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Malaysian On Islamic Behavioural Principles In Food Hygiene

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ABSTRACT

This review synthesises recent Malaysian research on food hygiene behaviour and examines how Islamic behavioural principles can enhance self managed hygiene in everyday food handling. Although knowledge of food safety among food handlers and consumers in Malaysia is generally high, the translation of this knowledge into consistent behaviour remains limited across demographic groups and across both urban and rural settings. Islamic principles offer a culturally grounded corrective to these behavioural gaps. The concept of amanah positions food handling as a moral responsibility, the principle of avoiding harm encourages precaution in daily decisions and the notion of halal and tayyiban links religious obligation directly to hygiene quality and overall food wholesomeness. These values have the potential to reinforce disciplined and conscientious behaviour even in low resource or low supervision environments. By integrating Islamic ethical motivation with contemporary public health approaches, the review proposes a more comprehensive framework for strengthening hygiene behaviour and improving food safety outcomes in Malaysia. The implications of this review suggest that food safety interventions which incorporate Islamic behavioural ethics may enhance internal accountability, improve training effectiveness, and support more sustainable compliance among Malaysian food handlers.

1. INTRODUCTION

Food hygiene is an essential component of public health and consumer protection. In Malaysia, the growth of the food service sector and the expansion of informal food businesses have increased the importance of maintaining safe food handling practices. Despite improvements in regulations and training requirements, foodborne illness cases related to poor hygiene continue to be reported. This situation indicates that existing approaches to food safety management have not fully succeeded in ensuring

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consistent behavioural compliance among food handlers.

Previous Malaysian studies have consistently shown that knowledge of food safety among food handlers and consumers is generally high. However, the translation of this knowledge into everyday practice remains limited across different demographic groups and food service environments. Many food handlers are aware of hygiene requirements, yet they do not always practise them consistently in real working conditions. These findings suggest that food hygiene problems in Malaysia are not solely due to lack of information, but are also related to behavioural and motivational factors.

Current food safety interventions in Malaysia rely mainly on certification courses, procedural guidelines, and regulatory inspections. While these measures are important, they emphasise external enforcement rather than internal motivation. Behavioural compliance often decreases when supervision is minimal, particularly in small-scale food operations. Recent Malaysian research has continued to highlight this knowledge–practice gap, indicating that conventional training approaches alone are insufficient to produce lasting behavioural change (Ashaari et al., 2023; Aspian et al., 2024). Studies by Aziz et al. (2024) and Bashir (2024) further confirm that contextual pressures and weak intrinsic motivation frequently undermine safe food handling behaviour even among trained workers. These findings strengthen the argument that new approaches are needed to address the motivational dimension of food hygiene behaviour in Malaysia.

Islamic teachings provide a comprehensive ethical framework that emphasises cleanliness, responsibility, and prevention of harm. The concept of amanah encourages individuals to treat food handling as a moral trust that affects the wellbeing of others. The principle of avoiding harm promotes preventive action even when risks are not immediately visible, while the notion of halalan tayyiban links religious obligation directly to hygiene quality and food wholesomeness (Awang, 2021). These values are closely aligned with scientific hygiene expectations and have the potential to strengthen personal accountability among Muslim food handlers.

However, despite their relevance, Islamic behavioural principles have not been systematically incorporated into Malaysian food safety strategies. Training programmes remain largely procedural and technical, with limited attention to cultural and religious motivations that influence daily behaviour. This represents an important gap in current food safety practice and research, as existing interventions rarely integrate ethical or spiritual dimensions into hygiene education. Addressing this gap may provide a more culturally appropriate and sustainable approach to improving hygiene behaviour.

Therefore, this review aims to examine how Islamic behavioural principles can complement contemporary food safety approaches in Malaysia. Specifically, the objectives of this article are to synthesise Malaysian evidence on food hygiene behaviour, to explore relevant Islamic ethical concepts related to cleanliness and responsibility, and to propose an integrated perspective that combines scientific and spiritual motivations for strengthening food hygiene practices.

2. PROBLEM STATEMENT

This paper addresses this gap by synthesising recent Malaysian research on food hygiene behaviour and examining how Islamic behavioural principles can enhance self-managed hygiene in diverse food settings. Through a narrative review of Malaysian studies from 2020 to 2025 combined with analysis of Islamic ethical literature, the paper proposes a conceptual framework that links scientific hygiene expectations with intrinsic moral and spiritual motivation. This approach reflects the cultural reality of the Malaysian population and has the potential to support more consistent and sustainable hygiene practices.

