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**The perception and acceptability of pre-slaughter and post-slaughter
stunning for Halal production: The views of UK Islamic scholars and Halal
consumers.**

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Abstract

The importance of religious slaughter from economic, emotive and ethical viewpoints is significant. There are apparent economic benefits associated with trading in meats slaughtered according to religious traditions. Some religious authorities insist on the slaughter of animals without stunning, but this, according to many researchers, compromises animal welfare. We conducted a survey of Islamic scholars and Halal consumers, 66 scholars from 55 organisations and 314 consumers from 54 UK cities/towns were surveyed. Forty-nine scholars were interviewed through pre-arranged meetings, 17 surveyed online whilst all 314 consumers were either surveyed online or through the remote completion of copies of the questionnaire. Most of the scholars (>95%) (CI 86.9 to 98.4%) agreed that if an animal is stunned and then slaughtered by a Muslim and the method of stunning does not result in death, cause physical injury or obstruct bleed-out, the meat would be Halal and 53% (CI 47 to 58%) consumers also thought such meat would be Halal.

Keywords

Halal consumer; Halal slaughter; Islamic scholar; Stunning; Animal welfare, Halal meat

1. Introduction

Animals slaughtered for Muslim consumption must meet specific requirements laid down in the Islamic Holy Book, the Quran, and the teachings of the Prophet contained in the various *Ahadith* (Grandin and Regenstein, 1994, Regenstein, Chaudry & Regenstein, 2003, Nakyinsige et al, 2013, Fuseini, Knowles, Lines, Hadley, & Wotton, 2016a). These Islamic dietary laws prohibit the consumption of meat (and by-products) from carnivorous animals, pigs, animals that die naturally and all forms of intoxicants (MS1500, 2009, HFA, 2014). The prohibited products are collectively referred to in Arabic as *Haram* products. For meat to be considered Halal (permissible), the animal must be a permissible species, handled sympathetically prior to and during slaughter, must be alive at the point of slaughter and the person bleeding the animal must have attained the age of discretion (MS1500, 2009, MUI HAS 23103, HFA, 2014, HMC, 2016). It is preferred that the slaughterer be Muslim, however, the Quran permits Muslims to consume meat slaughtered by Christians and Jews (Quran 5:5).

Of paramount importance within the Halal slaughter requirements is that the animal must be alive during the ritual cut (Quran 2:173, 5:3, Regenstein et al, 2003, Masri 2007, Fuseini, Knowles, Hadley & Wotton, 2016b). In many industrialised countries, there is a requirement for the pre-slaughter stunning of animals in order to render them insensible to the pain associated with slaughter (EC 1099/2009, WATOK, 2015). However, some Muslims have questioned the compatibility of pre-slaughter stunning with Halal production (EHDA, 2016, HAIP, 2016). Whilst some Muslims agree that animals may be stunned before slaughter (MS1500, 2009, MUI HAS 23103), others are of the view that stunning is contrary to the Islamic food laws (HMC, 2016). Proponents of pre-slaughter stunning for Halal production usually

accept 'reversible' stunning (HFA, 2014, MS1500, 2009, MUI HAS 23103, 2012), this is where a stunned animal can make a full recovery if bleeding-out does not occur, thereby demonstrating that the death of reversibly stunned animals is caused by blood loss following neck cutting (EBLEX, 2009, Wotton et al, 2014). Due to the differences of opinion that exist within the Muslim community regarding some aspects of Halal slaughter, and the lack of understanding of the requirements of other religious slaughter methods such as Shechita, a European Commission funded project, DIALREL (2010), looked at ways of promoting good religious slaughter practices and how to promote dialogue among key players in the industry for the protection of animal welfare. The Halal Monitoring Committee (HMC), the UK's largest certifier of un-stunned Halal meat, conducted an online survey through Ajax Consultants to understand the acceptability of pre-slaughter stunning among Islamic scholars in the UK (HMC, 2009). They concluded that 90% of the 282 scholars rejected electrical stunning of poultry whilst 9% asked for further research to be done on the subject. On whether electrical stunning of large animals was compliant with Halal slaughter, 85% of the scholars said no. In Belgium, a study conducted by animal welfare group GAIA (2010) reported that 21% of the 261 Muslims surveyed said they prefer stunned Halal meat, 30% were identified as neutral, 36% rejected stunning whilst 49% disagreed with stunning for Halal slaughter.

This study provided a platform for researchers to interact with Islamic scholars and Halal meat consumers to get a better understanding of the Halal slaughter requirements and the differences that exist among Islamic jurists in the interpretation of the Islamic dietary laws in the UK. There were also discussions on pre-slaughter stunning of food animals for Halal production, and whether simple stunning, defined in European Council Regulation, EC 1099/2009 as a method of stunning that does not

result in instantaneous death, may be accepted for Halal slaughter. The acceptability of post-cut stunning was also covered in the study. Post-cut stunning is where the slaughter cut is made on a conscious animal but the animal is then immediately stunned to prevent further suffering due to the cut and exsanguination.

