

Islamic Ethics and Nutrigenomics: A Methodological Approach to Constructing a Theoretical Framework

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Abstract

Individualised nutrition based on knowledge of nutrigenomics is becoming a major scientific and health interest subject worldwide. Still, it adds a layer of complexity that may benefit and harm the social aspects of eating. In the case of advancing the knowledge of gene–nutrient interactions and other scientific disciplines, all religious communities of the world, including Muslims, have statements of principles that express the identity and commitment defining one community from others. To properly develop a religiously acceptable framework that encompasses important aspects of the Islamic tradition, indirect input from Islamic scientific philosophers, scholars, luminaries and source materials is required. Without trying to be thorough, this work addresses that need and provides new opportunities for future research and publishing in Islamic ethics, genome, and food (nature). It also analyses Muslim scholars' arguments and deliberations on the ethical framework that extends beyond the binary dichotomy between right and wrong (al-'amr bi al-ma'ruf wa al-nahy 'an al-munkar) in Islamic jurisprudence. This qualitative study utilised a range of Islamic intellectual voices to build a theoretical framework of Islamic ethics in nutrigenomics based on constructivist grounded theory as the broader research approach. Constant conversation between nutrigenomics (modern science) and Islamic ethics is suggested to help Muslims grasp this dialectic better. It is only by taking a more comprehensive view incorporating theological, spiritual, jurisprudential, and social dimensions that one can make a stronger case and construct a foundational theoretical framework to build applications of Islamic ethics in nutrigenomics. Likewise, a systematic approach to developing a framework anchored in these sources is required to properly place the area of Islamic ethics in nutrigenomics and pave the way for future research on indigenous intervention development.

Keywords: Islamic Ethics, Nutrigenomics, Theoretical Framework, Muslim, Food.

INTRODUCTION

By the turn of the 20th century, it had become evident that the repercussions of the astounding biological advances and accompanying technology would extend well beyond the bounds of scientific and clinical procedures. Nowadays, it is well-known that dietary and food ingredients impact gene expression and that genetic diversity affects nutrition (Carlberg *et al.*, 2016). Nutritional bioactive compounds and the genome interact at the molecular level to better understand how certain nutrients or dietary regimens impact human health. These breakthroughs and complex issues and concerns pertaining to technology also need extensive ethical considerations (Ghaly, 2016). Before the modern era, food ethics was primarily concerned with dietetics, defined as “the readiness to manage one’s life according to self-ordained standards” (Zwart, 2000). According to Artemis (2020), the future will see a shift in emphasis towards the prevention of illness. Knowledge of the genetic vulnerability to disease will allow identifying people with increased risk and their responsiveness to nutrition.

Consequently, unique sustenance targeting individuals, families, subgroups within populations, and humanities will be required. In the case of advancing the knowledge of gene–nutrient interactions, Artemis (2020) asserts that the community needs to develop or utilise appropriate social, ethical, legal, educational, and economic frameworks to reap the benefits of such knowledge. There is a rising interest in bioethics and food ethics in Muslim countries and many other communities. A change in emphasis from food consumption to food production is also noticeable (Al-Attar, 2017). Regarding the question of axiology, Moosa (2009) argues that nothing in Islamic teachings classifies food as good or bad, lawful or prohibited, based on the intrinsic

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properties of the food. Consequently, in times of profound uncertainty, it is necessary to map the various configurations of Islamic ethics on the connection between genetics, nutrition (environment), and social processes (Aggett *et al.*, 2005). Hence, it is essential to distinguish ethical goals from scientific methods, not to divorce them but to unite them as we should, in an approach that integrates the universality of Islamic teachings and scientific techniques. Islamic ethics are described as having excellent character, and its fundamental purpose is to make God's contentment the primary goal of human existence. At the outset of our paper, we would like to draw attention to the fact that the goal of Islamic ethics is to aid the religious community in obtaining salvation by doing their duty and behaving morally. Many Muslim luminaries place this question on the concept of *adab* (virtue, moral conduct, proper manners, dispositions, etiquette, ethics, praiseworthy quality) (Al-Ghazali, 2010; Suhrawardi, 1891). However, this paper is diminutive to discussing *adab* discourse. It may suffice and expend to quote from Ibn al-‘Arabī when he classified *adab* into *adab al-sharī‘ah* (*adab of the Law*), *adab al-khidmah* (*adab of service*), *adab al-ḥaqq* (*adab of ‘right’*), *adab al-ḥaqīqah* (*adab of essential reality*). Ibn al-‘Arabī alludes *maqām* (station) of *adab* in Chapter 168 of the *Futūḥāt al-Makkiyyah* with, “The *adīb* – the one who knows and respects *adab* – is the *ḥakīm* (wise man)” (Gril, 1993).

