

Impact of Religion on Food and Nutrition

Sivakumar J T Gowder¹

Abstract

Food, shelter, and clothes are essential factors for human life. Food and nutrition are necessary for human health and well-being. Food is responsible for human growth, providing energy and developing the immune system, thereby protecting human health. Even we can treat 95% of diseases through proper and healthy food. Education on food and nutrition plays a crucial role in adopting a healthy lifestyle in this modern society. In addition to education, religion plays a vital role in food and nutrition, shaping our culture through cultural norms and ethical values. All religions have their dietary guidelines that are concerned with their religious significance. Religious fasting practices are helpful in keeping our bodies healthy through reliable metabolic activities. All religions preach to people about the importance of food sharing and the complications of wasting food. In this article, we can understand the role of religion on food and nutrition in our human society that can help health care professionals to provide common dietary guidelines that will be beneficial to our society.

Keywords: *Religion, Dietary Practices, Nutrition, Fasting, Cultural Sensitivity.*

Introduction

Food is a fundamental human need, essential for survival and prosperity. Its abundance signifies well-being, while its absence leads to devastation. Food symbolizes the "good" through acts like feasting or simply sharing a cup of tea, carrying significant cultural and social value. Offering food is a tangible way to endorse and preserve what is valuable, highlighting our deep dependence on this basic necessity. (Valley, et al. 2016).

Food holds profound symbolic meaning across various cultures and religions, connecting humans to the ultimate source of life. In many traditions, food is seen as a physical manifestation of the divine. For instance, in Hinduism, food (anna) is viewed as an expression of the Goddess Anna. It is offered to deities and returned as prasād, sanctified by divine power. In Catholicism, bread transforms into the body of God during Mass. Indigenous traditions often see food as inseparable from the spirit that animates life. In Abrahamic religions, food symbolizes a partnership with God, requiring both divine blessing and human effort. Jainism, which seeks liberation from the cycle of birth and death, views food as a symbol of life and social connection, ultimately to be mastered and renounced. The ethical procurement and distribution of food are paramount, as they embody sacred sustenance (Valley, et al. 2016).

Major Religious Groups - World Wide

Christians are the largest religious group globally, followed by Islam, which is the fastest-growing religion. Hinduism, Buddhism, and Sikhism come next as shown in Table 1. The religious composition of 198 countries and territories has been estimated for the year 2020. (Chouraqui, et al. 2021).

Table 1: The estimated distribution of the world's major religious groups is presented mainly for ranking purposes, not for providing precise numbers. The data are given as percentages of the total population and in brackets as the number of individuals in millions

Religion and Food

Dietary habits, cultural differences, and food acquisition methods vary individually. Eating attitudes encompass all knowledge, feelings, views, and behaviors related to food consumption. Eating behavior is complex, influenced by central and environmental factors affecting motor, cognitive, social, and emotional development. This is shaped by perceptions, past food experiences, and dietary status, which include physiological, demographic, economic, social, geographical, and

¹ College of Applied Medical Sciences, King Faisal University, Al-Ahsa, Kingdom of Saudi Arabia; Email: sgowder@kfu.edu.sa.

cultural factors. From birth, socialization influences eating habits, food choices, and dining settings. Religion impacts dietary practices by attributing symbolic meanings to foods, shaping culinary cultures, and integrating food preferences into belief systems (Arslan, et al. 2020).

Many societies have specific norms and taboos related to food, often tied to group and individual identity. These practices can serve adaptive functions, such as avoiding toxins during pregnancy or demonstrating commitment to the group (Major Smith, et al. 2023).

Religious beliefs often manifest in dietary practices, reflecting one's faith. Most religions have specific dietary guidelines or instructions, detailing what, how, and when to eat or avoid certain foods. As noted by (Blix, et al. 2001) in “Religion, spirituality and a vegetarian dietary,” food and religion have been interwoven since civilization's dawn. Despite varying cultural practices, the link between bodily nourishment and spiritual sustenance is universal. This connection persists in both developed and developing countries, influencing large segments of their populations (Sabaté, et al. 2004).