The integration of scientific standards with Islamic principles offers a culturally meaningful pathway to strengthen food safety behaviour among food handlers and consumers. By positioning hygiene as both a public health requirement and an ethical responsibility, the proposed framework contributes to a more holistic understanding of food hygiene and opens further opportunities for context-based behavioural interventions in Malaysia and other Muslim majority societies.

3. LITERATURE REVIEW

3.1 Knowledge and Practice Gap in Malaysian Food Hygiene

Many Malaysian studies consistently report a gap between food safety knowledge and actual hygiene practice. Aspian et al. (2024) found that although consumers displayed strong theoretical understanding of food safety principles, many continued unsafe behaviours such as improper thawing and insufficient reheating. Similar results were identified among food handlers in formal establishments. Fadhil et al. (2025) observed that although food court workers possessed satisfactory knowledge and positive attitudes, the actual practices documented through observation were inconsistent and often inadequate. These findings suggest that knowledge alone does not lead to reliable behavioural change.

Self-reported behaviour is also frequently misaligned with actual practice. Food handlers often claim they wash hands frequently, yet observational studies record fewer instances of proper hand hygiene. This inconsistency aligns with the broader limitations of the knowledge–attitude–practice framework that assumes knowledge directly improves behaviour. Malaysian evidence shows that daily behaviour is strongly shaped by environmental pressure, time constraints and habitual routines rather than knowledge alone.

3.2 Contextual Challenges in Vendor and Urban Food Environments

Food vendors working in urban Malaysian environments operate under constraints that influence hygiene behaviour. Bashir (2024) reported that street vendors worked in small spaces with limited water supply, intense heat and rapid customer flow. These realities contributed to shortcuts in hygiene routines. Aziz et al. (2024) also found that although street vendors demonstrated acceptable knowledge and generally positive attitudes, hygiene compliance remained inconsistent due to the demands of fast-paced service environments.

Food truck operators face similar pressures. Ashaari et al. (2023) documented that while Muslim food truck handlers possessed moderate to high knowledge and positive attitudes, their actual practices were limited by structural constraints such as restricted preparation areas and limited access to running water. These findings indicate that informal food businesses depend heavily on personal discipline and self-regulation because they lack the structured supervision found in formal establishments.

3.3 Household Food Safety Behaviour

Household food hygiene contributes significantly to overall food safety in Malaysia. Aspian and colleagues (2024) noted that many household food handlers believed their kitchens were safe and clean,

yet common risky behaviours such as thawing food at room temperature and reusing contaminated cloths remained widespread. These discrepancies show that visual cleanliness does not always reflect safe practices.

Younger adults who live in urban settings often adopt convenience based food preparation habits shaped by lifestyle patterns and time pressure. Research shows that frequent food delivery, limited home cooking and reliance on ready to eat meals can weaken consistent application of safe handling practices. These behavioural trends highlight the need for practical and realistic household hygiene interventions rather than idealised guidelines that may not align with daily routines.

3.4 Psychological and Organisational Influences

Psychological factors influence how individuals interpret and apply food hygiene behaviour. Karim (2023) found that individuals often rely on emotional cues such as disgust to evaluate safety, yet do not consistently apply the same caution in their own kitchens. People may avoid visibly unsafe food prepared by others, yet overlook similar risks in their own food handling. This shows that emotional responses do not always translate into consistent behaviour.

Organisational culture also plays a critical role in formal food establishments. Taha et al., (2021) observed that food handlers in workplaces that prioritised speed and cost efficiency were more likely to take shortcuts. In contrast, establishments with strong supervisory structures and clear accountability systems demonstrated better hygiene compliance. These findings show that organisational support and consistent monitoring are essential for strengthening hygiene behaviour beyond individual intention.

3.5 Urban and Rural Differences in Hygiene Behaviour

Urban and rural settings produce different hygiene behaviours due to distinct environmental and structural conditions. Mazuki et al. (2025) found that urban consumers often relied on visible cleanliness and halal certification as quick indicators of safety. Rural communities, however, often face limited access to refrigeration and water supply, influencing traditional practices that may not align with modern scientific recommendations.

3.6 Islamic Behavioural Principles and Hygiene Motivation

Islamic ethical principles provide a meaningful foundation for improving food hygiene behaviour. Abd Rahim et al. (2018) emphasised that Islamic teachings place strong emphasis on cleanliness and responsibility. The principle of amanah positions food handling as a trust, while the concept of halalan tayyiban connects religious obligation with hygiene quality (Awang, 2021). These principles can promote self-regulation in environments with limited supervision (Mohidem et al., 2023).

