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Understanding Muslim patients: cross-cultural dental hygiene care

Abstract: *Background:* Healthcare providers who understand the basic pillars of Islamic beliefs and common religious practices can apply these concepts, anticipate the needs of the Muslim patient and family, and attract Muslim patients to the practice. *Objective:* Cross cultural knowledge can motivate dental hygienists to adopt culturally acceptable behaviors, strengthen patient-provider relationships and optimize therapeutic outcomes. Trends in Muslim population growth, Islamic history and beliefs, modesty practices, healthcare beliefs, contraception, childbearing, childrearing, pilgrimage, dietary practices, dental care considerations and communication are explained. *Materials and methods:* This paper reviews traditional Muslim beliefs and practices regarding lifestyle, customs, healthcare and religion as derived from the literature and study abroad experiences. *Results and discussion:* Recommendations are offered on how to blend western healthcare with Islamic practices when making introductions, appointments, eye contact, and selecting a practitioner. The significance of fasting and how dental hygiene care can invalidate the fast are also discussed. *Conclusion:* The ultimate goal is for practitioners to be culturally competent in providing care to Muslim patients, while keeping in mind that beliefs and practices can vary widely within a culture.

Key words: cross-cultural care; cultural competence; culturally accepted practice; dental hygiene care; Muslim dental care; Muslim healthcare; Muslim tradition; patient-provider relationships

Introduction

The United States was founded on the premises of equal opportunity, freedom, open expression and peaceful cohabitation for culturally, ethnically and religiously diverse people. Healthcare providers live and work in a global society and must practise cultural awareness and sensitivity to achieve trusting patient–provider relationships and desired treatment outcomes. As the US population becomes more culturally diverse, inaccuracies, confusion and apprehension among some people may evolve. To be effective in today's multicultural healthcare settings, cross-cultural competency leads to care modifications that recognize, respect and integrate patients' cultural beliefs and practices in the healthcare encounter. Culturally competent practitioners engage all patients in the healthcare encounter and maximize communication to achieve client goals. One easily misunderstood culture includes people who practise Islam. The purpose of this paper is to provide information about Islam, Muslim healthcare beliefs and practices, and dental hygiene care adaptations that might be implemented when treating Muslim clients. The ultimate goal is quality oral health care for all segments of the population. Practitioners must also keep in mind that

variability exists within cultures and critically reflect on stereotypes that may be present in personal belief systems.

Review of the literature

Muslim populations

Muslims come from three main areas: South Asia, Iran and Arabic-speaking countries; of these three areas which all have unique cultural beliefs and practices; the largest populations emigrate from South Asia (Bangladesh, India and Pakistan) (1). With over one hundred Islamic countries, Muslims are ethnically, culturally and linguistically diverse (1). Only about 12% of Muslims worldwide are Arabs (2, 3). Currently, the Muslim population worldwide is an estimated 1 billion; in 2010, an estimated 7 million Muslims reside in the United States (4–6).

Currently, Arabs are emigrating from their native lands to avoid the devastating results of war and to seek new freedoms, education and opportunities. Most indigenous Muslims currently residing in the United States are African-Americans (5) and 82% are American citizens (6). This figure accounts for the immigrants who have chosen to reside in the United States and also native US citizens who have chosen to convert to Islam. Two-thirds of the Muslim population are concentrated in the metropolitan areas of Los Angeles, Chicago, Houston, Detroit and New York (4, 5). The most densely populated city in the United States is Dearborn, Michigan with a 20% Arab American population (8).

The Islamic religion

Islam is the second largest religion in the world with an estimated 1 billion followers (2). It is one of the three major monotheistic religions, Judaism and Christianity being the other two (2, 9). Islam was founded by Muhammad in the 7th century, in Medina, a city in western Saudi Arabia just north of Mecca (10). In Islam, Muhammad is viewed as the last prophet of God and is its most influential figure and leader.

Islam, which means total submission to the will of God, is a religion of peace, mercy, purity, obedience and forgiveness (2, 9). A Muslim is a practitioner of Islam, that is, one who submits. All Muslims believe in one God or *Allah* (the Arabic name for God). The *Qur'an*, the Muslim holy book, represents the word of *Allah*; it was written approximately 14 centuries ago and remains untouched and read in its original language and form (6, 11). Although interpretations vary, the *Qur'an* is believed to imply diversity and respect (12); all human beings are equal in terms of the *Qur'an*, but not identical (2). For example, Islam describes women as independent members of society who are equal to men in terms of basic human rights, pursuit of education, knowledge, freedom of expression, initiating enterprise and owning property independently (2). All genders and ethnicities are equal in the eyes of God. The only distinction recognized by God is piety (2). Yet this scripture is applied differently by ethnic groups in various Muslim countries.