Religious Dietary Laws and Guidelines

Judaism

Kosher Dietary Laws

Jewish dietary laws, known as Kashrut, outline the principles of a kosher diet. These guidelines are adhered to by observant Jews, including children and sometimes even infants (Wagschal, et al. 1991 & Eliasi, et al. 2002). The regulations specify which animal products are permissible and forbidden. While these restrictions do not necessarily lead to nutritional deficiencies, the allowed animals must be slaughtered and their meat prepared according to Jewish rituals, which includes a process called exsanguination. (Chouraqui, et al. 2021).

Yom Kippur

Yom Kippur, the Day of Atonement, occurs ten days after Rosh Hashanah and involves a day of fasting. Jewish adults, including pregnant or lactating women, are expected to abstain from all food and drink from sundown to sundown. However, exceptions are made for those with health concerns, children under nine, and women during childbirth. Older children are encouraged to fast for a shorter period. While a full day of fasting can lead to mild dehydration in hot climates, it is generally not harmful to healthy individuals. Those with health concerns should consult both a physician and a rabbi (Chouraqui, et al. 2021).

Clinical evidence on nutritional impact

The intrinsic quality of the meat appears unaffected, although its iron content has not been evaluated (Farouk, et al. 2014). Blood removal during preparation may impact iron intake, particularly in individuals susceptible to iron deficiency due to illness or low income. A retrospective study indicated a higher prevalence of anemia and iron deficiency (ID) in Israeli toddlers among ultra-Orthodox Jews (Meyerovitch, et al. 2006 & Moshe, et al. 2013). This elevated prevalence likely stems from lower iron intake, linked to a vegetarian or low-meat diet and kosher meat preparation practices, compounded by socio-economic factors (Chouraqui, et al. 2021).

According to Yanovich, et al. among 221 female military recruits tested, with an average age of 19 years, 61.4% were found to have an ID linked by the authors to the low iron content in kosher meat (Yanovich, et al. 2011). Additionally, studies have indicated that salt content in kosher meat, particularly poultry, can be 2–6 times higher compared to non-kosher meat, even after rinsing and cooking (Farouk, et al. 2014 & Burns, et al. 1984). This higher salt content appears to be more associated with home-based preparation methods than with meat purchased from a kosher butcher (Glick, et al., 1985). Increased salt intake from a young age can affect blood pressure and potentially increase the risk of cardiovascular and renal diseases in adulthood (Chouraqui, et al. 2021).

In summary, adherence to Jewish dietary laws can be perceived as restrictive, prompting some observant individuals to consider deviations that may compromise their health. This could potentially result in inadequate intake of iron and/or

calcium, as well as excessive sodium consumption. Orthodox communities, particularly multiparous mothers, may be particularly susceptible to these health risks (Chouraqui, et al. 2021).

Islam

Dietary laws

Islamic jurisprudence, based on commandments from the Quran, specifies foods as either halal (permissible) or haram (forbidden).

All vegetarian dishes and kosher meat products are considered halal. Prohibited foods include alcohol, animals that die of themselves, certain quadrupeds, insects, amphibians, and reptiles (Chouraqui, et al. 2021).

Consuming something normally forbidden, like pork, is not considered sinful under necessity, such as when no alternative is available. The animal must be slaughtered swiftly, with the name of God invoked, by a person from the People of the Book (Muslim, Jew, or Christian), using a well-sharpened knife (Chouraqui, et al. 2021).

Ramadan, the fourth pillar of Islam, falls in the ninth lunar month and is observed globally by Muslims as a month of fasting during daylight hours. This obligation applies to post-pubertal individuals in good health, as confirmed by a physician, and not menstruating. Exemptions from fasting include travel, health conditions requiring continuous treatment, pregnancy, and breastfeeding. Missed fasting days, for any reason, must be made up later unless due to a permanent illness, in which case feeding a poor person for each missed day is an alternative. During Ramadan, Muslims abstain from food, drinks, and smoking from dawn until sunset, breaking their fast with an evening meal called iftar and consuming a pre-dawn meal known as suhoor (Chouraqui, et al. 2021).