2. Materials and Methods

2.1 Data Collection

Data were collected from October 2015 to March 2016 using the SurveyMonkey online software and questionnaire web service. Respondents were recruited through telephone calls, emails, and through the use of the Snowball sampling technique, this is where the respondents, after taking part in the study, further distributed the research questionnaires amongst their family and friends who also take part in the study. We contacted mosques, Islamic centres, Islamic schools (*Madrasas*) and Muslim Associations through email and telephone communication. Two types of questionnaire were administered; a questionnaire for Islamic scholars and a Halal consumers' questionnaire. Questionnaires were completed remotely (through a web-link or by completing hard copies) or through face-to-face interviews. The study was approved by the University of Bristol Ethical Review Board (ID 26164).

2.2 Questionnaire development

Draft questionnaires were pilot-tested on 20 respondents at a mosque in West London to ensure that the questions were easy to understand and interpret. The respondents were 6 female and 14 male with varying levels of formal education. The draft questionnaires were slightly modified following the pilot survey, as it was found that many respondents did not actually understand some of the technical terms such as 'stunning', used in the draft questionnaire open-ended questions. The survey used only closed questions with the exception of two final questions in which respondents

were provided a free-text space for comment. In order to get an understanding of the requirements of Halal slaughter and relate it to stunning, the nature of the questions in the two questionnaires (scholar and consumer) were grouped into two parts, the first section was related to the conditions that must be met for meat to be classed as Halal. The second part was concerned with evaluating the understanding of Islamic scholars and Halal consumers regarding pre-slaughter and post-slaughter stunning and whether reversible stunning (for pre-slaughter) and post-cut stunning may be accepted for Halal slaughter.

2.3 Interviews with Islamic Scholars

Efforts were made to interview all Islamic scholars in-person. Out of 129 mosques and other Islamic organisations contacted to arrange meetings with their scholars, 29 mosques, 15 Islamic centres, 6 Islamic schools (*Madrassa*), 3 Halal Certification Bodies, 1 Muslim chaplaincy of Her Majesty's Prison and 1 umbrella group for mosques agreed to participate in the study. One organisation emailed to say they did not want their scholars to be interviewed and 73 organisations did not respond to our requests after at least 2 email or telephone reminders. A total of 66 scholars from 17 UK cities or towns were surveyed, 49 (74%) of them were interviewed through face-to-face meetings whilst the remaining 17 (26%) completed the questionnaire through a web-link sent to them through email. The scholars identified themselves as *Muftis*, *Imams*, *Ulemah* (male) and *Ulumah* (female), in all, 3 (5%) *Ulumah* and 63 (95%) *Muftis*, *Imams* or *Ulemah* participated in the study. A *Mufti* is a person well versed with Islamic law, such a person can interpret Islamic law regarding what is Halal and what is not. An *Imam* is a Muslim leader who normally leads the mosque in prayers whilst an *Ulemah* (*Ulumah*- female) in Arabic means a learned person.

2.4 Survey of Halal consumers

A total of 314 Halal consumers took part in the study. Two hundred and fifteen (68%) of the respondents were recruited through emails, telephone and word-of-mouth. Out of 666 hard copies of the Halal consumer questionnaires given to mosques, Islamic centres and volunteers, 19% (61 respondents) questionnaires were completed. Also, 54 email invitations were sent with a link to the online survey, 12% (38) consumers participated, the rest were recruited using the Snowball sampling technique. Respondents were from 54 towns/cities across the UK.

2.5 Questionnaire 1- Islamic scholars

The scholars were asked to provide personal information; name, age, gender, name of organisation they are associated with and the nearest city/town of residence. They were given a brief introduction to the aims of the survey and they were assured that data collected would be anonymous. They were asked to select Halal slaughter requirements from a list of 6 possible options, this was followed with a question in which the scholars were provided a free text box (unlimited amount of space) to list any other requirements which were not covered in the preceding question. The scholars' perception and interpretation of pre-slaughter and post-slaughter stunning of food animals with regard to Halal slaughter were evaluated with the following closed questions:

- Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter. Do you agree with this statement?
- Some methods of stunning have been shown to be reversible, that is, such methods do not lead to the death of animals prior to slaughter (bleeding-out). Are you aware of these methods of stunning?
- If an animal is stunned and then slaughtered by a Muslim and the method of stunning does not injure or result in the death of that animal before slaughter,

and blood loss is not adversely affected, would you regard this meat as Halal?

Scholars who provided a “No” answer to this question were then provided with a free-text box to give a reason as to why stunned meat is not Halal.