In short, nutrigenomics is one of the most pressing ethical issues facing Islamic, religious, and non-religious ethical traditions today (Mohd *et al.*, 2021). There are vast academic works addressing nutrigenomics from a common scientific bioethical viewpoint. However, very few publications of bioethics are available from an Islamic standpoint (Ghaly, 2019). In keeping with the Islamic tradition as one of the world's most widely practised and fastest-growing faiths, it is only proper to deliberate the Islamic ethics. Various Muslim perspectives and arrangements have explained the ethical values in medicine (Rahman, 1998; Padela 2007), bioethics (Atighetchi, 2007; Al-Bar and Chamsi-Pasha, 2015), economics (Chapra, 2009), ecology (Ramadan, 2009). Each provides its own approach, technique, and history, and each vies for scholarly and public attention. However, there are very few specialised publications on integrated topics like genetics, food or nutrition, and Islamic ethics.

Nutrigenomics broadly encompasses but is not limited to a set of ethical concerns raised by cutting-edge genomic technologies, to which the Islamic tradition would ordinarily respond by providing immediate and short-term solutions through an ethical examination of specific applications such as genomic testing, RNA analysis, genetics of chrononutrition, nutrients and gene expression in diseases, and many others. The whole spectrum is often accomplished by using instruments from the field of Islamic jurisprudence. What is currently missing from research in this field is a foundational theoretical framework upon which to build applications of Islamic ethics in nutrigenomics. We emphasise that the Islamically ethical use of genetically-based dietetic recommendations must be founded on a well-understood theory of the spiritual, intellectual, jurisprudential, and social dimensions. By merging the social dimension into Islamic ethics discourse on genomics and nutrition, individuals may reach complete and enlightened deliberations that consider not just the “ought” but also the “is”, which is frequently referred to in Islamic literature as *ahwāl al-nās* (people's realities). In our opinion, scrutinising *ahwāl al-nās* and integrating them into the contemporary Muslim culture discourse cannot be accomplished just via surveying.

SCOPE AND METHODOLOGY

Haverkamp and Young (2007) asserted that research methodologies are placed within epistemological and ontological perspectives and the philosophy of science. The Islamic paradigm has its own epistemology and ontology, which may seem to be interpretive or constructivist from the outside. However, the lived reality of Islam, as embodied in the life of Prophet Muhammad (PBUH) and transmitted through the scholarly tradition of the Muslim ummah (global community), can undoubtedly be said to incorporate constructivist approaches to social phenomena as Muslims struggle to make sense of how to apply religious tenets to daily life (Al-Sharaf, 2013). This is represented in the different *madhābīb* (schools of thought) equally acceptable within the tradition and the historical precedence for diverse interpretations and viewpoints of Islamic principles in practice (Al-Alwani, 1993). This dimension of the phenomena, i.e., nutrigenomics under investigation in this study, includes a range of Islamic scholarly voices in developing a theory of Islamic ethics and justifies the use of constructivist grounded theory as the methodology that comprises the larger research. To successfully construct a religiously

suitable framework that includes major features from the Islamic tradition, it is critical to establish the framework for an Islamic paradigm of nutrigenomics with indirect input from Islamic scientist philosophers, Islamic scholars, and source materials (Yusoff, 2023). Individuals who have devoted their lives to studying and comprehending the meanings and knowledge contained in Islamic sources, as well as those who work closely with the Muslim community and possess knowledge about the relationship between Islam and science, hold the keys to information and insight gained through their unique experiences (Rothman, 2022).