Five fundamental pillars (Table 1), the six principles of faith (Table 2) and several core values (Table 3) guide Muslim practice. Muslims believe that practicing the five fundamental pillars conscientiously will allow for passage into heaven after death.

Critical Muslim practice is cleanliness, especially when praying to Allah. 'Cleanliness is half the faith', a well-known teaching of the Prophet Muhammad (5). To carry out this teaching, Muslims don modest clothing covering the body and perform traditional washing, called *wudu*, before praying, which involves washing the head/face, hands, arms and feet three times in sequence to attain a state of purity. Once cleansing is complete, the supplicant lays a small prayer rug in the

Table 1. **The five fundamental pillars of Islam**

Fundamental pillars	Defined
Shahadah or declaration of faith	Belief in one God and the Prophet Muhammad Muslims must announce their faith and belief to God, that is, there is no other God but *Allah* and Muhammad is the last messenger of God's word
Salat or five daily prayers	Muslims pray five times per day (dawn, midday, afternoon, sunset and night) prostrating oneself in the direction of Mecca; the purpose is to ask *Allah* for guidance and strength in life Men attend a mosque to pray with other men and boys. Women pray alone or with other women Friday is the holy day of the week. After prayer, Muslims will spend the rest of the day relaxing with family and friends
Sawor or fasting during Ramadan	During the Islamic ninth Lunar month, Muslims must refrain from all foods, drink and sexual relations from dawn to sunset Fasting is considered to be physically and spiritually purifying and a means of reacquainting oneself with physical hunger to foster empathy for the poor and self-control
Zakat or compulsory charity	Compulsory giving to the less fortunate; a means of purifying one's wealth, establishing social justice and providing positive human behaviours The minimum donation is 2.5% of the person's estimated wealth. Charity is practised during *Ramadan*. Not all Muslims are mandated to *zakat*, if a Muslim is poor already, zakat is not expected
Hajj or Pilgrimage to Mecca	A pilgrimage to Mecca must be performed at least once in a person's lifetime Considered an obligatory duty of all practicing Muslims as long as they are mentally, physically and financially able

Table 2. **The six principles of faith**

Six articles	Muslim beliefs defined
God	One God and provider Complete trust and hope in God; submission to his will and reliance on his aid Secures dignity and saves Muslims from fear, despair, guilt and confusion
Angels of God	Angels of God are purely spiritual and splendid beings whose nature requires no food, drink or sleep No physical desires of any kind or material needs; spend days and nights in the service of God
Prophets of God (Adam, Idirs, Nuh, Saleh, Ibrahaim, Isma'il, Ishaq, Lut, Ya'qub, Yousef, Shu'aib, Ayyub, Musa, Harum, Dhu'l-kifl, Dawad, Saliaiman, Ilias, Al-Yasa, Yunus, Zakariyya, Yahya, 'Isa (Jesus), (Muhammad)	Muslims only believe in one God (*Allah*) Importance of all messengers of God without any discrimination among them Messengers are chosen by God to teach mankind and deliver his message God has tasked man with certain assignments and sent messengers with revelations for his guidance
Books of Abraham, Moses, David, Torah, the Bible and Qur'an	In the *Qur'an*, a special reference is made to the books of Abraham, Moses, David and Jesus Although not participants in Islamic religion, these Prophets of God are to be respected by Muslims
The Day of Judgment or Justice	Compensation and reward for good deeds; punishment for evil deeds Abiding strictly to teachings ensures passage to heaven in the afterlife Final settlement of all accounts
Divine Decree	Things occur for a reason. Belief in destiny and fate is one of the basic beliefs of Islam *Allah* knows all things and is the creator of all things; nothing exists outside of his will and decree

Table 3. **Important behaviours dictated by Islamic law**

Behaviour	Defined
Haram (forbidden actions)	Unlawful or forbidden behaviours such as eating pork, dating before marriage, revealing skin other than the face or hands (women), adultery
Halal (*permitted foods/actions*)	Food prepared according to the Tenets of Islam Permitted foods Animals butchered facing Mecca, right before eating, their throats are slit, blood is left to drain to prevent contamination of bacteria in the meat Eating in moderation; overeating is shameful (4)
Fard (compulsory actions)	Compulsory actions that must be performed, for example, ritualistic prayers perform five times per day
Mustahab (cleansing of one's teeth before prayer)	Act of cleaning the teeth and mouth before starting each daily prayer session Those who perform this behaviour are rewarded by *Allah*
Makruh (performing a disliked action)	Performing an action that is disliked or discouraged, but not prohibited

direction of Mecca and begins the ritual of prayer. Another Islamic practice of cleanliness is washing of the gentiles each time the restroom is used to maintain purity at all times.