- If an animal is slaughtered whilst it is alive, followed immediately with stunning, would you regard this practice as Halal?

A question on the pain associated with slaughter without pre-stunning was included:

If an animal is slaughtered without any form of stunning, which of the following do you consider to apply?:

- The animal will feel reduced pain because the knife acts as a stun
- The animal will feel pain

2.6 Questionnaire 2- Halal consumers

The Halal consumer’s questionnaire differed slightly from that of the scholars’. The consumers did not have to give their names or any association with an Islamic institution. However, from a series of closed questions, they were asked to indicate their highest academic qualifications from a list of options, whether they considered themselves practicing Muslims, the frequency of their prayers (*Salat*) with the following options; I pray 5 times a day, I pray occasionally and I do not pray. They were also asked to select one of the following two options that apply to them;

- I eat only Halal meat
- I occasionally eat non-Halal meat, but not pork.

The rest of the questions were the same as those in the scholars’ questionnaire on the subject of the pain associated with slaughter without stunning, pre-slaughter and post-slaughter stunning. However, on the question regarding the acceptability of reversibly stunned animals for Halal production, consumers were asked to select one of three

options (Yes, No or Not Sure) whilst the scholars only had two options (Yes or No). Table 1 is an outline of the questions put forward to the scholars and consumers. Where appropriate, the results are presented as a percentage with the actual count in brackets followed by a 95 per cent confidence interval (CI) for the estimate calculated using Wilson's Method (Altman et al 2000).

[INSERT TABLE 1 ABOUT HERE]

3. Results

Of 129 Islamic organisations contacted, 55 agreed to participate. A total of 66 scholars from 55 organisations completed the questionnaire. One scholar was excluded from the analysis because of an almost empty answer set.

3.1 Requirements of Halal slaughter- Islamic scholars

Table 2 is a summary of the outcome of the scholars' survey. The scholars were provided with a list of Halal slaughter requirements to select the main requirements that must be met during Halal slaughter (Table 1). The respondents were allowed to select one or more options. Out of 65 respondents, one respondent skipped the question, 98% of the respondents indicated that the animal must be alive at the time of slaughter, 80% said the person bleeding the animal must be a Muslim, 59% indicated that there is a need for all the flowing blood to be drained out of the carcass, 38% said the animal must be healthy and not injured, 36% indicated that in the absence of a Muslim, a Jew or Christian may slaughter and 17% of respondents indicated that the age of the animal is important. Although 36% of respondents agreed that animals slaughtered by Jews and Christians may be suitable for consumption by Muslims, 61% of these respondents explained that the slaughterer must be a practicing Jew or Christian and that the *tasmiyyah* (a short prayer) must be recited before slaughter by the Christian or Jew, 17% were of the view that only Shechita (Jewish) slaughter is

suitable for consumption by Muslims but not Christian slaughter, 13% said the slaughterer must believe in the monotheism of God and that it is a must for them to recite the *tasmiyyah* before slaughter. A further 9% explained that any Christian or Jew could slaughter for Muslims to consume as long as they believe in the “original text”. The respondents were then provided a free-text box to list any additional Halal slaughter requirements they felt were not included in the question. Forty-three of the 65 respondents provided at least one additional Halal slaughter requirement, 51% respondents indicated that the sharpness of the knife is important, another 51% said the appropriate blood vessels must be severed, 21% said the name of God must be recited before the slaughter of each animal, 5% indicated that the animal must be a permissible species, 2% said animals must be fed and watered before slaughter and 1 said the slaughterer must be given sufficient training.

[INSERT TABLE 2 ABOUT HERE]

3.2 Stunning and slaughter- Islamic scholars

Respondents were asked whether they agree with the following statement: ‘Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter’. Out of 65 participants, three did not respond to the question, 31% said yes whilst 69% answered no. The respondents were then asked whether they were aware that some methods of stunning have been shown to be reversible, one respondent skipped the question, 58% said no and 42% said yes. When the respondents were asked whether meat would be considered Halal when animals are stunned with a method of stunning that does not result in death, cause physical injury to animals or adversely affect blood loss, 2 scholars did not respond to the question, 95% said the meat would be considered Halal whilst 5% said the meat would not be Halal. The 2 respondents who did not respond to the question explained that they did not have any

practical experience with stunning and that they would prefer to see it in practice before making a decision. Of the 60 respondents who indicated that the meat would be suitable for consumption by Muslims, 25% explained that despite the fact that the meat would be Halal, the act of stunning animals is prohibited in Islam because it is, in their opinion, inhumane and cruel and that stunned animals would only be Halal if it is proven beyond any reasonable doubt that the animal was alive at the time of slaughter, 12% indicated that although reversibly stunned meat is Halal, stunning is not a preferred method of slaughter for Halal whilst 7% of respondents indicated that stunning should only be used for large animals and not birds due to the possibility of some birds dying as a result of the stun. The 3 respondents who indicated that all forms of stunning are not Halal gave the following reasons for their stance; 2 of them said stunning is against the guidance of the Prophet of Islam whilst 1 respondent questioned the validity of any research which suggests that some methods of stunning does not result in instantaneous death.