Clinical evidence on nutritional Impact

Chicken meat processed according to Islamic slaughtering practices was found to have notably lower levels of both hem and non-hem iron compared to meat from conventional methods (Addeen, et al. 2014). This issue parallels concerns observed with iron intake in the context of Kashrut, albeit to a lesser extent. To date, there appears to be no research specifically addressing this issue. Furthermore, recent multivariate regression analysis indicates that religious observance negatively correlates with per capita meat consumption among Muslim populations worldwide (Chouraqui, et al. 2021).

A meta-analysis involving participants aged 18 to 58 years revealed a modest weight loss during Ramadan (-1.24 kg), which typically persisted for up to two weeks post-Ramadan (Sadeghirad, et al. 2014). Subsequent studies confirmed these findings, showing slight decreases in BMI (-1.9%, $P < 0.001$; -0.366 ± 0.371 kg/m², $P < 0.001$) and body fat (-0.6%, $P = 0.9$; -0.484 ± 0.597 kg, $P < 0.001$), but no significant change in lean body mass. These changes returned to baseline levels within a few weeks (López-Bueno, et al. 2014 & Fahrial Syam, et al. 2016).

In another study involving 9 pre-teen and 9 teenage boys, weight and BMI increased significantly during Ramadan and the subsequent two weeks (37.9 ± 7.9 vs 36.8 ± 7.4 kg, $P < 0.01$ and 55.9 ± 10.5 vs 53.9 ± 10.5 kg, $P < 0.01$). This increase was linked to slightly higher energy and fat intake at iftar, reduced physical activity, and shorter sleep durations (Farooq, et al. 2015)

Overeating during iftar or suhoor meals can result in symptoms such as dyspepsia, heartburn, and acute pancreatitis (OR: 2.15; 95% CI: 1.23–3.8; $P = 0.01$) (Abolaban, et al. 2017 & Drozdinsky, et al. 2018).

A prospective study in Saudi Arabia involved 400 patients with diabetes (40 with type 1 and 360 with type 2) who fasted during Ramadan. It found that hypoglycemia occurred in 65% of type 1 diabetic patients and 14.7% of type 2 patients. Despite experiencing hypoglycemia, 15.4% and 29.3% of type 1 and type 2 diabetic subjects, respectively, continued fasting. A cross-sectional multicountry observational study reported that 16.8% of 1,759 diabetic patients experienced hypoglycemia, predominantly those with type 2 diabetes (Beshyah, et al. 2019). Hypoglycemia was more frequent among type 1 diabetic patients, and fasting was interrupted in only 67% of affected patients. Therefore, adjusting medication timing to non-fasting hours or opting for long-acting formulations may be advisable (Abolaban, et al. 2017 & Grindrod, et al. 2017)

A meta-analysis of 22 studies involving 31,374 pregnancies, where 60.3% of participants were exposed to Ramadan fasting, found that maternal fasting did not impact birth weight or the rate of preterm births (Glazier, et al., 2018). In Ankara, 52% of lactating mothers observe fasting during Ramadan (Ertem, et al. 2001). Another study in Turkey revealed that daily energy and nutrient intake among fasting lactating mothers often fell below recommended dietary reference values for this population, except for protein, vitamin A, and vitamin C (Rakicioglu, et al. 2006). However, no adverse effects on infant growth were observed, although concentrations of magnesium, zinc, and potassium in breast milk decreased significantly, often below normal values.

Separately, unrelated to dietary practices but linked to Quranic dressing codes, women's vitamin D status may be a concern (Grabowski, et al. 2017). Among 1,981 Chinese lactating women, Muslims were found to be 13.4 times more likely to be deficient in vitamin D compared to Hans (95% CI: 5.8–30.7, $P < 0.001$) (Pang et al., 2016). Similarly, in veiled Turkish female students, the prevalence of vitamin D deficiency was 55% compared to 20% in unveiled students ($P < 0.01$), with the covered group also showing higher BMI values (24.0 ± 4.0 vs 22.3 ± 3.1 kg/m², $P = 0.02$) (Buyukuslu, et al. 2014).