Modesty practices

Men wear traditional long draping clothing called a *thobe* or *dishdash* (Fig. 1) that covers the body from the neck to the ankles; women wear an *abaya* (Fig. 2) that covers the whole body, a *hajab* that covers the hair (Fig. 3) and long sleeves and/or gloves that cover the hands, leaving only the face exposed. Some women also wear a *niqab* to cover the face (Fig. 4); this will only leave her eyes visible to others. During prayer, a woman may keep the hands ungloved, however, must don modest clothing covering all parts of the body except the hands and face; men must wear modest clothing covering the naval to knees. Neither gender is mandated to wear these traditional items but may choose this style of dress for cultural or personal religious reasons.

Islamic modesty may inhibit the dental providers' ability to properly examine the patient. The patient may feel uncomfortable exposing certain parts of their bodies for examination. For example, Muslim women wearing a *hijab* (Fig. 3) do not expose their hair to men except their husbands, fathers and brothers. This practice makes a comprehensive head and neck examination challenging to impossible for a male practitioner. Some female Muslims who cover their faces prevent the comprehensive head and neck examination of the skin for cancer or accessing the oral cavity. Muslim men are also expected per the *Qur'an* to practise modest dress, that is, cover from the navel to the knees at all times. Oral care professionals need to discuss what examinations are needed, what is involved on the part of the patient and the practitioner and when to adjust clothing to prepare the patient prior to examinations.

Although Muslims have positive attitudes towards professional healthcare providers and achieving health, cultural customs influence patient treatment and acceptance of professional recommendations. Modesty prevents some Muslim

Fig. 1. A traditional Thobe or Dishdash. Used with permission from Rami Al-Zaki.

Fig. 2. A traditional Abaya. Used with permission from Marieke Couwenberg, Netherlands.

patients from accepting treatment from medical and dental professionals. For Muslims, it is inappropriate to touch a person of the opposite sex unless you are closely related or the

Fig. 3. A traditional *Hijab*. Used with permission from Michelle Sirois, BSDH, MS Springfield Technical Community College, Springfield, MA, USA.

Fig. 4. A traditional *Hijab* and *Niqab*. Used with permission from Michelle Sirois, BSDH, MS Springfield Technical Community College, Springfield, MA, USA.

spouses of the person; for that reason, some Muslim patients strongly prefer same gendered healthcare providers (1). In the case of a Muslim patient needing medical or dental treatment, the first choice might be a Muslim doctor of the same gender; if that is not possible, a same gender, non-Muslim doctor may be chosen, followed by a Muslim doctor of the opposite gender, and then finally a non-Muslim doctor of the opposite gender. If a non-Muslim doctor of the opposite gender is the only option, then the doctor performing the examination or treatment carefully examines only the areas needed to make a diagnosis or provide therapy (13).

Elderly and female Muslim patients are most likely to refuse treatment from different gendered clinicians because of deep-rooted beliefs (14). If a Muslim woman accepts healthcare encounters with an opposite gendered provider, she may be accompanied by her spouse or an elder female chaperone to ensure modesty is preserved. The dental hygienist should discuss the patients' expectations and treatment options on the initial visit. If a dental professional of the same gender is available, it is best to allow the patients to select the provider.

Health care for Muslim patients

Muslims glean views on health, illness, dental and medical practices from *Qur'anic* scriptures (15). The *Qur'an* encourages Muslims to maintain good health, eat in moderation, prevent disease, seek medical cures when ill, maintain good hygiene and appreciate wellness. Muslims believe their bodies are gifts from *Allah*; achieving and maintaining health is extremely important (6). Muslim patients also strongly believe in fate; if illness should occur, it is seen as a sign from *Allah* that the follower must repent for sins committed. Not all disease or illness is viewed as a negative from *Allah*; Muslims believe that *Allah* may test their patience while in this life, and if they succeed, they will reap full reward in their afterlife (13). 'How wonderful is the affair of the believer, for all if it is good, and that applies to no one except the believer. If something good happens to him, he gives thanks, and that is good for him, and if something bad befalls him, he bears it with patience, and that is good for him' (narrated by Muslim, 2999) (13). Dental professionals need to educate patients on the multi-factorial approach of disease as well as disease prevention strategies, so misunderstandings can be avoided.

