurses suffer from a lack of experiences that would prepare them to understand and predict the needs associated with Muslim culture because in addition to being far different from the dominant value cultural mores, they are actually an amalgamation of traditional Islamic values combined with the mores of the ethnic groups that practice this lifestyle.

Touch is one of the most common aspects of Muslim culture that a clinician will encounter when caring for Muslim students because it is a critical element in the healthcare delivery process. Every culture has clear boundaries about touch that can positively or negatively impact a clinician’s ability to care for his or her patients and most Muslims follow a very defined code of behavior regarding touch. Since the majority of Muslims are generally from minority ethnic and linguistic populations and the majority of nurses are predominantly white American Christians, a disconnection in communication between these two groups can easily occur, especially in areas related to touch. Touching and the restrictions placed on touching are intended to underscore respect in Muslim culture. For instance, many Western clinicians know that there is a need to take care when touching Muslim women; but, most are unaware that they should avoid touching the opposite gender even by attempting to shake hands unless the patient extends the hand.
first or permission is obtained. Additionally, nurses probably also do not know that women, who practice the strictest code of separation in Islam related to touching, will not uncover in front of or be touched by even other women who are not Muslims.

A simple demonstration of respect can be achieved by insuring that the entire body except the part that needs to be examined remain covered for both men and women, even if the patient is deceased and especially the sexual organs are the area of concern.

The clothing worn by Muslim men and women is a reflection of how much value this culture attributes to respect and to touch whether through physical awareness or by using any of the other senses such as the eyes. Healthcare practitioners and nursing clinicians should be cognizant that regardless of the gender a decision not to adhere to wearing the traditional cultural dress code of Islam in no way indicates that the individual has abandoned all of the other cultural rules that dictate social discourse surrounding touch. Whenever possible, establish clear communication using a translator if necessary to identify preferences and comfort level before touching occurs. In the case of American Muslim converts, they may apply the most stringent forms of religious legislation to social discourse as they struggle to establish a Muslim cultural identity that defines their emergence within the broader Muslim cultural presence.

Food

Most cultures share the belief that there is a critical relationship between food and health. Food is almost always used as the first line of treatment for some illnesses such as soups for the common cold and some food types are highly valued as preventative and curative for a variety of illnesses. For centuries, many Muslims have maintained a steadfast belief that black seed has medicinal properties that can cure all illnesses if eaten or distilled properly. It is narrated by hadith that the Holy Prophet (AS) said: "Use the
black seed because it has a relief of all diseases, but death (A. N. Muhaimin, personal communication, November 28, 2009; Islamic Bulletin, 1999; Al-‘Ani, 1985, p. 274)." That belief has spurred Muslim medical scientists and nutritionists to use black seed in a search for cures to such diseases as cancer and respiratory diseases. Muslims are also less likely to drink milk and consume foods that are fortified with vitamin D because of traditional food preferences or lactose intolerance, which increases their risk factor of having vitamin D deficiency. Another highly valued practice related to food is abstinence from oral sustenance, also viewed as having healing properties by Muslims. Although Muslims practice several optional fasts, the most commonly known fast is the obligatory fast of Ramadan, which is mandated in the Holy Qur’an and should be assumed by every able bodied male and female beginning by puberty, the formal age for adulthood in Islam. However, Muslim children typically begin fasting in solidarity with their families at around seven to nine years of age. The fast of Ramadan requires abstinence from all oral intake from 1 hour before dawn to sunset, unless an illness might be worsened or harm might befall an unborn fetus if a pregnant woman fasts. Women are not permitted to fast while menstruating, but they must make up the missed days during the succeeding year. Although there are many benefits associated with fasting, there are also associated risks. An example provided by Anwar Muhaimin, President of Quba, Inc (Personal communication, November 28, 2009), a Muslim community in Philadelphia, PA was that during a blood drive sponsored by his community in 2006, the hemoglobin level was so low in 20 out of 50 men and women who fasted the month of Ramadan and came to donate blood. Since that time, he recommends that pregnant women who fast are sure about their health before assuming the fast of Ramadan. His advice was essential for their compliance.
Beliefs about Illness