In summary, adherence to Islamic dietary laws may heighten the risk of insufficient iron intake. When evaluating these risks, socioeconomic factors should also be taken into account. Vitamin D deficiency due to reduced sun exposure is another concern. While fasting during Ramadan is obligatory only for healthy post-pubertal adolescents and adults, many Muslims with acute or chronic medical conditions opt to fast, potentially impacting their health adversely (Chouraqui, et al. 2021).

Christianity

Dietary Practices

In contrast to Islam and Judaism, Christianity has fewer dietary rules and customs. Within Catholicism, there are 23 distinct Churches or Rites—predominantly the Western (Roman or Latin Rite, 98%) and 22 Eastern Rites. The Catholic Church prescribes abstinence and fasting during specific periods, particularly during Lent (starting 40 days before Easter Sunday). On Fridays, commemorating the Passion of Christ, Catholics over 14 years old are expected to abstain from non-lean foods, typically refraining from most meats. Instead, fish and seafood often become the main dish on these days, and some devout Catholics opt to be vegetarian. Fasting is required for healthy adults during specified times (Chouraqui, et al. 2021).

In contrast, most Protestant denominations do not enforce food laws, question the restrictions on meat, and do not distinguish between "fat days" and "lean days."

Seventh-day Adventists primarily adhere to a lacto-ovo vegetarian diet, which, when balanced, poses no adverse nutritional effects. They also advocate following kosher laws (Chouraqui, et al. 2021).

Orthodox Church. The Orthodox Church includes various regional forms such as Ethiopian Tewahedo, Greek Orthodox, Russian Orthodox, Serbian Orthodox, and Ukrainian Orthodox. Practicing Orthodox Christians adhere more rigorously to periods of abstinence, totaling 180–200 days annually, which include two Lenten periods before Christmas and Easter. Greek Orthodox believers abstain from meat, fish, dairy products, olive oil, and eggs during these times, typically consuming bread, fruits, legumes, nuts, seafood, snails, and vegetables. This dietary practice has been associated with lower body mass, total cholesterol, LDL-C, and LDL-C/HDL-C ratio (Trepanowski et al., 2010). Additionally, the consumption of strangled animals and blood is prohibited by the Greek Orthodox Church.

In Ethiopia, where 44% of the population follows Orthodox Tewahedo Christianity, adherents observe over 200 days of fasting or abstinence annually. This includes abstaining from all animal-derived foods and sometimes even fasting from all food and water. While lactating mothers are exempted from these regulations, some choose to follow them. Similarly, although children are not required to fast, some mothers avoid cooking animal-derived foods to prevent contamination of shared cooking utensils used for family meals (Chouraqui, et al. 2021).

In the Church of Jesus Christ of Latter-day Saints, approximately one-third of Mormons practice regular fasting, which has been associated with lower body weight, reduced fasting glucose levels, and a lower prevalence of diabetes and coronary artery disease (Chouraqui, et al. 2021).

Dietary restrictions among Jehovah's Witnesses include abstaining from blood and dishes prepared with blood, as well as avoiding raw or rare meat.

Rastafarian beliefs, rooted in Judaism and Christianity, prohibit the consumption of pork, crustaceans, alcohol, and sometimes tea and coffee. Most Rastafarians follow a vegetarian or vegan diet, emphasizing foods free from artificial coloring, flavoring, or preservatives (Chouraqui, et al. 2021).

Clinical evidence on nutritional Impact

A study involving 650 non-Hispanic White Adventists aged 30 years found that all vegetarian groups (lacto-ovo-vegetarians, pesco-vegetarians, and vegans) had lower adjusted prevalence ratios for hypertension, high total cholesterol, high LDL-C, obesity, abdominal adiposity, and cardiovascular disease compared to non-vegetarians (Matsumoto, et al. 2019). Overall, Adventists exhibited lower body weight compared to other religious groups (Yeary, et al. 2017). Additionally, some Adventists practice consuming their last meal of the day in the afternoon, leading to an extended overnight fast that may contribute to weight loss and reductions in baseline plasma glucose and insulin levels. (Patterson, et al. 2017).