Medical practice and healthcare providers are viewed positively by Muslims because of the strong emphasis on well-being that is conveyed by the *Qur'an*. The *Qur'an* refers to physicians or healthcare providers as *hakim* or wise people and healers (6). Muslim patients express gratitude and respect to healthcare providers and often seek physicians with patience, attentiveness (listening more than speaking), moderation, good intuition, rational thinking and kind disposition (6). To achieve a successful patient–provider relationship, these qualities should be demonstrated by the dental provider.

Muslim customs in relation to oral health care

Effective oral healthcare providers understand and respect the beliefs and practices of their Muslim patients. Unfortunately, ignorance of customs can undermine the establishment of trusting relationships (19). Muslim patients may refuse treatment if they feel that their beliefs are violated or disrespected. Many patients and providers never reach the treatment phase of care because of ignorance of culturally acceptable habits of patients. For successful patient–provider relationships, the healthcare and dental provider must practise behaviours that support the Muslim patient's beliefs and comfort level.

Customary western gestures valued as polite are not always welcomed by the Muslim patient. For example, handshakes particularly with the opposite sex may be viewed as negative or *haram* to some Muslim patients (7, 16). Therefore, it is not necessary to greet a Muslim patient and their family members with a handshake. Simple introductions with clearly stated intentions before starting any procedures or examinations are best and most appreciated. Like most people, Muslim patients strongly prefer the healthcare and/or provider to announce their presence before entering the room especially when the patient is women. Respecting these rules can help Muslim patients relate more openly to the provider and recommended care (16).

Eye contact is usually viewed as a sign of confidence in American culture. In contrasts, Muslims view direct or lengthy eye contact as a negative behaviour suggesting a lack of respect and will often avoid eye contact in conversation, especially with those of the opposite gender. Prolonged eye contact also may be viewed as aggressive behaviour or having the potential to lead to sinful thoughts and should be used sparingly when having discussions with Muslim patients, particularly of the opposite gender (6, 7). Dental professionals should minimize eye contact and utilize charts, graphs or other educational materials to help the patient focus on the message and reduce stress.

Western oral healthcare professionals often use touch as a sign of empathy or to strengthen the bond between patient and provider. Touching is a part of how some cultures show concern, support and kindness to one another; however, Muslims restrict touching to close friends and families. Greetings between close family members or same gendered friends usually involve cheek kissing or hugging. To reflect their close friendships and support bonding, Muslim men often hold hands or hug. Some will kiss each other's cheeks three times while whispering greetings. Muslim women also can be seen in close contact with other women as a sign of bonding or a strong relationship. Public displays of affection between male and female Muslims, even if married, are considered *makruh* (*undesirable*) and not practised in public. Healthcare providers should restrict touching the patient to treatment needs only; comforting patients during the time of distress or pain is best carried out without touching for increased patient ease (17). Muslim family members may provide physical comfort for other family members, but it is an undesirable behaviour if a healthcare provider does it. The best approach for the dental professional when providing comfort is to be attentive and kind and to listen to the Muslim patient without bodily contact.

Contraception, childbearing, childrearing and Islam

Muslim women are expected to make medical decisions about contraception and childbearing based on their personal beliefs. Decisions about contraception, as long as they are reversible, are viewed as *makruh*, but not forbidden by the *Qur'an*. In contrast, contraception such as the morning after pill or intrauterine devices, tubal ligation or vasectomies is *haram* because of their irreversible nature (6, 14). Some Muslim women may be taking birth control pills that can affect their gingival inflammatory response and induce xerostomia. The patient should be educated on how these factors affect the oral cavity and disease risk. Prevention strategies such as proper brushing and interdental cleaning in addition to salivary substitutes, if needed, should be discussed.

The *Qur'an* encourages mothers to breastfeed their children for up to 2 years of age. If a mother cannot breastfeed, surrogates will be asked to fulfil the nursing responsibilities. Breast-

feeding requires a higher caloric and nutrient intake to sustain mother and child. As in all cultures, the mother must practise nutritious eating for the health of her child and herself. Medical and dental providers should provide nutritional counselling to Muslim women of childbearing age to instil valuable information about nutrition, the ill effects of an unbalanced diet and inadequate exposure to sunshine. Breastfeeding also keeps hormone levels higher than in women who are not breastfeeding; therefore, oral care providers need to assess mothers for hormone-related gingivitis and periodontitis (1). Alwaeli and Al-Jundi studied the perception of periodontal disease awareness among pregnant women and its relationship with sociodemographic variables in Jordan. Of the 275 pregnant women surveyed, 56% did not believe that the frequency of tooth brushing should be increased during pregnancy and pregnancy can be adversely affected by gingival diseases (35). This study reflects the lack of dental education and care that some Middle Eastern populations receive. Middle Eastern patients living in the United States may not possess correct knowledge on how oral conditions directly impact their systemic health or the health and success of the foetus.