Currently, this unique brand of insight and understanding is unavailable elsewhere since the area of Islamic bioethics and nutrigenomics in the Muslim culture is still relatively new in the academic and scientific circles. As a result, there is no pre-existing theory upon which to build while developing this particular discipline. Likewise, a systematic approach to developing a framework anchored in these sources is required to properly place the area of Islamic ethics in nutrigenomics and pave the way for future research on indigenous intervention development. Therefore, to contextualise the discourse over the intersection between Islamic ethics and nutrigenomics, the following sections delve into the general conceptualisation of nutrigenomics, contemporary Muslim views on developing an interdisciplinarity method, and Islamic ethics on nutrigenomics by emphasising some of its distinguishing aspects and some ethical deliberations correlated with theological, spiritual, jurisprudential, and civilisational domains. Undoubtedly for Muslims, to build an ethical viewpoint founded on the Islamic tradition, one must examine the Qur'ān and Sunnah, the religion's two primary textual sources. As with many other subjects, evaluating the content of these two Scriptures will not provide straightforward solutions to the concerns that the study of genetics attempts to address. Thus, developing an Islamic ethics viewpoint requires additional intellectual and academic work led by a set of procedures and ideas that evolved throughout the course of Islamic history. What is required is a far more fundamental analysis that considers the Qur'ān's deliberation along with the subtlety of Muslims' lived experiences, inequalities, and the unique characteristics of its community, etc. (Sulayman, 2013). Hence, this paper aims to address that need while not claiming to be exhaustive and provide fresh avenues for future research and publishing on Islamic ethics, genome, and food (nature). It also examines Muslim scholars' arguments and deliberations on the ethical framework, deliberations that extend beyond the binary distinction between right and wrong, or what is traditionally considered *al-'amr bi al-ma'rūf wa al-nahy 'an al-munkar* (commanding right and forbidding wrong) in Islamic jurisprudence.

AN OVERVIEW OF NUTRIGENOMICS

Nutrigenomics as a study discipline is highly dependent on the recent development of powerful technologies that enable the processing of massive amounts of data on gene variants. The so-called “omics” technologies, including genomics, transcriptomics, proteomics, metabolomics, foodomics, lipidomics, and metagenomics, enable the simultaneous detection and quantification of many distinct kinds of molecules (Geissler, 2020). The human genome mapping in 2000 added a new dimension to this field of health food research (Nerlich *et al.*, 2002). The human genome has been entirely sequenced, and most experts think that environmental and hereditary factors impact chronic illnesses such as diabetes, hypertension, and cancer. It has been shown that food alters the way the DNA is read and expressed (Müller and Kersten, 2003). Scientists may be able to comprehend, predict, and perhaps treat chronic illnesses by analysing differences in the human genome and the interaction between DNA and nutrition. This field of study is called nutritional genomics or nutrigenomics (Mathers, 2004).

The term nutrigenomics is used to refer to the study of the effects of dietary components on the genetic blueprint in an organism (genome), the set of proteins expressed by the genome (proteome), and the collection of all low-molecular-weight molecules (metabolites) essential for cell metabolic reactions (metabolome). The field of nutrigenomics employs molecular technologies to study how certain diets alter the gene expression (Ruskovska *et al.*, 2022). The ability of numerous dietary components to bind to nuclear receptors (NRs) could affect the transcription of genes involved in many biological processes such as apoptosis and cell proliferation, thus modifying the susceptibility to chronic diseases, i.e., obesity, tumour, and metabolic diseases (Romagnolo *et al.*, 2014). For example, vitamins A and D and fatty acids were found to directly activate NRs and promote gene transcription (Kiss *et al.*, 2013). Choline is another example of an essential diet that acts as a methyl donor

for homocysteine methylation and can affect the epigenetic status of the genome, which may lead to permanent changes in the gene expression in offspring (Niculescu, 2013). Insufficient choline in the maternal diet impacts foetal brain development in animal models (Zeisel, 2011). Other research demonstrated that choline availability during the adulthood of rodents could influence the epigenetic state of the genes involved in liver carcinogenesis through RNA expression modifications (Niculescu, 2013).