In a recent study, which included 30% of fasting mothers, it was found that the prevalence of underweight, defined as a body mass index (BMI) <18.5 kg/m², was 50.6% among fasting mothers compared to 25.9% among non-fasting mothers (P < 0.05) (Desalegn, et al. 2018).

Similarly, the weight-for-height and height-for-age Z-scores for children aged 6–23 months born to fasting mothers were significantly lower (P < 0.01) compared to those born to non-fasting mothers (Desalegn, et al. 2019).

In summary, most Christian dietary practices are not restrictive and generally do not pose significant nutritional risks, except during periods of prolonged fasting or abstinence Chouraqui, et al. 2021).

Hinduism

Dietary habits

The Hindu diet encompasses various traditions, reflecting a belief in the equality of all living beings. Many Hindus avoid meat, fish, and eggs, opting instead for milk products, which aligns with lacto-vegetarianism. Cows, revered as sacred to the Hindu goddess Bhoomi and considered maternal and nurturing figures, are not consumed. When planned thoughtfully, a vegetarian diet can provide adequate nutrition for both adults and children. However, there may be concerns regarding potential deficiencies in vitamin B12, iron, zinc, selenium, and n-3 fatty acids. (Van Winckel, et al. 2011; Craig, et al. 2010; McEvoy, et al. 2015 & Elorinne, et al. 2016).

Certain communities observe numerous fasting days and designated periods in their calendar, often restricting their diet to plant-based foods (Chouraqui, et al. 2021).

Clinical evidence on nutritional Impact

A national survey conducted in India among 641,642 adult non-pregnant women revealed that the prevalence of undernutrition (BMI < 18.5 kg/m²) and iron deficiency anemia (hemoglobin level < 12 g/dL) was higher (P < 0.01) among Hindus (24.2% and 53.2%, respectively) compared to Muslims (21% and 50.3%), Christians (11.4% and 37.8%), or other religious groups (14.1% and 50.5%) (Bharati, et al. 2019). There is no conclusive evidence linking these findings directly to the exclusion of animal protein or consumption of milk and curds.

A previous study indicated that communities with more restrictive vegetarian diets were more prone to developing iron deficiency anemia compared to others, including Muslims who consume halal meat (P < 0.05) (Bhatti, et al. 2007).

Vitamin B12 deficiency (serum levels < 150 pmol/L) and impaired vitamin B12 status (serum methylmalonic acid concentrations > 0.26 μ mol/L) were found in 51% of pregnant Hindu women, with 44% of their infants exhibiting vitamin B12 deficiency at 6 weeks of age (Finkelstein, et al. 2017).

Sikhism

Sikhism, a monotheistic religion originating in the Punjab region in the late 15th century, allows Sikhs the freedom to decide whether to consume meat or not. However, they refrain from eating cows and strictly avoid ritually slaughtered meat, such as halal and kosher meat. The majority of Sikhs follow a lacto-vegetarian diet, and alcohol consumption is prohibited (Chouraqui, et al. 2021).

Buddhism

Dietary Principles

There are no set prescriptions for food restrictions in Buddhism, except that monks and nuns should not eat after noon. Under the concept of not harming, many Buddhists follow a lacto-vegetarian diet, and alcohol is strongly discouraged (Chouraqui, et al. 2021).

Clinical evidence on nutritional Impact

In a comparative study of 54 Korean Buddhist vegetarian nuns and 31 omnivorous Catholic nuns, higher values were observed in body weight, fat-free mass (44.5 vs 41.8 kg, $P = 0.013$), body fat (13.8 vs 11.7 kg, $P = 0.037$), and BMI (22.6 vs 20.7 kg/m², $P = 0.10$) among the Buddhist nuns (Lee et al. 2009). However, this association may be influenced by a confounding factor, as body fat was found to be inversely correlated with the duration of vegetarianism (P for trend = 0.043). There were no significant differences in vitamin B12 and iron status between the two groups (Lee, et al. 2011).