Muslim parents raise their children according to *Qur'an* scriptures explaining the importance of about self-restraint, respect and dedication to God and family. From the Book XXI of Ihya' 'Ulman al-Din, 'If it is habituated to and instructed in goodness then this will be its practice as it grows up, and it will attain to felicity in this world and the next; its' parents too and all its' teachers and preceptors, will share in its' reward' (18). Raising a child according to Islamic scripture means to instruct a child to watch the behaviours of a proper Muslim (i.e. from their parents) and then grow to practise those habits for themselves. Often times, when a child has chosen to do something bad, it is sometimes best to not embarrass the child, which may encourage the child to perform that act again in future. If the child is spoken to by the parent on rare occasions, it may make a lasting impression on the seriousness of the offense (18).

To abide by this childrearing theory, Muslim parents may discipline a child and the child is expected to accept the punishment with grace and dignity (18). Childrearing theories related to the *Qur'an* teaching emphasis are placed on healthy eating habits, never overindulging in foods and proper bodily hygiene, only shown through the daily example of parents and family members (18). Children who practise overeating, slouching or even excessive talking can be viewed as lazy, which is very undesirable trait in Muslim culture.

Dental professionals should reinforce the teachings of nutrition and oral hygiene by reviewing with parent and child, appropriate oral hygiene practices such as avoiding carious foods, controlling the bacterial load and practicing proper brushing and interdental cleaning techniques and daily fluoride use for increased health and wellness. These instructions should be initiated with the mother or caregiver of the child at birth and continue with child until adulthood.

Once the child turns 7 years of age, formal guidance and discipline will be provided and a child is expected to begin the practices prayer and Islamic lifestyles if they have not already begun them. Muslim parents instil the values and practices of Islam in their children from age 7 to 14. When the child reaches puberty, the child is expected to don traditional clothing and practise the religious behaviours of their parents and relatives. After the child turns 14 years of age, the child will assume the role of an adult, maintain their own health and supervise and assist with the care of ageing parents (6). If treating adolescent Muslim patients, dental providers should direct instruction towards the teenager, while still including the parents. Information should include the importance of good oral and bodily hygiene and care as well as the ill effects of practicing unhealthy behaviours such as tobacco use and oral cancer, caries and periodontal disease risks.

Critical health care

Although men, women and older children are left to make their own healthcare decisions, when issues of critical illness or extensive treatment arise, the immediate family participates collectively in the decision-making process. Muslim families may dictate whether treatment will be carried out at all or to what extend the care will be given (17). With situations of severe illness or disease, healthcare providers should discuss treatment options, risks and benefits with elder family members only, without the patient present (17). The rationale behind keeping the terminally ill patient out of any medical discussions relies on the theory that keeping patients unaware of the severity of disease maintains their mental health as long as possible.

Elderly people tend to feel strongest about Muslim healthcare traditions. Healthcare and dental professionals may find it hardest to interact with elderly patients, which often results in low levels of satisfaction for patient and provider (16). If a patient becomes too ill to make medical decisions for themselves, the responsibility of choosing healthcare treatments will be left to a grown male son; if a grown son does not exist in the family, the patient's father, brother or uncle will make the medical decision regarding their health care (15, 16). In Islam, there is no concept of last rights for a dying patient. Death is considered final when the heart beat and breathing have stopped, or when mental function has ceased. Muslims do not believe in 'do not resuscitate' orders; Muslim families expect healthcare professionals to do everything within their power to maintain life for their patient (6, 17, 18). These beliefs may conflict with traditional American medical practices such as HIPPA; however, to provide the best provider–patient relationship, prior communication along with informed consent should be documented. Although dental professionals do not encounter life and death situations, some families still practising traditional hierarchies may expect elder men to decide on which treatments the patient will receive.

Pilgrimage and infectious diseases

One major health concern when treating Muslim patients is their travel. At least once in a lifetime, Muslims must travel to

Mecca (*hajj*) to fulfil a pillar of Islam. Some visit Mecca more often if financially able. Travelling to Mecca can be a health risk. Muslims are expected to have full medical evaluations and vaccinations prior to their departure to ensure safe travels. Documentation affirming their cleared health status is needed to travel to Mecca.