Health is believed to be lost through a lack of balance and moderation in one’s lifestyle. Muslims believe that there are three types of beings that were created above animals. Those beings are man, who was created from the earth; angels, created from light, and jinn, created from fire. Men and jinn have free will, but angels do not. In the case of mental illnesses, most Muslims believe that jinn, who with angels live on a plane invisible to man and have the power to possess the minds of people. Both good jinn and bad jinn exist. Bad jinn can cause mental illness through possession. However, they also believe that certain prayers over the ill person can exorcise the jinn and purify the environment from the bad jinn (A. N. Muhaimin, personal communication, November 28, 2009). This information is rarely known by young people but it may impact the willingness of older people to allow participation in certain treatment modalities.

Body Image

Cultural groups often vary in their definitions of an acceptable and desirable body size. In addition to touch, body image is a dimension of social exchange that Islamic attire was intended to help address. The appearance of the human form even in Muslim culture seems to be far more related to the level of affluence of the individual. Traditional Indian, Chinese and Arabic cultures have been cited as examples where at the very least thinness was not emphasized as a requirement for feminine beauty (Khandelwal, Sharan, & Saxena, 1995; Nasser, 1988); however, historically the non-medical literature suggests that although a certain degree of fullness in the body may have been traditionally desirable, being ‘fat’ was not universally admired” even in those ethnic subgroups. Muslim body image is definitely associated with the mores of geographic regions and according to various Hadith, Prophet
Muhammad (AS) advised that gluttony is not a desirable trait for any aspect of a Muslim’s life and his recommendation is that the stomach should be filled with 1/3 food, 1/3 water and 1/3 air. Additionally, drinking fluids should be avoided for ½ hour after food has been consumed. Such habits promote a slender physique (A. N. Muhaimin, personal communication, November 28, 2009; Al-‘Ani, 1985, p. 21; A. N. Muhaimin, personal communication, November 28, 2009).

Conclusion

In summary, the United States has drastically changed as a result of the influx of a wide range of ethnic and linguistic cultural groups over the last century. However, despite the increased diversity, American healthcare practitioners are still largely non-Hispanic whites; whose heritages and backgrounds have provided them with little if any of the knowledge, skills, and experiences that are necessary to effectively communicate with the vastly differing patient populations that make up this new culturally rich healthcare frontier (Tucker, Mirsu-Paun, A., van den Berg, & et al, 2007). A clash between the differing value systems that guide traditional healing versus Western scientific inquiry increases healthcare disparities for minority people; especially children, who are left feeling ashamed and even isolated after realizing that their cultural mores regarding health maintenance, illness prevention and even death are neither accepted nor respected within dominant, mainstream healthcare. American nurses are ill-prepared to understand and predict the needs of a culture that is far different from their own, especially since that culture is actually an amalgamation of traditional Muslim values and the mores of many ethnic groups that practice this lifestyle. Of all interactions that are required in the patient-healthcare provider exchange, touch is the most encountered, but least understood. Touch is highly regulated in Islam and it is an example of a cultural phenomenon that must be better understood if quality healthcare is to be delivered.
The Impact of Race and Culture on Vitamin D Deficiency on Muslims: What Nurses Need to Know

Module 2: Understanding Vitamin D Deficiency in High Risk Aggregate Groups

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University of Phoenix
Module 2: Understanding Vitamin D Deficiency in High Risk Aggregate Groups

Many factors attenuate the body’s ability to synthesize vitamin D. Though still evolving, a sufficient body of evidence has already associated the high prevalence of fatigue, musculoskeletal complaints, and depressive symptoms among covered immigrant Muslim women, including equatorial Africans, with cultural practices, religious traditions and biological traits that prevent or interfere with cutaneous vitamin D production (Abdul-Aziz, 2009; Reed, Laya, Melville, Ismail, Mitchell and Ackerman, 2007).

Although Philadelphia, Pennsylvania is situated at latitude 39°N, it was the site of one of the best known modern studies of rickets in the USA since the introduction of vitamin D supplementation of milk and fortified cereals. The study focused on 24 cases of rickets at Children’s Hospital in urban Philadelphia. All the patients were African American and 16 out of the 24 cases were Black Muslims who were breastfed by mothers also believed to be vitamin D deficient as a result of diet and wearing the most extreme form of traditional Islamic attire, showing only their eyes and hands when in public. The development of vitamin D deficiency in the children of this study was correlated to the “combined effect of nutritional, racial, cultural and environmental factors” (Abdul-Aziz, 2009; Bachrach, Fisher, & Parks, 1979).