In another study, postmenopausal Taiwanese women practicing long-term vegan Buddhism were found to have a higher risk of exceeding the lumbar spine fracture threshold (adjusted OR = 2.48, 95% CI = 1.03–5.96) and being classified with osteopenia based on femoral neck bone mineral density measured using dual-photon absorptiometry (adjusted OR = 3.94, 95% CI = 1.21–12.82) (Chiu, et al. 1997). Conversely, a Vietnamese study found no significant difference in bone mineral density between vegan Mahayana Buddhist nuns and omnivorous postmenopausal women, despite vegans having much lower dietary intake of calcium and protein (Ho-Pham, et al. 2009).

In summary, the nutritional adequacy of dietary practices in Indian religions depends largely on the extent of food restrictions within the vegetarian diet. Lacto-ovovegetarian and lactovegetarian diets generally do not pose adverse health effects, except for potential deficiencies in iron, when well balanced. However, a vegan diet may lead to deficiencies in calcium, iron, and vitamin B12 (Chouraqui, et al. 2021).

Chinese culture

Dietary habits

In China, food is considered integral to disease prevention, treatment, and health maintenance. The traditional Chinese diet emphasizes starches such as rice and noodles, along with legumes and vegetables, and includes moderate amounts of meats, predominantly pork, poultry, and seafood. When these dietary principles are adhered to properly, they are generally not associated with health risks. However, there has been a shift in the structure of the Chinese diet away from traditional patterns towards one that is high in fat, low in carbohydrates, and low in fiber (Chouraqui, et al. 2021).

Clinical evidence on nutritional impact

A significant number of Chinese children have insufficient intake of calcium, iron, zinc, selenium, vitamin A, thiamine, riboflavin, and vitamin C (Wang, et al. 2017). Starting from 6 months of age, rice is typically the initial grain food introduced, with up to 88% of infants consuming it. Eggs and pork are the primary sources of protein, while half of

infants do not consume any fruits or vegetables (Yu, et al. 2016). Iron deficiency is prevalent among pregnant Chinese women as well (Ma, et al. 2002).

Nutritional Implications of Religious Food

Many religious beliefs attribute specific benefits to their dietary practices, particularly concerning nutrition and health. For instance, caffeine is often restricted or prohibited in many religions due to its addictive properties and harmful physical effects. Similarly, spices and certain condiments like pepper, pickles, or foods with preservatives are often restricted because they alter the natural taste of food (Haque, et al. 2018).

In religious ceremonies, the use of wine varies among different groups. Roman Catholics, Eastern Orthodox Christians, and certain Protestant denominations use wine sacramentally to symbolize the blood of Christ in communion services, following teachings attributed to the apostle Paul that suggest moderate wine consumption can have a soothing effect on stomach ailments. In contrast, Mormons strictly forbid wine and all alcoholic beverages due to their stimulant properties. Jews generally avoid grapes and grape products, except under specific conditions, viewing them as associated with idolatry (Haque, et al. 2018).

Tobacco, another stimulant, is universally condemned by many religious leaders and healthcare experts as a harmful substance affecting users' health. Research consistently links tobacco use to conditions such as cancer, high blood pressure, and heart disease (Haque, et al. 2018).

Marijuana, despite its potential for pain management in severe illnesses like cancer, remains restricted in most religions except Rastafarianism. Rastafarians integrate marijuana into their religious rituals, referring to it as the "weed of wisdom" and believing it contains healing properties (Haque, et al. 2018).

Additionally, in Islam, it is mandatory to slaughter animals in a specific manner before consuming their flesh. Evidence supports that Islamic methods of animal slaughter are considered scientifically sound and humane (Azizi, et al. 2010).

In Hinduism, many adherents practice vegetarianism, believing it contributes to nutritional benefits. Until recent years, the advantages of vegetarianism were largely based on anecdotal evidence rather than clinical studies. However, in the past few decades, multiple studies have suggested that adopting a vegetarian diet can lead to the following impacts (Craig, et al. 2009):

Lower body weight: A study conducted by Cancer Research UK observed that individuals who transitioned to vegetarianism over five years tended to gain less weight compared to those who continued eating meat. Vegans, in particular, showed even lower weight gain rates as they aged, in comparison to both vegetarians and meat-eaters.