3.7 Need for an Integrated Framework

Although culture and religion influence behaviour, Islamic ethical motivation has yet to be systematically integrated into food safety interventions. Saad et al. (2023, 2024) demonstrated that technology-based training improves engagement and risk perception, yet these tools have not been fully

connected to Islamic ethical values. The literature indicates a need for a holistic framework that blends scientific standards, contextual realities and Islamic motivation.

4. RESEARCH METHOD

This article is based on a structured narrative review of Malaysian studies related to food hygiene behaviour and Islamic ethical perspectives. Relevant literature was identified through academic databases such as Google Scholar and journal repositories using keywords including food hygiene Malaysia, food safety behaviour, Islamic ethics, and halal food handling. The review prioritised peer-reviewed articles published between 2018 and 2024 to ensure currency and relevance to contemporary Malaysian food safety issues.

The selection of a narrative review approach is justified because the objective of this article is to synthesise conceptual and behavioural insights rather than to conduct statistical meta-analysis. Sources were included when they specifically examined knowledge, attitudes, or practices of Malaysian food handlers and when they discussed behavioural or motivational factors influencing hygiene compliance. Conceptual papers on Islamic ethics were also reviewed to establish the theoretical linkage between religious values and hygiene behaviour.

To enhance the reliability of the review, information from multiple studies was compared and cross-checked. Themes were organised according to recurring patterns in the literature, particularly those related to behavioural gaps, contextual challenges, and potential Islamic ethical influences. This methodological approach enables a balanced integration between empirical findings and theoretical discussion while maintaining coherence with the aims of the article.

4.1 Review Design

This review employed a narrative mapping approach to synthesise contemporary Malaysian studies related to food hygiene behaviour and to integrate relevant Islamic ethical principles within the analytical process. A narrative design was selected because it allows the inclusion of diverse sources of evidence. These sources include quantitative surveys, qualitative interviews, observational studies, outbreak investigations and academic writings on Islamic ethics. This approach is appropriate for topics in which behaviour is shaped by cultural, structural, psychological and moral influences that extend beyond measurable variables. The review therefore aims to interpret not only what behaviours occur but also why these behaviours are expressed across different Malaysian settings.

4.2 Search Strategy

A structured search was conducted across major academic databases that contain food safety and public health literature. These include Scopus, Web of Science, PubMed, Google Scholar and the Malaysian Citation Index. Search terms were combined in various ways to reflect both the technical and the cultural aspects of food hygiene. The terms used included food hygiene, food safety, knowledge attitude practice, Muslim consumers, food handlers Malaysia, household food handling, street vendors Malaysia, urban food safety, rural hygiene behaviour, Islamic principles and halalan tayyiban. The review focused on studies published from the year twenty twenty to the year twenty five because this period reflects recent changes in Malaysian food environments, including the growth of food delivery services and increased hygiene awareness following the global health crisis.

To support breadth and ensure coverage, citation tracking and cross checking of reference lists were conducted. Studies outside the primary date range were included selectively if they provided important conceptual grounding or early evidence of behavioural patterns that continue to be relevant to the Malaysian context.

4.3 Study Selection and Analytical Procedure

The identification and selection of studies followed a structured process designed to ensure relevance, quality and clarity of behavioural insights. All records obtained from the database search were screened through several stages. The first stage involved reviewing titles and abstracts to determine whether the studies involved Malaysian food handlers, consumers, household food preparers, street vendors or food truck operators. Only studies that investigated behaviour related to food hygiene and food safety were considered further. This included behaviour such as hand hygiene, temperature management, cross contamination control and household storage practices. Studies that explored demographic influences such as age, gender, income level, education or differences between urban and rural settings were also retained. In addition, publications that engaged with Islamic concepts relevant to hygiene were included when they contributed to understanding moral responsibility, the avoidance of harm, *ihsan* or the meaning of *halalan tayyiban* in relation to food practices.

At the same time, studies were removed when they did not meet the behavioural scope of the review. These included laboratory based microbiological analyses that lacked discussion of human decision making, industrial food production research without interpersonal interaction, and articles on halal certification that focused only on audit processes without addressing hygiene behaviour. General opinion pieces were excluded unless they offered essential conceptual grounding for Islamic behavioural principles. Studies with unclear methodology or insufficient reporting were also excluded to maintain academic quality.