Mecca attracts over 2 million Muslims annually (19), where large group rituals are conducted in very close proximity to many people. With high numbers of Muslims in small areas for hours at a time, infectious diseases such as tuberculosis, meningitis, hepatitis, influenza, yellow fever, typhoid, malaria and polio can be transmitted. Unsanitary restrooms or close sleeping accommodations provide further opportunities for disease transmission. Patients who have recently returned from Mecca may be carriers of infectious diseases. Standard precautions and careful health history assessment are paramount. It is a standard of care for dental providers to update health histories at each appointment and monitor concerns and health risks. If the patient reports that he/she will be travelling to Mecca, discussions should include behaviours to minimize infection risk. Reviewing simple precautions such as effective hand washing, ingesting bottled water only, use of medical masks in confined areas and proper vaccinations prior to travel will reduce risk of disease transmission.

Table 4. ***Halal* and *Haram* foods**

Halal foods	*Haram* foods
Proteins	
*Chicken, beef, lamb and seafood	Any and all pork or pork by-products
Eggs, bean lentils	Meats not prepared in *Halal* tradition
Dairy	
All milk, yogurt, cheese, butter, vegetable margarine and vegetable oils	All animal fats, lard, animal drippings, butters made from animals
Fruits	
All fruits	Fruits cooked in animal fats
Vegetables	
All vegetables	Vegetables cooked in animal fats
Others	
Breads, cereals, soups, desserts and beverages	Made with animal fats or alcohol
Animal fats	
All animal fats, lard, animal drippings, butters made from animals not prepared in the *Halal* manner	Alcoholic beverages

*As long as it is prepared in a *halal* manner.

Dietary practices of muslims

Proper nutrition directly impacts the oral health of all patients. If a patient is deficient in certain nutrients such as proteins, vitamin C, vitamin B and vitamin A, then they may be at risk for immunosuppression, poor bone health and tooth loss. Sunlight is absorbed through exposed skin of the women's face and hands as long as they are uncovered; however, for those Muslim women who wear gloves and a *naqab*, absorption may be low and place them at risk for vitamin D deficiencies and osteoporosis. Muslim patients practise strict dietary rules dictated by the Islamic faith; these practices may pose a risk for nutritional deficiency and higher risk for poor oral health (Table 4). Muslims will only eat *halal* prepared food; some areas of the country it may be difficult to find meats prepared in the proper *halal* manner, so many Muslims will eat seafood, which is always considered to be *a halal* meat. If a Muslim man or woman is not practicing proper dietary guidelines, health issues may arise especially if pregnancy or fasting during Ramadan occurs. It is best to have a clear discussion with each patient about dietary practices to ensure proper nutrition.

Customs during *Ramadan*

The ninth month of the Islamic lunar calendar, Ramadan is a month of spiritual consciousness and social responsibility for fulfilling one's fasting and charity obligations, two of the five fundamental pillars of Islam (Table 1). During this month, Muslims believe the Prophet Muhammad received the Holy *Qur'an* from *Allah*. Muslims fast during *Ramadan* to increase self-control over all bodily senses, spirituality, empathy towards the dispossessed and clarity of mind. Devout Muslims believe that those who fast will be rewarded from *Allah* with all previous sins being forgiven (20). The *Qur'an* teaches that 'whoever fasts during Ramadan out of sincere faith and hoping to attain Allah's rewards, then all his past sins will be forgiven'. Along with fasting, the act of *zakat* (charity) is also practised at this time; Muslims living in Arab countries give monies to poor individuals or charitable organizations that care for the poor. Muslims practicing and living outside of Arab countries donate to Muslim foundations for the care and assistance of less fortunate Muslims (21).

Ramadan requires abstention from eating, drinking and sexual relations from dawn to dusk (22). Muslims must awake before sunrise to ingest their predawn meal (*sahoor*), particularly difficult when *Ramadan* takes place during the hot days of summer, they will eat and drink again only when the sun sets. Owing to the length of time, Muslims may go without eating and drinking, it is typical for them to pray, read the *Qur'an* and rest. Muslims must avoid immoral behaviour and anger and practise only compassion towards others at this time (22).

Every adult and healthy Muslim must practise *Ramadan*; this includes everyone over the age of 13. Persons exempt from fasting are pregnant women, women who are menstruating, diabetics, elderly and the ill. Menstruating women must fast at a future time of her choice to make up for times not fasting during *Ramadan*.