Improved cholesterol levels: Researchers from the University of Toronto and St. Michael's Hospital found that a vegetarian diet comprising specific plant foods can effectively lower cholesterol levels, comparable to some drug treatments. This dietary approach reduced LDL cholesterol levels—known as "bad" cholesterol, which contributes to arterial plaque formation—by nearly 29%. The diet included components such as almonds, soy proteins, high-fiber foods like oats and barley, and a margarine enriched with plant sterols, found naturally in leafy green vegetables and vegetable oils.

Longer lifespan: Multiple studies indicate that vegetarians generally have a lower risk of obesity, diabetes, cancer, and cardiovascular diseases, all of which can reduce life expectancy.

Reduced cancer risk: Research suggests that vegetarians have a lower likelihood of developing various types of cancer compared to meat-eaters. For instance, a recent UK study as part of the European Prospective Investigation into Cancer and Nutrition-Oxford (EPIC-Oxford) found that vegetarians had a significantly lower overall cancer risk. However, vegetarians were observed to have a slightly higher risk of colon cancer.

Lower risk of various diseases: Numerous studies indicate that individuals who consume meat more frequently tend to have a higher propensity for developing various diseases and conditions compared to those who adhere to a vegetarian diet.

Vegetarian diets typically contain lower amounts of fat, particularly saturated fats, and are richer in fiber compared to diets that include animal-based foods. However, individuals following a vegetarian diet, like those who consume meat, should monitor their calorie intake, consumption of snacks, refined carbohydrates, full-fat dairy products, and non-meat junk food (Nordqvist, et al. 2014).

Discussion

Global migration is expanding the diversity of cultural and religious practices within populations, prompting healthcare professionals to pay closer attention to potential health implications, particularly concerning nutrition. The evidence examined in this review suggests that religious dietary practices may have varying nutritional outcomes. While many religious dietary guidelines pose no nutritional risks and some offer benefits, others could have negative effects. These guidelines have ancient origins, established over millennia in vastly different environmental contexts, and their actual impact on health remains debated (Brammli-Greenberg, et al. 2018; Yeary, et al. 2017; Ahrenfeldt, et al. 2017 & Pew Research Center, 2019), especially given their adherence levels that vary according to religiousness. In certain religions such as Orthodox Judaism, and Ethiopian Orthodox Christianity, and among devout Muslims, those who adhere most strictly to dietary rules may face greater risks of nutritional deficiencies. However, assessing the extent of adherence to these guidelines across the global population remains challenging, despite widespread religious affiliation (Chouraqui, et al. 2021)

Observational studies do not establish a direct cause-and-effect relationship between religious dietary guidelines and nutritional imbalances. While several studies highlight a higher prevalence of nutritional deficiencies in certain religious communities, factors such as socio-economic status and co-existing conditions (like obesity) often confound these findings. Globally, religious affiliation correlates with socioeconomic status, influencing disparities in education and wealth across different national contexts (Chouraqui, et al. 2021).

Generally, low socio-economic status significantly influences malnutrition, undernutrition, and obesity in developed countries. It is also associated with poorer adherence to national dietary guidelines (Van de Poel, et al. 2008; Bhutta, et al. 2017; Black, et al. 2013 & Alkerwi, et al. 2015). These relationships are intricate and multifaceted. For example, in rural India, children and women from the poorest households are 2.9 times more likely to experience malnutrition compared to those from the wealthiest quintile. However, even at similar wealth levels, Hindus and particularly Muslims tend to have higher rates of malnutrition compared to other religious groups (Chouraqui, et al. 2021).

Among the risks associated with nutritional inadequacies or malnutrition, iron deficiency (ID) poses a particular concern among some individuals who strictly adhere to vegetarian or vegan diets. ID can arise from the avoidance of blood-containing meat and is exacerbated by a lower intake of meat, fish, or poultry, particularly among economically disadvantaged populations. Religious beliefs and per capita income both influence meat consumption patterns (Milford, et al. 2019). Interestingly, adverse outcomes appear more closely tied to deviations from dietary rules due to misunderstandings of the rules or a preference for simpler methods of compliance (Chouraqui, et al. 2021).