After applying these criteria, the initial search produced one hundred and forty two records. Removal of duplicates left one hundred and one unique studies. Screening of titles and abstracts reduced this number to sixty one studies that were suitable for full review. These selected studies were then examined in detail and grouped according to setting, population and behavioural theme. The themes included contamination control, vendor handling practices, household food behaviour, hygiene behaviour in formal food premises, demographic influences and urban and rural contrasts.

Data extraction involved coding each study according to its main behavioural findings, methodological approach and contextual setting. Islamic ethical literature was reviewed separately to identify constructs that have behavioural implications. These include ideas related to responsibility, the avoidance of harm, moral discipline and the comprehensive meaning of *halalan tayyiban*. The final stage of analysis brought together empirical findings from Malaysian studies and ethical constructs from Islamic literature. This integrative process allowed the review to identify where scientific evidence and Islamic principles converge, where they complement one another and how Islamic motivation may strengthen self-managed hygiene behaviour across diverse Malaysian food environments.

5. DISCUSSION

The findings of this review indicate that food hygiene behaviour in Malaysia is shaped by an interaction of cognitive, structural and motivational factors. Although many food handlers and consumers demonstrate adequate or high levels of knowledge about food safety, this knowledge does not consistently translate into daily practice. Observational evidence from various Malaysian studies confirms that lapses in hand hygiene, temperature control, cross-contamination prevention and storage practices occur frequently

even among trained individuals (Aspian et al., 2024; Mohamed Naba et al., 2025). This persistent knowledge and practice gap aligns with global concerns that technical awareness alone is insufficient to drive behaviour that is disciplined and consistent. These findings are consistent with both Malaysian and international research which similarly concludes that behavioural compliance is determined more by motivation, habits and contextual pressures than by knowledge level alone. The comparison with previous studies therefore strengthens the argument that food hygiene challenges in Malaysia are fundamentally behavioural rather than informational in nature.

Contextual barriers further reinforce this inconsistency. Street vendors, food truck operators and urban food handlers face environmental pressures including limited space, restricted water supply and fast-paced service conditions that challenge their ability to comply with recommended hygiene standards (Bashir, 2024; Ashaari et al., 2023). Household food handlers demonstrate similar challenges, particularly within fast moving urban lifestyles where convenience-driven routines often replace ideal handling behaviours (Aspian et al., 2024). These findings show that behavioural inconsistency is not solely due to a lack of knowledge but is also shaped by structural realities and lifestyle constraints. In comparison with earlier Malaysian interventions that focused primarily on awareness campaigns, recent studies reveal that practical limitations within real working environments often undermine the effectiveness of such programmes. The implication of this comparison is that food safety initiatives must address environmental and operational constraints in addition to providing technical instruction if meaningful behavioural improvement is to be achieved.

Psychological and organisational factors also play important roles. Individuals may judge food safety based on emotional cues such as disgust or visual cleanliness but may overlook less visible risks in their own environments (Karim, 2023). Organisational environments that emphasise speed, profit or efficiency may unintentionally encourage shortcuts that compromise hygiene (Taha et al., 2021). In contrast, supportive organisational cultures with clear expectations and active supervision tend to produce stronger adherence to hygiene procedures. This contrast illustrates that behaviour is strongly influenced by the social and organisational context in which food handling occurs. Compared with studies that have concentrated mainly on individual knowledge and attitudes, these findings highlight the importance of organisational culture as a theoretical factor in explaining hygiene behaviour and compliance.

Within this complex behavioural landscape, Islamic behavioural principles offer an underutilised yet promising motivational foundation. Islamic teachings emphasise *amanah*, or moral responsibility, which encourages individuals to treat food handling as a trust that affects the wellbeing of others. This aligns closely with public health expectations yet is grounded in deeply personal and spiritual commitment (Abd Rahim et al., 2018). The principle of avoiding harm, which encourages preventive action even when risks are not visible, also mirrors scientific recommendations for contamination control (Mohidem et al., 2023). Furthermore, the concept of *halalan tayyiban* positions hygiene as an inseparable component of lawful and wholesome food, integrating spiritual obligation with food safety standards (Awang, 2021). In comparison with conventional behaviour-change approaches that rely mainly on procedural enforcement, these Islamic ethical principles provide an internal source of motivation that may encourage more consistent and self-regulated hygiene practices. The difference between externally enforced compliance and internally motivated responsibility offers an important explanation for why current strategies have achieved only limited behavioural impact.