While nutritional genomics research may provide significant opportunities for human health improvement, it is uncertain how the information gained will be used in the future. In theory, nutrigenomics might contribute to health improvement in at least three ways. The first method would be to tailor the nutritional guidance to each individual (Bouwman *et al.*, 2005). Currently, dietary recommendations are mostly based on large population epidemiological research. These recommendations, however, are believed to be of limited use for certain people since they overlook the presence of genetic variances between individuals that may impact how the body reacts to food (Castle *et al.*, 2007). Hence, genetic profiling is expected to improve the individualisation of dietary advice. Perhaps genetic profiling can forecast the future risk of illness, informing individuals that specific preventative eating regimens apply to them (Komduur, 2013). These risk estimations may be based on individual genetic profiles, allowing for more personalised dietary advice, or on studies about the genetic variety of groups, allowing for various dietary recommendations for different categories of individuals (Darnton-Hill *et al.*, 2004; Penders *et al.*, 2007; Fenech *et al.*, 2011). While some extremely unreliable commercial genetic tests for dietary advice have been available on the market since 2002 (Gollust *et al.*, 2003; Gregori *et al.*, 2011), initial scientific enthusiasm for the progress made in genetic research to create individually tailored advice or population-based recommendations has waned (Meijer, 2005; Fenech *et al.*, 2011). Additionally, there is a need to examine if individuals who receive more personalised and evidence-based nutritional recommendations are more motivated to alter their lifestyles (McBride *et al.*, 2010).

The second use of nutrigenomics is in identifying micronutrient-induced harm in the body by biomarkers such as metabolites, proteins, and transcripts. This may result in more precise and evidence-based general dietary recommendations (De Roos and Romagnolo, 2012). Additionally, improved biomarker testing may enable the detection of lifestyle-related disorders, such as diabetes, while these problems are still reversible. This future test will be able to observe the cellular damage caused by eating to guide diet and lifestyle modifications that will halt or reverse the progression of illnesses or pre-diseases (Müller and Kersten, 2003; Darnton-Hill *et al.*, 2004; van Ommen *et al.*, 2009). Third and finally, nutrigenomics may find application vis-à-vis health-promoting food items. Understanding how nutrients interact with the body and their influences on gene expression may lead to the creation of novel functional foods. Additionally, it may aid in verifying the validity of existing functional food claims (Müller, 2002; Castle *et al.*, 2007).

TOWARDS A CONCEPTUAL GROUND OF NUTRIGENOMICS IN ISLAM

Striking a holistic balance between these various levels of interdisciplinarity will continue to be a significant challenge for anyone seeking to make formative contributions to the subject of Islamic ethics in any field. Understanding the many forms of interdisciplinary methods and how they vary from disciplinary approaches provides a fuller understanding of the process of knowledge generation and transfer (Miller, 2020). Therefore, it is impossible to blindly embrace or eliminate ethical viewpoints developed outside the Islamic tradition and explain their alleged “incongruity” with Islam by invoking passages from the Islamic scriptural foundation, i.e., the Qur’ān and Sunnah. On the other hand, it is difficult to justify the methodologically approaching ethical issues raised by nutrigenomics developed outside the Islamic tradition only through the lens of *fiqh*. However, this is not to say that all these levels and aspects of interdisciplinarity should always be included in the Islamic discourse on any nutrigenomics topic. Clearly, this is not practicable since several elements (e.g., the nature of the problems, the absence of specialists, and the diverse venues of the debates) should be examined before determining the extent to which Islamic ethical deliberation should be multidisciplinary. Hence, the discussion below analyses the works of several contemporary Muslim scholars to identify a possible conceptual framework of Islamic ethics in nutrigenomics.

Firstly, the question of attitude towards science and technology must be addressed from the perspectives of notable contemporary scholars. Dallal (2010) highlights the difficulties characterising the relationship between

Islam and science since Muslim intellectuals have a broad range of opinions. Nevertheless, deliberating on the application of Islamic ethics is not merely an academic exercise in developing a broad direction or outlining guidelines about the acceptable and unacceptable ranges of Muslim conduct (Ramadan, 2009). Before conducting this exercise, consideration should be given to how the Islamic intellectual tradition has thought about its interrelation to the sacred scriptures and the Universe, the philosophy of the sciences drawn from that relationship, and the meaning to be assigned to human activity in history (Sulayman, 2013). Over the past decade, the work of Bakar (2019) on “knowledge synthesis” has been instrumental in evoking Muslims’ concerns about Islamic science, modern science, and postmodern science. According to Bakar (2019), in the entire process of knowledge synthesis from sifting through the heritage in both Islamic science and modern science right to reinterpreting the selected ideas and integrating these reinterpreted ideas into the *tawhidic* epistemological framework until the synthesis is completed, the sifting phase appears to be the most physically and mentally demanding. Therefore, as he asserts in his “Towards a Postmodern Synthesis of Islamic Science and Modern Science: The Epistemological Groundwork” article, it is necessary to prioritise several areas of study like Islamic and modern biomedicine due to the broad domain of knowledge synthesis. Simultaneously, in his *Epistemological Integration: Essentials of an Islamic Methodology*, Malkawi (2014) aspires to provide an intellectual framework for Islamic methodology with the intention of realising experiential instruction in the deliberate research pertaining to knowledge in a range of disciplines. He argues since it is difficult to distinguish (1) a realm that is natural and material, (2) social and human, and still another that is spiritual, psychic, and emotional, linking the concept of methodology with the evolution of the various sciences has been fundamental to show the unity of knowledge in the sphere of human endeavour. Malkawi points out that the concept of methodology most largely parallels what has been recognised in the history of science and philosophy in ancient Greek and Arab-Islamic cultures as the “science of logic”.