Muslims celebrate *Eid-al Fitr*, a thanksgiving celebration to signify the completion of Ramadan (23) and the opportunity to obey *Allah*. The root word *Eid* means 'he returns or the time

Table 5. **Rules for sacrificing an animal for *Eid***

1. Purchase the animal from a humane breeder. Abused animals are prohibited (27) Typical animals used in these celebrations are lamb, goat and camel
2. Treat the animal with compassion and kindness It is important to give the animal water and let it feel at peace before sacrificing
3. Never slaughter an animal in front of other animals It is forbidden to inflict emotional pain or physical suffering on animals and this will terrify other animals
4. Use a sharp knife to slit the jugular vein of the animal; the animal will die quickly and with little pain. Utilizing knives that are dull, nicked, serrated or short are considered tortuous (27)
5. Do not move the body of the animal from the site of the sacrifice until the animal is completely dead (27). Moving an animal while still alive may inflict pain

Table 6. **Guidelines for *Eid-al Fitr* preparation**

1. Wake up early
2. Prepare for personal cleanliness
3. Take a *ghusl* (bath)
4. Clean mouth
5. Don best clothing owned
6. Use perfume (men only)
7. Have breakfast before leaving for prayer
8. Pay *zakat* (charity to poor) when paid during Ramadan is called *zakat al fitr*, which must be paid before the EID prayer
9. Go to prayer ground early
10. Offer *Salat al-Eid* in congregation in an open place except when weather does not permit
11. Use two separate routes to and from the prayer ground
12. Recite the *takbir* on the way to *salat* and until the beginning of *Salat al-Eid*

of return of joy and of grief'. Animals are sacrificed after the celebration of *Eid-al Adha*, according to Islamic law (Table 5) (24). Keeping with traditions of the Prophet Muhammad, Muslims are expected to prepare themselves for *Eid* (Table 6).

Fasting lowers blood sugar, cholesterol and systemic blood pressure; however, it is always in the best interest of the patients' health to advise the patient to consult a physician whether fasting places the client at risk (22). During *Ramadan* daytime hours, fasting persons may appear irritated and/or slightly confused because of the low blood pressure and sugar levels (16), lack of caffeine, lack of nicotine or atypical medications typically taken during the daytime schedule. The dental hygienist should discuss medications and doses with Muslim patients before any treatment is performed and consider that patients may skip prescribed medications when fasting. For Ramadan, physicians and dentists should prescribe medication, so that it can be taken between dusk and dawn. When emergency dental care is necessary, the appointment may need to occur after sundown. Given the restricted eating schedules during *Ramadan*, patients will be more cooperative and involved if their appointments are after sundown. It may be best for both parties to avoid scheduling appointments during *Ramadan*.

Dental care

Fasting and xerostomia may contribute to a common noticeable oral malodor from increased sulphur contents, which may mislead a clinician to misdiagnosis the patient with having poor oral hygiene or oral disease. During *Ramadan*, the faithful are expected to complete oral cleansing before sunrise or after sunset; dentifrices or mouth rinses used during sunlight hours are considered *makruh*. A Muslim who attends a daytime dental visit may be viewed as breaking the fast because of hand piece water, prophylactic pastes and water to rinse. Even the administration of topical or local anaesthetic agents, dental sealants or fluoride therapies may be viewed as breaking the fast. Devout Muslims may even believe that routine practices consisting of oral examinations, intraoral toothbrush demonstrations or swallowing water is *haram*, if any of the products that enter the mouth are swallowed during times of fasting. It may be best to discuss the necessary dental routine before scheduling the patient or schedule the patient after sunset times or at times other than during *Ramadan* to avoid conflict.

Some Muslim patients practise traditional methods of oral cleansing with *miswaak* (*also called siwaak*) twigs prior to praying (Fig. 5). The use of the *miswaak* twig is mostly attributed to religious, cultural or socioeconomic reasons (28). *Miswaak* branches are harvested from the Arak tree (*Salvadora Persica*), which grows mainly in Middle Eastern climates (Fig. 6) (25). Twigs are cut into six-inch sections, and the outer bark is peeled back by the patient's finger nails to expose the inner portions of the branch (26). The patient chews on the end of the branch to fray the edge until it resembles a brush and then cleanses the oral cavity (Fig. 7).

Miswaak sticks contain cleaners such as sinigrin, sodium chloride, sodium bicarbonate, potassium chloride and calcium oxalate; astringents such as gallic acid and volatile oils, which

Fig. 5. A *miswaak* twig used for oral cleansing in Muslim cultures. Note frayed, brush-like end. Used with permission from Carmelo Barrios Padrino, BSDH, Gene W. Hirschfeld School of Dental Hygiene, Old Dominion University, Norfolk, VA, USA.

Fig. 6. The *salvadora persica* tree for harvesting *miswaak* twigs. Picture courtesy of http://abtrenewal.wordpress.com/2009/11/26/what-if-the-church-was-like-a-weed/.