On the issue of the pain associated with the slaughter of animals without any form of stunning, respondents were asked the following question; If an animal is slaughtered without any form of stunning, which of the following do you consider to apply? Fourteen of the 65 respondents did not respond to the question, 78% said the animal will feel reduced pain because the knife acts as a stun whilst 22% said the animal will feel pain. The 14 respondents who did not answer the question insisted that the slaughter of animals without stunning, in their opinion, causes no pain, however, there were only two answer options none of which included the answer they provided. The scholars were also asked for their interpretation of post-cut stunning for Halal production. A total of 14 respondents did not answer the question, 88% of those who responded said the practice is Halal compliant whilst 12% said it is against the Halal

slaughter rules. Of those who agreed that post-cut stunned meat is suitable for consumption by Muslims, 31% of them suggested that the act of any form of stunning is unacceptable although the meat would be Halal, 2% said the meat is acceptable on condition that the volume of blood loss is not impeded as a result of the stun and 7% suggested that the practice is disliked although the meat would be Halal. Two of the respondents who suggested that the practice is not consistent with Halal slaughter called for more research into the effect of pre-slaughter and post-slaughter stunning on the volume of blood loss.

3.3 Halal consumer demographics

Out of 314 respondents, 73% were male, 27% female and one person did not indicate the gender. The highest level of education of the respondents are 23% graduates, 20% postgraduates, 20% further education, 16% A-level, 13% GCSE/O-Level and 8% selected N/A (not applicable). Most of the respondents, 98% considered themselves as practicing Muslims (14 participants did not respond to this). When asked whether they eat only Halal meat or they occasionally eat non-Halal meat but not pork, 24 of the 314 respondents skipped the question, 98% indicated that they eat only Halal meat, 2% said they occasionally eat non-Halal meat but not pork. On whether they practice their religion, 29 respondents skipped the question, 88% said they pray 5 times a day, 11% pray occasionally and 0.7% said they do not pray at all. Table 3 is a summary of the outcome of the Halal consumers' survey.

[INSERT TABLE 3 ABOUT HERE]

3.4 Requirements of Halal slaughter- consumers

Halal consumers were asked to select at least one condition they regarded as the requirement(s) of Halal slaughter from six options. A total of 95% of respondents said animals must be alive at the time of slaughter, 72% said the animal must be healthy

and not injured, 72% indicated that the slaughterman bleeding the animal must be a Muslim, 53% said all flowing blood must be drained out of the carcass, 31% indicated that the animal must be of a certain age, 30% indicated that in the absence of a Muslim, a Jew or Christian may slaughter. The respondents were then provided a free-text box to list any additional Halal slaughter requirements not listed in the 6 options. Of the 314 respondents, 105 provided at least one more additional Halal slaughter requirement(s), these additional requirements are summarised in table 4 below.

[INSERT TABLE 4 ABOUT HERE]

3.5 Stunning and Halal slaughter- Halal consumers

Halal consumers were asked whether they agreed with the following statement: Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter. The majority of respondents 58% selected 'no' to imply that they disagreed with the statement whilst 42% said 'yes' they agreed with the statement and 2 did not respond to the question. The consumers were subsequently asked whether they were aware that some stunning methods have been shown to be reversible; 39% said yes they were aware of such methods whilst 61% indicated that they were not aware of reversible stunning methods. When asked whether they would regard meat as Halal if animals were pre-stunned with a method of stunning that does not result in death, cause physical injury or obstruct bleed-out, 53% respondents indicated that such meat would be Halal, 32% said the meat would not be Halal whilst 15% were unsure. Respondents who indicated that the meat would not be Halal were provided a free-text box to explain why such meat would not be Halal, 35 of them responded; 57% respondents said pre-slaughter stunning is against Islamic law, 3% respondent said stunning obstructs bleed-out, 14% respondents said stunning is

painful/can injure animals, 14% respondents said stunning may result in the death of animals before slaughter and 11% respondents said they had little or no knowledge about stunning so they would rather avoid stunned meat. On post-cut stunning, 82 participants did not respond to the question, 69% of the respondents said they regard post-cut stunning as Halal whilst 31% indicated that they did not recognise it as Halal. Consumers were asked about the consequences of slaughter without pre-stunning (with an option of selecting one or more answers), 60% said the animal will feel reduced pain because the knife acts as a stun, 33% said the animal will feel pain and 20% said there would be improved blood loss in comparison with stunned animals. Thirty two respondents skipped the question.