Recently, the Maqāṣid Methodology initiated by Auda (2021) aimed to revive the basic conceptions of the Qur’ān and Prophetic traditions to present an Islamic framework and worldview capable of achieving *maqāṣid* (Islamic higher objectives) in the contemporary situation. The ultimate objective is for this framework to evolve into networks of educational and research institutions that contribute to the advancement of global civilisation. The process comprises five overlapping and interrelated steps: goal, Cycles of Reflection, critical literature and reality studies, framework, and formative ideas and principles. Auda asserts that the process begins by establishing a goal inspired by one of the necessities levels of maqāṣid (preservation of religion, life, lineage, intellect, property). Meanwhile, the Cycles of Reflection on the Revelation are critical for building criticism of written and experienced views on reality, as well as for constructing a framework for conceptualisation and analysis. Finally, formative ideas and principles shape the investigation’s result, i.e., benefit and harm decisions or verdicts. Earlier, Auda (2010) recommended that “disciplinisation” should neither be an obstacle to using the relevant concepts from different fields in research endeavours nor be a way of monopolising sources of reference in any discipline to restrain creativity and control new ideas. In developing the discipline of the theory/fundamentals of Islamic law, it is necessary to be open to relevant ideas from other disciplines. Otherwise, the Islamic legal theory will remain strictly within the boundaries of traditional literature and its manuscripts, and the outcome rulings of Islamic law will remain largely outdated.

SELECTED ETHICAL CONSIDERATIONS OF NUTRIGENOMICS IN THE CONTEMPORARY MUSLIM CULTURE

Scholars approaching the ethical considerations of nutrigenomics for the contemporary Muslim culture now can access dozens of issues with several clustered themes. Perhaps the most basic consideration that Muslim scholars must observe closely is the recent paper of Görman *et al.* (2020) in *Principles of Nutrigenetics and Nutrigenomics: Fundamentals of Individualized Nutrition* (De Caterina *et al.*, 2020). They pose structurally interrelated issues, constantly touching on the various spiritual, theological, jurisprudential and social dimensions that Muslims must somehow work on in developing a framework. They view ethical considerations of nutrigenomic as comprising (1) Integrity Risks: Sensitive Data and Protection, Relatives, and Incidental Findings; (2) Social Risks: Social Aspects of Eating, Individual Responsibility for Health, Justice, and the Risk for Discrimination; (3) Quality Risks: Evidence, Motivation, and Commercialisation; and (4) Mitigation: Precautionary Principle, Informed Consent, A Wider Understanding of Personalisation, Education of Professionals, Need for Revision

of Legislation, and Step-by-Step Approach. The ethical considerations of nutrigenomic listed here are not representative of all common morality and are not based on complete induction. Rather, they form a part of a larger framework. However, we claim far less in that these considerations we have identified and put in the form of a framework for the ethics of nutrigenomics are a part of universal morality. We selectively draw these considerations to construct a theoretical framework for nutrigenomics in the contemporary Muslim culture.