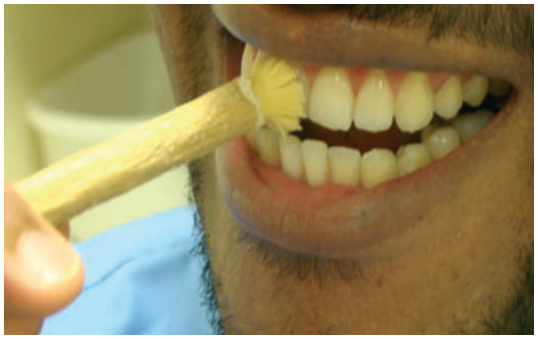

Fig. 7. Oral cleansing utilizing the *Miswaak* Twig. Used with permission from Carmelo Barrios Padrino, BSDH, Gene W. Hirschfeld School of Dental Hygiene, Old Dominion University, Norfolk, VA, USA.

some believe strengthen gingival tissues, are also naturally found in miswaak twigs (28). Although the twig contain antimicrobial and plaque inhibitory effects (29–32), a fair amount of recession can occur on the periodontium and dentition from the twig's frayed ends (28–30), or the patient may develop with gingivitis and periodontitis if the *miswaak* twig is used improperly, similarly compared to when a toothbrush or oral aid is used incorrectly. The use of the *miswaak* twig for oral hygiene is comparable or slightly better than tooth brushing because of its natural bacterial growth inhibitory effects (28) The inhibitory antimicrobial effects of the *miswaak* were most affective against *P. gingivalis*, *A. actinomycetemcomitans*, *H. influenzae* and less affected on *S. mutans* and *L. acidophilus* when tested in agar plates (32). Toothpaste is not used with *miswaak* twigs, so no fluoride is obtained from this oral self-care regimen. Therefore, persons utilizing this method of tooth cleaning may exhibit oral malodor, extrinsic tooth stain, caries and periodontal disease if the twig is not used frequently or properly. Dental professionals should review *miswaak* twig use with patients to ensure proper use, angulation and control to avoid gingival destruction and increase bacterial plaque removal (Fig. 7).

Along with the use of the *miswaak* twig for oral cleansing, Muslims incorporate Islamic practices into oral product selection. Muslims view alcohol or alcohol-containing products as *haram*. Therefore, the dental professional should recommend alcohol-free products to assist the patient and support their religious beliefs. If a dental professional recommends that the patient utilizes an alcohol-containing medication, it is best to carefully explain risks and benefits before administration to increase patient compliance and facilitate education. If patient refusal occurs, informed refusal should be documented in the chart for future care planning and to minimize legal risk. New patients to the healthcare setting should be informed of standard protocol regarding informed consent and informed refusal to avoid confusion.

Western dental care for devout Muslims may not conform to the traditions of Islam; however, dental practitioners are responsible to educate patients on current evidence-based practices. When working with culturally different patients, oral healthcare perceptions, beliefs and experiences may conflict. For instance, professional oral health care in Iran was not introduced until 1997 (33, 34). Dental care in the Muslim world is evolving, but patients may not be accustomed to the standards of care in the United States. In some areas of the world such as Iran, the ratio of dental provider to patient averages around 1–5500 (33). These statistics reflect the lack of access to care that some people in developing and undeveloped countries experience. Dental professionals must use education and com-

Table 7. **Summary of healthcare practices which providers should implement while treating Muslims patients**

1.	Avoid stereotyping patients Discuss cultural beliefs before treatment to reference patient values
2.	Incorporate culturally sensitive behaviours when treating a patient
3.	Avoid prolonged eye contact
4.	Respect modesty If patient clothing needs to be removed have a full discussion prior to treatment/examination
5.	Avoiding touching a Muslim patient unless necessary for examination or treatment
6.	Discuss severe illness or disease with the elder family members. Permission should always be obtained from patient and documentation should reflect all conversions held between the provider, family members and patient
7.	Incorporate education for both parent and child to increase healthy homecare behaviours
8.	Review practices to avoid disease Include health prevention education during treatment visits
9.	Discuss recent or expected travel plans for Arab patients Discuss the risk involved in disease transmission and practices to prevent infectious diseases
10.	Respect and understand the dietary habits of Muslim patients Incorporate cultural knowledge into the process of care
11.	Immigrants to the United States may not be familiar with Western standards in dental care Spend time discussing current patient habits and evidence-based research to increase patient knowledge and adherence to professional recommendations
12.	Education and communication increase patient/provider success

munication to help increase dental literacy and overall oral health.

Conclusions

Stereotyping Middle Eastern patients undermines patient–provider relationships. Being aware and respectful of the various practices of Muslim patients may help avoid uncomfortable situations between practitioners and patients. Table 7 summarizes practices that medical/dental providers should reference whenever treating a Muslim patient. Focusing on key factors established in Table 7 will assist in building a trusting patient–provider relationship that can result in the desired therapeutic outcomes.

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