A recent research study of dark skinned immigrant Somali Muslim women who resided in Washington State at latitude 47–48°N, where UV-B irradiation is decreased for a large portion of the year, focused on women who wore long dresses and covered their heads. Researchers found not one woman met the recommended standard for vitamin D levels of mean over 30 ng/mL or 25(OH)D serum concentration. The entire sample population measured 14.4 ng/mL, lower than the 17.7 ng/mL found in African American
women; who were previously considered lowest. White women are usually found to measure at 33.1 ng/ml, just above the recommended level. Investigators in this study concluded that a combination of traditional dress, diets low in vitamin D, and dark skin may have collectively played a critical role in the subjects’ low vitamin D levels. These results were significant because they added to the existing body of knowledge even though the convenience sample was small, which limited its power to detect differences. However, the profound finding of 100% hypovitaminosis D in this population of Somali immigrant women supports the need for future evaluation and study in order to identify gaps in services and treatment for dark skinned Muslim women who wear traditional clothing especially if they also cover their faces, hands and feet. Recommended nursing interventions yielded from this study were in line with past research and included the need to educate covered women about the extraordinary benefits of receiving skin exposure to direct sunlight for minimal periods and/or to obtain diagnostic assessment of the need to use vitamin D supplementation or referral to Women, Infants and Children nutrition programs (Reed, Laya, Melville, Ismail, Mitchell and Ackerman, 2007). Notwithstanding the impact that nursing health promotion and prevention efforts could have on limiting or forestalling suffering; morbidity; and mortality among this aggregate group, the healthcare costs savings associated with interrupting the disease spectrum known to accompany vitamin D deficiency could be staggering even if only African American Muslims who represent about 20% of America’s 2.35 million total estimated Muslim population (Pew Research, 2007, ¶ 5) were targeted.
Risk Groups

“Persons at risk for developing vitamin D deficiency include [those] living at latitudes [above 37°N or below 37°S] where sunlight during winter months is known to be insufficient to promote vitamin D synthesis through the skin” (Holick, p. 356, ¶ 4), “the homebound or institutionalized, dark-skinned individuals, and those who avoid direct sunlight exposure for cultural or health reasons” (Reed, Laya, Melville, Ismail, Mitchell, and Ackerman, 2007, p. 207, ¶ 2). Other risk factors linked to the deficiency are inadequate dietary intake of vitamin D or insufficient supplementation, obesity, age, medication use and use of sun screen products (Goldstein, 2009) or sun shielding glass (Holick, 2006, p. 356, ¶ 4). Both qualitative and quantitative research support the premise that “inadequate vitamin D may be involved in the pathogenesis and or progression of several disorders including cancer; hypertension; cardiovascular disease; neuromuscular diseases; osteoarthritis; diabetes; and other autoimmune diseases” (Goldstein, 2009, p. 345; Holick, 2006) as well as “mood disturbances and impaired neuropsychiatric function” (Reed, et al 2007). The potential impact of any one of these illnesses on academic performance and long-term success could be devastating among a population that already struggles to maintain a lifestyle that adequately provides for their needs. The full extent of the harm done by vitamin D deficiency has yet to be completely understood, but present knowledge of its noncalcemic effects reveals it exerts significant influence in “apoptosis, antiangiogenesis, antiproliferation, prodifferentiation, and immunomodulation” (Holick, p. 367, ¶ 5), as depicted in the figure below.
Implications for Practice

Why the rush to diagnose and treat vitamin D deficiency in children especially in Black Muslim female students living in urban centers? The goal of public health nursing is the prevention of disease and disability for all people through the creation of conditions in which people can be healthy…[by designing]…interventions to mobilize resources for action, and promote equal opportunity for health” (DeSantis, 2001, p.311, ¶ 6; Quad Council, 1999, p. 2). Medical experts estimate about 50% of an individual’s “peak bone mass develops during adolescence, and the concern is that missing out on the strongest possible bones in childhood could haunt people decades later” (Neergard, 2007).