To elaborate the question of ethical considerations to present-day Muslims, it must first be recalled that the elements carried out in accordance with Shariah are a form of ethics and are inseparable from the theological, spiritual, and civilisational significance associated with it (Nasr, 2010). Many of the Islamic ethics or postulates described in this section are directly connected to nutrigenomics, while others are indirectly tied to it. From the Islamic epistemology perspective, there are several fundamental concerns pertaining to unearthing Islamic ethics based on its theological, spiritual, jurisprudential, and social domains. First, the principle of *tawhid* (divine unity) is the theological essence of Islam. This principle, which fulfils an epistemological role at many levels and within diverse areas of knowledge, is inclusive and synthetic in character, keeping with Islam's nature as a religion of knowledge par excellence. As the scope of nutrigenomic application has been recognised and explained, the principle of *tawhid* may be undertaken to enlighten the essential integrating purpose for considering ethics. *Tawhid* literally translates as “unification” or “making into one”, which means the recognition of plurality as no other than the fact that what appears as many or varied is, in reality, One and Only in Essence (Rauf, 1984). Throughout history, Islamic civilisation has seen this concept play a synthesising function in the area of science, both in terms of philosophy and theory creation (Bakar, 2020).

Certain issues raised by the clash between the conventional notion of human and “scientific” and postmodern conceptions must be evaluated and resolved against this backdrop. The first of these often-asked questions is “How does the fragmented scientific knowledge, or in this case, nutrigenomics, concerning human behaviour relate to what has been traditionally referred to as “human nature”?” To address this point, it is necessary to recognise that the human state's actuality cannot be exhausted by its external representations. In “Islamic Perspectives on the Genome and the Human Person: Why the Soul Is Important,” Ahmed and Suleman (2019) analysed the premise that the knowledge unearthed by human genetics and genomics has a significant impact on people's perception of human nature. In opposition to this conception as a background, the authors scrutinise the link between the genome and a human being. A large portion of the writing is devoted to examining *nafs* (soul/spirit) concepts and the accompanying words. More strikingly, the authors conducted a survey regarding the Qur'ānic allusions to these phrases and how they were analysed by Exegetes of the Qur'ān, philosophers, and theologians (Ahmed and Suleman, 2019). In this sense, the nutrigenomic project affecting human life should consider how it can affect the soul's proclivity for reverting to its primordial condition of purity and obedience since, according to Islamic spirituality, human beings have a purpose related to a spiritual journey and a return to *fiṭrah* or the nature of man (Al-Attas, 2020). Attempting to reconstruct the original covenant in this life is both a physical and a spiritual activity that manifests itself in many ways. As a result of the human genome project, it is possible to question whether a person's capacity to remember their first encounter with God will be affected in any way.

The discovery of nutrigenomics has broadened the scope of the genome in which human beings and sustenance must be addressed. Being exposed to the significance of the soul in the writing of Ahmed and Suleman (2019), elaborating on the question of sustenance brings a reminder of the depiction of livelihood in the Qur'ān. In the first phase of any Muslim studies, the question that underpinned the research was, “What are the fundamental principles and notions that govern the conceptualisation of the sustenance of a person from an Islamic perspective?” Although there are many possible interpretations and viewpoints on what the Qur'ān says about the sustenance of human beings and how this can be applied to formulate a structure or map of the relationship, it was found that many common foundational factors (Bin Muhammad Yusoff, 2023) emerged as the key in conceptualising a general framework of Islamic ethics on nutrigenomics (Al-Bar and Chamsi-Pasha, 2015). Sustenance is a category that refers to food and drinks mentioned in the Qur'ān and includes both general terms and food terms of a particular nature, certain verbs in connection with the general food terminology, and pieces of equipment used in the household (Waines, 2022). Central to the entire representation of food or sustenance is the concept of,

- (i) *qūt* (sustenance): “He placed firm mountains therein rising above it, blessed it, and apportioned its means of sustenance therein in four days, alike for all who ask.” (The Qur’ān 41:10); the concept of sustenance is related to al-Muqīt (the Sustainer), “Whosoever intercedes for a good cause shall receive a share of it; and whosoever intercedes for an evil cause shall share in its burden; and God is Sustainer of all things.” (The Qur’ān 4:85);
- (ii) *ma’ishah* (victuals): “Is it they who apportion the Mercy of thy Lord? We have apportioned for them their livelihood in the life of this world and have raised some of them above others in rank, that some of them may take others into service. And the Mercy of thy Lord is better than that which they amass.” (The Qur’ān 43:32);
- (iii) *rizq* (provision): “I desire no provision from them; nor do I desire that they should feed Me.” (The Qur’ān 51:57); “For Sheba too there was certainly a sign in their dwelling - two gardens, one to the right and one to the left: Eat of the provision of your Lord and give thanks to Him - a good land, and a forgiving Lord.” (The Qur’ān 34:15).