However, current food safety interventions in Malaysia rarely integrate these Islamic behavioural drivers. Training programmes remain predominantly procedural, and hygiene campaigns rely heavily on cognitive reinforcement without considering cultural and religious motivations. This creates a gap between the values that guide daily life for many Malaysians and the frameworks used to promote hygiene behaviour. Integrating Islamic principles into hygiene education may strengthen intrinsic motivation, enhance personal accountability and support behavioural consistency in both formal and informal settings. This is particularly relevant for environments with limited supervision where self-regulation is essential. The comparison between existing procedural approaches and value-based approaches suggests that future interventions should combine technical instruction with ethical and cultural reinforcement rather than depending solely on regulatory compliance.

The emergence of technology-based food safety training such as virtual reality simulations presents new opportunities for bridging this gap. Saad and colleagues (2023, 2024) showed that immersive training tools can improve risk perception, decision making and memory retention among food handlers. When combined with Islamic ethical framing, such tools may produce even stronger motivation for consistent behaviour by connecting scientific principles with culturally meaningful values. This integrated approach could be especially valuable for younger food handlers and urban populations who respond well to interactive and experiential learning. Compared with traditional classroom-based training methods that focus largely on information delivery, technology-supported learning offers a more engaging platform to internalise both procedural knowledge and ethical responsibility. These developments suggest that innovative educational methods can play an important role in operationalising the integration between scientific and Islamic perspectives on food hygiene.

Overall, the findings of this review highlight the need for a comprehensive behavioural framework that incorporates scientific knowledge, contextual realities and Islamic ethical motivation. Such an integrated model would be more culturally aligned, more effective and more sustainable than current approaches that rely primarily on technical guidelines. The theoretical implication is that models of food safety behaviour in Malaysia should extend beyond cognitive and regulatory dimensions to include moral and cultural factors as central components. From a practical perspective, the discussion indicates that Malaysian food safety policies and training programmes should explicitly recognise the role of cultural and religious values as complementary elements in behaviour-change strategies. By combining procedural standards with ethical motivation, food safety interventions are more likely to achieve deeper, more consistent and longer-lasting improvements in hygiene behaviour.

6. CONCLUSION

This review demonstrates that improving food hygiene behaviour in Malaysia requires more than increasing knowledge or strengthening regulatory enforcement. Although many food handlers and consumers possess adequate awareness of food safety principles, behavioural consistency remains limited across multiple settings. Structural constraints, workload pressure, lifestyle routines and organisational practices all influence the daily decisions that determine hygiene outcomes (Bashir, 2024; Taha et al., 2021). These findings confirm that behaviour is shaped by a combination of cognitive, contextual and motivational factors.

Islamic behavioural principles offer a culturally grounded and morally compelling foundation for strengthening self-managed hygiene. The principles of *amanah*, avoidance of harm, *ihسان* and *halalan tayyiban* encourage responsibility, discipline and mindfulness in food handling. These values align with scientific hygiene expectations and can motivate individuals to practise safe behaviour even in environments with limited supervision (Abd Rahim et al., 2018; Awang, 2021). Despite their relevance, these principles have not been systematically incorporated into Malaysian food safety strategies.

By synthesising Malaysian food hygiene evidence with Islamic ethical teachings, this review proposes that future interventions should integrate both scientific and spiritual motivations. This integrated approach can enhance internal accountability, improve behavioural consistency and support more resilient food safety cultures in both formal and informal food environments. Emerging technologies such as virtual

reality training also offer innovative pathways for delivering hygiene education that is engaging, culturally meaningful and aligned with Islamic values (Saad et al., 2023, 2024).

From a practical perspective, several actions are recommended to strengthen the application of these findings. Policymakers and regulatory agencies should incorporate Islamic ethical values into national food safety training frameworks and public awareness campaigns to complement existing technical guidelines. Training providers are encouraged to design modules that explicitly connect standard hygiene procedures with principles such as *amanah* and avoidance of harm in order to enhance intrinsic motivation among food handlers. Food service organisations should cultivate workplace cultures that emphasise moral responsibility, clear supervision and consistent hygiene expectations as part of daily operations. Educational institutions and vocational training centres should adopt innovative learning approaches, including technology-assisted platforms such as virtual reality simulations, to deliver hygiene education that is both scientifically accurate and culturally relevant.

In conclusion, a combined framework that incorporates scientific hygiene principles, contextual considerations and Islamic behavioural ethics offers a promising direction for improving food safety outcomes in Malaysia. Such a framework would not only support public health objectives but also resonate deeply with the cultural and religious identity of the Malaysian population, creating a more sustainable and effective foundation for safe food handling.

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