4. Discussion

This study confirms that the interpretation of the Shariah law by Islamic jurists within the UK (and other parts of the world) regarding the acceptability of slaughter practices for Halal production differs between scholars. With guidance from the Quran and Hadith, one would expect these jurists to make unanimous decisions regarding what is Halal and *Haram* (prohibited), however, a number of differences of opinion exist among the scholars. Fuseini, et al., (2016a) suggested that the differences in scholarly opinion may sometimes be the result of differences between the two main sects, *Sunni* and *Shia* or the subdivision of the Sunni sect into four different schools of law; the Maliki, Hanbali, Shafii and Hanafi schools of law. Although there are several differences within the Muslim community regarding Halal slaughter, the most important of these differences is whether pre-slaughter stunning is Halal compliant, this is due to concerns that some methods of stunning may violate the Halal rules by causing the death of animals before slaughter.

During our face-to-face meetings with Islamic scholars in the UK, some of them admitted that they had never witnessed the stunning of animals in practice. One scholar indicated that he would not believe any research demonstrating the reversibility of stunning until he sees it in practice. Islamic scholars are expected to advise Halal consumers on the suitability of various slaughter methods for Halal production, however, the lack of understanding of stunning among some scholars has resulted in the issuance of confusing *Fatwas* (religious rulings) on the suitability of stunned meat for consumption by Muslims. There is an urgent need for these scholars to be given theoretical and practical education on stunning and other modern slaughter techniques such as mechanical slaughter, this will help them make informed decisions about the suitability of these techniques for Halal production. Our findings also revealed that the majority of UK scholars (95%) would regard meat from stunned animals as Halal on condition that it is proven to be reversible, however, 25% of those who would regard stunned meat as Halal did not think stunning should be encouraged during Halal slaughter because they believe the practice impedes bleeding out, leads to poor meat quality and that it is an inhumane and cruel practice. Research has however demonstrated that the stunning of animals before slaughter has no adverse effects on blood loss (Anil et al., 2004, 2006, Khalid, Knowles & Wotton, 2015), meat quality (Önenç and Kaya, 2004) and the humaneness of stunning has been objectively measured with EEG (Newhook and Blackmore, 1982). A further 7% did not think stunning is suitable for Halal poultry, according to the scholars, this is because of a high risk of birds dying due to their size. Our findings differ from the results of a previous study conducted in the UK by the Halal Monitoring Committee (HMC, 2009) in which it was reported that 85% and 90% of the scholars surveyed indicated that they would reject electrical stunning of large animals and birds

respectively. Whilst the present study specifically related the question to electrical head-only stunning, there is lack of information on the type of electrical stunning the HMC study related to, especially in large animals where the type of electrical stunning may be adapted to induce cardiac fibrillation, a situation that would not support recovery and would therefore be rejected by the majority of Muslims. Also, this study included both Islamic scholars and Halal consumers whilst the previous study only involved Islamic scholars. As far as we are aware, this is the first time a survey of this nature has included both scholars and consumers.

In line with the Quranic position on Halal slaughter, the majority of UK Islamic scholars (98%) and consumers (95%) agreed that, for meat to be Halal, the animal must be alive at the time of slaughter. Conversely, although the Quran permits the consumption of the food of Jews and Christians (Quran 5:5), with the exception of specifically prohibited foods such as pork and intoxicants, only 36% of scholars and 30% of consumers think such meat is acceptable for Muslims to eat. Some of the scholars who rejected Christian and Jewish slaughter were of the opinion that Jewish (Shechita) and Christian slaughter were incompatible with Islamic law because there is no requirement for the name of God to be recited on every single animal. Others argued that only practicing Christians and Orthodox Jewish slaughter may be suitable for Muslims to consume on condition that the life of the animal is dedicated to God before slaughter. Our study also revealed that 80% of UK scholars and 72% of UK Halal consumers were of the view that the slaughterman must be a Muslim and 59% of scholars and 53% of consumers said there is a requirement for all the flowing blood to be drained out of the carcass. Just over half (52%) of the Halal consumers surveyed indicated that they would regard meat as Halal if animals are stunned with methods that do not result in the death of animals before the ritual cut is made, in addition,