Thus, the Qur’ān serves as the fundamental source of every kind of conception. It serves as a resource for authors seeking to glean lessons and validate their methods for Muslims. Meanwhile, in Sufi literature, food is seen as a heavenly gift and a manifestation of *mahabbah* or divine love (Gabriel, 2000). When speaking about food, Sufis regularly reference passages that advocate these values: “...So send one of you with this money of yours into the city and let him observe which of them has purest food and bring you some provision therefrom. Let him be discreet and make no one aware of you.” (The Qur’ān 18:19); “and give food, despite loving it, to the indigent, the orphan, and the captive.” (The Qur’ān 76:8). Thus far, how human beings interact with other creatures as a means of self-sustenance has profound spiritual implications beyond the simple maintenance of the body as a vehicle for the spirit (Stephen and Hülya, 2015).

Furthermore, the Qur’ān often refers to sustenance in terms of pre-existing circumstances. Likewise, the Qur’ān aspires to exceed all earlier dietary laws (Judaism, Christianity, etc.) by firmly defining what constitutes *al-ṭayyibāt* (good food) and *al-qabāḥ* (bad food), while this dietary procedure is not to be more rigorous than the previous ones (Gabriel, 2000). In fact, the Qur’ān often exalts the virtues of eating, describing it as “one of the greatest of Divine bounties”, and it is important to observe that the Qur’ān opposes the rigorous Jewish purity standards, regarding them as excessive and burdensome, divine retribution for the crimes of the Israelites. In comparison, Islamic prohibitions are lenient since “God does not require more of a soul than it is capable of.” (The Qur’ān 2:286).

It is convenient for us now to say that when Muslim scholars participate in this Islamic ethical discourse and discuss any subject, their reliance is not only upon scriptural references, the Qur’ān and Sunnah, but also on so-called interdisciplinary reasoning (Ghaly, 2019). The field of nutrigenomics is of particular interest to us. In the discipline of medicine and, by extension, bioethics, today’s Muslim scholars have made the greatest progress in drafting *fatāwā* (legal opinions) relevant to contemporary issues. They would therefore seem to propose an Islamic ethic in the nutrigenomic; it is vital to comprehend the boundaries within which there exists some sort of genetic relationship to concepts and rules understood as being Islam to consolidate the *thawābit* (static) of Shariah’s root as well as its *mutaḥayyirāt* (dynamic) of application, along with being in touch with the contemporary science fountainhead of people civilisation. The enthusiasm surrounding nutrigenomics is likely comparable to that around other early-stage scientific advances. Whether they are traditional or contemporary scientifically educated, Muslim ethicists have not yet figured out how to apply Islamic principles to today’s rapidly changing scientific and social context (Moosa, 2009).

As previously stated, nutrigenomics or personalised nutrition uses data about people’s unique dietary needs and preferences to produce guidance, products, and services specifically tailored to their needs for a long-term shift towards a healthier diet (Ordovas *et al.* 2018). Hence, the question arises: would personalised nutrition provoke a clash between science and human self-understanding regarding the responsibility to health? For instance, treating physicians may find themselves torn between a patient’s right to autonomy and the duty to prevent harm to the patient. Taking up Habermas’ question, al-Khatib (2018) argued that the intervention of the genome undermines the concept of autonomy, thus threatening human morality because all human actions are linked

to the human being as an ethical creature. This issue emerges, especially when tackling the question of *al-wilayah 'alā al-nafs* (guardianship of the soul) involving medicating for treatment purposes. Perhaps an earlier resolution adopted by International Islamic Fiqh Academy (2013) on the human genome, “everyone has the right to decide whether he wishes to be kept apprised of the results or implications of any genetic test he undergoes... all archived genetic diagnoses or those prepared for other purposes like research should be subject to full confidentiality”, should also be within sight of Muslim ethicists.

Certainly, the expression of *hifz al-nafs* (preservation of self) in one of the classical *maqāṣid* (purposes) of the Islamic law elements helps us assimilate the question of nutrigenomics in which it refers to the global moral law, including the specific and explicit meaning of the general obligation—care for self and for others (al-Khatib, 2018). According to al-Shatibi (1997), two principles underpin *hifz al-nafs*: “the first one is that which builds its cornerstones, establishes the rules and observes existence. The second concerns all that can ward off disruption, existing or expected, and ensure its preservation.” *Hifz al-nafs* includes treatment, as can be inferred from Ibn al-Qayyim’s rumination, “the framework of the doctor’s authority rests upon six pillars of providing treatment and procedure: preservation of existing health, restoration of lost health up to the hilt, elimination or mitigation of illness as much as possible, discernment of lesser harmful in order to eradicate the more malignant, and repudiation of the least interest to achieve the greater one. Hence the treatment should be carried out in accordance with these six pillars.” As far as the postulation of *hifz al-nafs* is concerned, the question of anatomy still needs to be thoroughly examined by contemporary Muslim scholars.