Certain dietary laws also bring associated benefits. For instance, abstaining from alcohol, as practiced in the Mormon Church, Islam, Hinduism, and Sikhism, offers personal and public health advantages (Le Dare, et al. 2019). However, adherence to improperly balanced vegetarian or vegan diets can pose risks such as reduced intake of iron and vitamin B12, and lower bone mineral density. Conversely, over the long term, vegetarian diets may help reduce elevated blood pressure, body fat mass, blood glucose, or plasma lipids, although they may increase the risk of stroke (Dinu, et al. 2017; Rocha, et al. 2019; Glenn, et al. 2019 & Tong, et al. 2019). Meat serves as a crucial source of high-quality dietary protein and contributes significantly to the intake of iron, zinc, selenium, vitamin B12, and other nutrients, all of which can be obtained in sufficient amounts without consuming meat. Excessive meat consumption often leads to overconsumption of energy and fat and may increase the risk of colorectal cancer (Chouraqui, et al. 2021).

Fasting periods are observed for religious or spiritual reasons. It's important to distinguish between fasting, which involves abstaining from all calorie intake, and abstinence, which typically involves refraining from specific types of food, particularly meat. In Greek Orthodox practice, extended periods of abstinence are believed to confer similar benefits to those of a well-balanced vegetarian diet. Short fasting periods, such as those observed in Judaism, or alternate day fasting, as seen in Catholicism, have a minimal nutritional impact (Patterson, et al. 2017 & Trepanowski, et al. 2010)

Islamic fasting during Ramadan does not entail energy restriction and generally has a moderate or reversible effect on health outcomes (Patterson, et al. 2017; Trepanowski, et al. 2010 & Venegas-Borsellino, et al. 2018). Regular fasting practices, as observed among Seventh-day Adventists and in the Mormon Church, may yield certain health benefits (Patterson, et al. 2017). However, prolonged fasting periods, as practiced in the Ethiopian Orthodox Church, have been associated with risks of malnutrition or undernutrition (Chouraqui, et al. 2021)

Practical Recommendations

Understanding the diverse religious dietary regulations and their potential health implications can provide valuable guidance to healthcare professionals in managing populations' health. It is advisable to inquire about a patient's specific religious practices and any associated nutritional considerations sensitively, without compromising their religious beliefs. Gathering individual dietary information enables tailored management, particularly focusing on maternal and child health.

Assessing nutritional status through clinical examination, weight assessment, and BMI calculation is crucial before offering dietary advice. Balanced vegetarian diets should ensure adequate energy intake from a variety of plant-based sources and pay attention to essential nutrients such as protein, fiber, omega-3 fatty acids, iron, zinc, iodine, calcium, vitamin D, and vitamin B12 (Baroni, et al. 2018). In cases where nutrient deficiencies are suspected, such as in iron, vitamin B12, or D, biomarker measurements can guide the appropriate prescription of supplements (Chouraqui, et al. 2021).

Conclusion

The impact of religious practices on health remains a subject of debate, with limited research available on the topic (Brammli-Greenberg, et al. 2018; Grindrod, et al. 2017 & Ahrenfeldt, et al. 2017). Most dietary guidelines stemming from religious traditions followed closely for centuries or millennia, generally have no significant health implications when adhered to properly. Some practices, such as abstaining from certain foods or alcohol, can even be beneficial. However, specific dietary restrictions may result in nutritional deficiencies, particularly in socioeconomically disadvantaged populations, often due to limited meat consumption or inadequate intake of dairy products.

Healthcare providers should possess a basic understanding of how spirituality, religiosity, and personal beliefs serve as important social determinants influencing patients' health behaviors and compliance with treatments and dietary recommendations. This knowledge becomes increasingly valuable as migrant populations introduce new religious practices into countries worldwide. It enables health professionals to adopt personalized approaches when considering the necessity of nutrient supplementation, particularly focusing on nutrients like iron, calcium, vitamin D, or vitamin B12, especially among children and women of childbearing age (Chouraqui, et al. 2021).

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