there is a requirement for the method of stunning to have no adverse effect on blood loss or cause physical injury to the animal. Our results corroborate a study conducted in Belgium by a national animal welfare group, GAIA (2010). They reported that up to 51% of Belgian Muslims do not oppose the use of stunning during Halal slaughter. There were more Halal consumers (42%) than Islamic scholars (31%) who were convinced that pre-slaughter stunning of animals could be used to reduce or abolish the pain associated with slaughter, but the majority in each of the two groups believe stunning does not play any role in reducing pain. Despite the fact that research has demonstrated the reversibility of some methods of stunning (Velarde, Ruiz-de-la-Torre, Roselló, Fàbrega, Diestre & Manteca, 2002, EBLEX, 2009, Wotton, et al., 2014), the majority of scholars (58%) and consumers (61%) indicated that they were unaware of the availability of such methods. It is interesting to note that eventhough Islamic scholars are expected to advise Halal consumers on the suitability of stunned meat for consumption by Muslims, a higher proportion of the consumers than scholars are aware of the existence of reversible stunning. One would expect the scholars to be better informed about these methods of stunning, regarded by the majority of proponents of Halal stunning as Halal (MS1500, 2009, MUI HAS 23103, HFA, 2014). The consumers, apart from getting their advise from the scholars on the suitability of stunning for Halal production, may be researching more into stunning methods than the scholars. Many Islamic scholars were willing to participate in demonstrations of the reversibility of stunning, this may help in assuring the scholars that some methods of stunning may be Halal compliant. Video evidence is available to support the reversibility of head only electrical stunning with sheep (EBLEX, 2009).

This study will have been subject to a degree of bias, as is the case with any study. In this case all questions were in English, but with a translation facility for those who could not read and understand English. Muslims with no formal education and those who could not speak English did not have equal opportunity to participate in the study. Additionally, snowball recruitment of consumers would be likely to recruit amongst people from similar backgrounds and with common connections perhaps to the exclusion of some sub-communities.

4. Conclusion

There is no common agreement among Muslims on the suitability of stunning for Halal production. Many Islamic scholars and Halal consumers would regard pre-stunned meat as Halal if there were some level of assurance that the type of stunning used does not cause the death of animals before the Halal cut is made. However, many Islamic scholars, despite agreeing that reversible stunning is compatible with Halal slaughter, would still not recommend its use during Halal slaughter because of the belief that pre-slaughter stunning is a cruel and inhumane practice and violates the guidelines of Halal slaughter. Many of these scholars hold an opinion that pre-slaughter stunning of animals adversely affects the volume of blood loss during exsanguination and that stunning produces inferior meat quality. There is an urgent need for stakeholders in the meat industry to involve Islamic scholars in research on pre-slaughter stunning to enable them make informed decisions about the aspects of stunning that continue to divide opinions of the scholars.

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Table 1. An outline of the questions put forward to the Islamic scholars and Halal consumers.

Scholars' Questions	Consumers' questions
1. Full name of scholar/Imam	1. Nearest city/town
2. What is your age <ul style="list-style-type: none"> • Less than 20 • 21-30 • 31-40 • 41-50 • 51-60 • Over 60 	2. What is your age <ul style="list-style-type: none"> • Less than 20 • 21-30 • 31-40 • 41-50 • 51-60 • Over 60
3. Gender <ul style="list-style-type: none"> • Male • Female 	3. Gender <ul style="list-style-type: none"> • Male • Female
4. Name of organisation/mosque/Islamic centre	4. Highest academic qualification <ul style="list-style-type: none"> • GCSE/O-Level • A-Level • Further education qualification • Graduate • Postgraduate qualification • N/A
5. Nearest city/Town	5. Do you consider yourself a practicing Muslim? <ul style="list-style-type: none"> • Yes • No
6. What do you consider as the requirements of Halal slaughter (you may tick more than one option)? <ul style="list-style-type: none"> • Animal must be alive at the 	6. Which of the following applies to you? <ul style="list-style-type: none"> • I eat only Halal meat • I occasionally eat non-Halal

<p>point of slaughter</p> <ul style="list-style-type: none"> • Animal must be healthy and not injured • Age of the animal is important • The slaughterman bleeding the animal must be a Muslim • In the absence of a Muslim, a Jew or Christian may perform Halal slaughter • All flowing blood must be drained from the carcass 	<p>meat, but not pork</p>
<p>7. Are there any other requirements for Halal slaughter not covered in question 6 above? If you consider there are, please detail them or write 'None'</p>	<p>7. Which of the following applies to you?</p> <ul style="list-style-type: none"> • I pray 5 times a day • I pray occasionally • I do not pray
<p>8. Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter. Do you agree with this statement?</p> <ul style="list-style-type: none"> • Yes • No 	<p>8. What do you consider as the requirement(s) of Halal slaughter (you may tick more than one answer)?</p> <ul style="list-style-type: none"> • Animal must be alive at the point of slaughter • Animal must be healthy and not injured • Animal must be of a certain age • The slaughterman bleeding the animal must be a Muslim • In the absence of a Muslim, a Jew or Christian may perform Halal slaughter • All flowing blood must be drained from the carcass
<p>9. Some methods of stunning have been shown to be reversible, that is, such methods do not lead to the death of animals prior to slaughter (bleeding-out). Are you aware of these methods?</p> <ul style="list-style-type: none"> • Yes • No 	<p>9. Are there any other requirements for Halal slaughter not covered in question 8? If you consider there are, please detail them or write 'None'</p>
<p>10. If an animal is stunned and then slaughtered by a Muslim and the method of stunning does not injure or lead to the death of that animal before slaughter (bleed-out) and does not affect blood loss, would you regard this meat as Halal?</p> <ul style="list-style-type: none"> • Yes • No 	<p>10. Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter. Do you agree with this statement?</p> <ul style="list-style-type: none"> • Yes • No
<p>11. If you answered No to question 10,</p>	<p>11. Some methods of stunning have</p>