Although Komduur (2013) alludes that nutrigenomics is unlikely to generate large hazards comparable to those associated with Frankenstein trajectories, patients and users of nutrigenomics face a slew of uncertainties. The majority of these uncertainties are not captured by the conventional definition of risk, the magnitude of damage multiplied by chance (Amendola, 2002), or by the phrase “incomplete knowledge”. Unquestionably, a more personal appeal to food and pharmaceutical consumers to adopt modern health requirements into their meal choices may impact their way of living (Burgess, 2007). From this vantage point, it seems morally beneficial for Muslims to get used to the hypes and (basic and relative) uncertainties associated with this novel strategy. They must develop the ability to cope with the most significant uncertainties that requires sorting the more significant from the less significant uncertainties, commonly referred to as *fiqh al-awlawiyyāt* or understanding priorities (al-Qaradawi, 1996). This includes the possibility of making scientific-based decisions and conducting talks and debates about these uncertainties.

Additionally, from a public health standpoint, the potential to utilise nutrigenomics to improve the health of the community, particularly the poor, should be explored. On the other hand, although personalised nutrition may help people maintain a healthy diet and lifestyle, it might encompass a rising segment of the population and a group of health-conscious individuals (Görman, *et al.* 2020). The challenge of justice is exacerbated if such attempts do not include everyone in society. The Qur’ān (59:7) says, “That which God has given in spoils to His Messenger from the people of the towns is for God and His Messenger, and kinfolk, orphans, the indigent, and the traveller, that it not come to circulate among your wealthy.” Undoubtedly, the question of discrimination and inequality has to be the subject of a continuous public debate. Dakake (2015) proposes five general Qur’ānic principles governing Islamic social ethics. The principles differ profoundly in certain key aspects from the secular formulation of these norms in the contemporary West. The principles are as follows: (1) significance of the religious community or ummah, (2) just treatment of all members of society, (3) the maintenance of social harmony and peaceful relations among its members, (4) the notion of essential human equality before God and His laws, meaning that all human beings have the same opportunity to realise their moral and spiritual potential, and (5) the balancing of rights and responsibilities. What stands out in this list of principles is the role of each level in society, from the government to individuals.

CONCLUSION

Throughout this analytical study and the ensuing discussions of this theoretical framework, this paper has identified several major ethical issues in this highly specialised field. Undoubtedly, food and drink are central to Islamic religious ethics, which encompass both the *‘ibādāt* (worship) of Muslims who adhere to explicit

scriptural prohibitions and the sphere of *mu'āmalāt* (social relationships) in which they adhere to commands such as feeding the poor and weak. While the requirement of physiological nutrition demonstrates humanity's reliance on the Creator, these manifestations of divine goodness serve as a reminder of the Muslim's required response of gratitude. We may infer that a Muslim's life is a dialectical interaction between two distinct kinds of texts: biomolecular and religious texts. A constant conversation between nutrigenomics (modern science) and the Islamic ethics is suggested to facilitate a better grasp of this dialectic. This demands a shift in emphasis away from practical ethical concerns and towards the larger cultural context of the Islam and science discourse, for example, by focusing on the influence of genomics on human autonomy. It is only by taking a more comprehensive view that incorporates theological, spiritual, jurisprudential, and social dimensions that one can make a stronger case and construct a foundational theoretical framework upon which to build applications of Islamic ethics in nutrigenomics. Likewise, a systematic approach to developing a framework anchored in these sources is required to properly place the area of Islamic ethics in nutrigenomics and pave the way for future research on indigenous intervention development. Thus, we conclude from the Qur'an 43:32, "Is it they who apportion the Mercy of thy Lord? We have apportioned for them their livelihood in the life of this world and have raised some of them above others in rank, that some of them may take others into service. And the Mercy of thy Lord is better than that which they amass."

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