Using the Philadelphia, PA public school system as ground zero for examining the potential gravity of the problem may illuminate the benefits that could be realized if school nurses and public health nurses spearheaded national research and prevention
efforts aimed at screening, educating and referring students observed to be most at risk for developing vitamin D deficiency for appropriate treatment. The total K-12 student population enrolled in Philadelphia public schools is 163,064; and of that number, approximately 61% are from Black or African American decent (School District of Philadelphia, 2009). An additional 1000 students attend four nonpublic Muslim schools and thousands more are home schooled. Although no statistics could be located specifying public school enrollment by gender, Philadelphia schools are no different than schools in other major urban cities in the nation where the largest populations of all Muslims dwell, but especially Muslims of color who comprise the greatest risk group are concentrated (US Census, 2001). With similar or greater numbers of black covered Muslim students at-risk for in identified and untreated vitamin D deficiency in k-12th grades increasing around the country with every passing year, the potential risk for long term suffering and morbidity is staggering. With American Muslim female students covering at much earlier ages and for longer periods diseases from chronic pain to than their counterparts in most Muslim countries, they could face an increased risk for developing obesity, multiple sclerosis, diabetes and hypertension which already disproportionately affects people of color. The simple addition of the following self assessment questionnaire to the annual mandatory screenings of students can help identify those with the highest risk level for the disorder.

In the 2008 study, *Use of a Questionnaire to Assess Vitamin D Status in Young Adults*, Bolek-Berquist, et al hypothesized that a simple questionnaire could identify young adults with a high and low likelihood of vitamin D deficiency. They created a series of questions to identify vitamin D intake. The authors found that subjects who received a suntan, used of a tanning booth or drank at least two servings of milk daily were significantly less likely to be vitamin D deficient than those who had not. More definitively, they
found that responding in the negative to any two of the three questions from those aforementioned categories yielded a sensitivity of 79% and specificity of 78% for predicting vitamin D deficiency. Though there was obvious room for improvement, their screening tool can serve as a good indicator of the need for laboratory testing to confirm suspicions, especially in the presence of dominant risk factors such as wearing concealing clothing and having dark skin.

After accounting for all the cultural and biologic aspects of risk, the nurses should seek to employ the following strategies in establishing evidence-based practice that cares for this subculture:

1. Be informed about existing evidence [Right click to open podcast from an expert]
2. Test your knowledge [Right click to open quiz and test your knowledge]
3. Identify risk among your students [Right click to open risk assessment questionnaire]
4. Use the algorithm in clinical decision making [Right click to open algorithm]

Conclusion

Both qualitative and quantitative research support the premise that “inadequate vitamin D may be involved in the pathogenesis and or progression of several disorders including cancer; hypertension; cardiovascular disease; neuromuscular diseases; osteoarthritis; diabetes; and other autoimmune diseases” (Goldstein, 2009, p. 345; Holick, 2006) as well as “mood disturbances and impaired neuropsychiatric function” (Reed, et al 2007). However, despite a preponderance of evidence to support the critical importance of vitamin D to human health, hypovitaminosis D remains poorly diagnosed and rarely treated before the onset of serious illness. Several
factors increase a person’s chance of developing vitamin D deficiency, but none contribute more to increasing the risk than having dark, wearing clothing that covers all body surfaces and “living at latitudes [above 37°N or below 37°S] where sunlight during winter months is known to be insufficient to promote vitamin D synthesis through the skin” (Holick, p. 356, ¶ 4) Because this dark skinned Muslim women continues to face barriers to accessing quality healthcare, their long term poor health outcomes will be far more pronounced. A complex interplay of factors exists that influence perceived susceptibility of vitamin D deficiency among dark-skinned and veiled American Muslim women. To succeed in helping these young women reduce their risk of developing any of a number of crippling and life-altering diseases that accompany chronic vitamin D deficiency, the nurse, family and community will have to join forces to institute the required lifestyle changes and/ or supplementation with vitamin D to reduce risk and eliminate the threat to the long-term health of the community in their unborn children.
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