please state why?	<p>been shown to be reversible, that is, such methods do not lead to the death of animals prior to bleeding-out. Are you aware of these methods?</p> <ul style="list-style-type: none"> • Yes • No
<p>12. If an animal is slaughtered without any form of stunning, which of the following do you consider to apply?</p> <ul style="list-style-type: none"> • The animal will feel reduced pain because the knife acts as a stun • The animal will feel pain 	<p>12. If an animal is stunned and then slaughtered by a Muslim and the method of stunning does not injure or lead to the death of that animal before slaughter (bleed-out) and does not affect blood loss, would you regard this meat as Halal?</p> <ul style="list-style-type: none"> • Yes • No • Not sure
<p>13. If an animal is slaughtered whilst it is alive, followed immediately with stunning, would you regard this practice as Halal?</p> <ul style="list-style-type: none"> • Yes • No 	<p>13. If you answered No to question 12, please state why?</p>
	<p>14. If an animal is slaughtered without any form of stunning, do you consider any of the following to apply? (you may choose more than one option).</p> <ul style="list-style-type: none"> • The animal will feel reduced pain because the knife acts as a stun • The animal will feel pain • There is improved blood loss in comparison with stunned animals • Other (Please specify)
	<p>15. If an animal is slaughtered whilst it is alive, followed immediately with stunning, would you regard this practice as Halal?</p> <ul style="list-style-type: none"> • Yes • No

Table 2. A summary of the outcome of the scholars' survey.

Question	Outcome
Age	<ul style="list-style-type: none"> • Less than 20 3 (5%)

	<ul style="list-style-type: none"> • 21-30 • 31-40 • 41-50 • 51-60 • Over 60 	11(17%) 16 (25%) 26(40%) 5(8%) 4(6%)	
Gender	<ul style="list-style-type: none"> • Male • Female 	62(95%) 3(5%)	
What do you consider as the requirements of Halal slaughter? (you may tick more than one option) (Question skipped by 1 respondent)	<ul style="list-style-type: none"> • Animal must be alive at the point of slaughter • Animal must be healthy and not injured • Age of the animal is important • The slaughterman bleeding the animal must be a Muslim • In the absence of a Muslim, a Jew or Christian may perform Halal slaughter • All flowing blood must be drained from the carcass 	63 (98%) 24 (38%) 11 (17%) 51 (80%) 23 (36%) 38 (59%)	CI 91.7 to 99.7% CI 26.7 to 49.7% CI 9.9 to 28.2% CI 68.3 to 87.7% CI 25.3 to 28.2% CI 47.1 to 70.5%
Are there any other requirements for Halal slaughter not covered in question 6 above? If you consider there are, please detail them or write 'None' (43 out of 65 respondents provided at least 1 requirement)	<ul style="list-style-type: none"> • Knife sharpness is important • Appropriate blood vessels must be severed • The name of God must be recited before slaughter 	22 (51%) 22 (51%) 9 (21%)	CI 36.8 to 65.4% CI 36.8 to 65.4% CI

	<ul style="list-style-type: none"> • The animal must be a permissible species 	2 (5%)	11.4 to 35.2%
	<ul style="list-style-type: none"> • Animal must be fed and watered before slaughter 	1 (2%)	CI 1.3 to 15.5%
	<ul style="list-style-type: none"> • The slaughterer must be given sufficient training 	1 (2%)	CI 0.4 to 12.1%
		1 (2%)	CI 0.4 to 12.1%
Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter. Do you agree with this statement? (Question skipped by 3 respondents)	<ul style="list-style-type: none"> • Yes 	19 (31%)	CI 20.6 to 43.0%
	<ul style="list-style-type: none"> • No 	43 (69%)	CI 57.0 to 79.4%
Some methods of stunning have been shown to be reversible, that is, such methods do not lead to the death of animals prior to slaughter (bleeding-out). Are you aware of these methods? (Question skipped by 1 respondent)	<ul style="list-style-type: none"> • Yes 	27 (42%)	CI 30.9 to 54.4%
	<ul style="list-style-type: none"> • No 	37 (58%)	CI 45.6 to 69.1%
If an animal is stunned and then slaughtered by a Muslim and the method of stunning does not injure or lead to the death of that animal before slaughter (bleed-out) and does not affect blood loss, would you regard this meat as Halal? (Question skipped by 2 respondents)	<ul style="list-style-type: none"> • Yes 	60 (95%)	CI 86.9 to 98.4%
	<ul style="list-style-type: none"> • No 	3 (5%)	CI 1.6 to 13.1%

If you answered No to the preceding question, please state why? (There were 3 respondents)	<ul style="list-style-type: none"> Stunning is against the guidance of the Prophet on slaughter 	2	CI 20.8 to 93.9%
	<ul style="list-style-type: none"> Questioned the validity of any research confirming the reversibility of some methods of stunning 	1	CI 6.1 to 79.2%
If an animal is slaughtered without any form of stunning, which of the following do you consider to apply? (Question skipped by 14 respondents)	<ul style="list-style-type: none"> The animal will feel reduced pain because the knife acts as a stun 	40 (78%)	CI 65.4 to 87.5%
	<ul style="list-style-type: none"> The animal will feel pain 	11 (22%)	CI 12.5 to 34.6%
If an animal is slaughtered whilst it is alive, followed immediately with stunning, would you regard this practice as Halal? (Question skipped by 14 respondents)	<ul style="list-style-type: none"> Yes 	45 (88%)	CI 76.6 to 94.5%
	<ul style="list-style-type: none"> No 	6 (12%)	CI 5.5 to 23.4%

Table 3. A summary of the results of the survey of Halal consumers.

Question	Outcome	
What is your age?	<ul style="list-style-type: none"> Less than 20 	31 (10%)
	<ul style="list-style-type: none"> 21-30 	65 (21%)
	<ul style="list-style-type: none"> 31-40 	111 (35%)
	<ul style="list-style-type: none"> 41-50 	71 (23%)
	<ul style="list-style-type: none"> 51-60 	27 (9%)
	<ul style="list-style-type: none"> Over 60 	9 (23%)
Gender (Question was	<ul style="list-style-type: none"> Male 	228 (73%)

skipped by 1 respondent)	<ul style="list-style-type: none"> Female 	85 (27%)	
Highest academic qualification (Question was skipped by 3 respondents)	<ul style="list-style-type: none"> GCSE/O-Level A-Level Further education qualification Graduate Postgraduate qualification N/A 	41 (13%) 50 (16%) 61 (20%) 73 (23%) 62 (20%) 24 (8%)	
Do you consider yourself a practicing Muslim? (Question was skipped by 14 respondents)	<ul style="list-style-type: none"> Yes No 	293 (98%) 7 (2%)	CI 95.3 to 98.9% CI 1.1 to 4.7%
Which of the following applies to you? (Question was skipped by 24 respondents)	<ul style="list-style-type: none"> I eat only Halal meat I occasionally eat non-Halal meat, but not pork 	283 (98%) 7 (2%)	CI 95.1 to 98.8% CI 1.2 to 4.9%
Which of the following applies to you? (Question was skipped by 29 respondents)	<ul style="list-style-type: none"> I pray 5 times a day I pray occasionally I do not pray 	251 (88%) 32 (11%) 2 (0.70%)	CI 83.8 to 91.3% CI 8.1 to 15.4% CI 0.2 to 2.5%
What do you consider as the requirement(s) of Halal slaughter (you may tick more than one option)?	<ul style="list-style-type: none"> Animal must be alive at the point of slaughter Animal must be healthy and not injured Animal must be of a certain age The slaughterman bleeding the 	298 (95%) 226 (72%) 97 (31%) 225 (72%)	CI 91.9 to 96.8% CI 66.8 to 76.7% CI 26 to 36.2% CI 66.4 to 76.4%

	<p>animal must be a Muslim</p> <ul style="list-style-type: none"> • In the absence of a Muslim, a Jew or Christian may perform Halal slaughter • All flowing blood must be drained from the carcass 	<p>93 (30%)</p> <p>165 (53%)</p>	<p>CI 24.8 to 34.9%</p> <p>CI 47 to 58%</p>
Stunning of meat animals prior to slaughter has been shown to reduce the pain associated with slaughter. Do you agree with this statement? (This question was skipped by 2 respondents)	<ul style="list-style-type: none"> • Yes • No 	<p>131 (42%)</p> <p>181 (58%)</p>	<p>CI 36.6 to 47.5%</p> <p>CI 52.5 to 63.4%</p>
Some methods of stunning have been shown to be reversible, that is, such methods do not lead to the death of animals prior to bleeding-out. Are you aware of these methods?	<ul style="list-style-type: none"> • Yes • No 	<p>122 (39%)</p> <p>192 (61%)</p>	<p>CI 33.6 to 44.3%</p> <p>CI 55.7 to 66.4%</p>
If an animal is stunned and then slaughtered by a Muslim and the method of stunning does not injure or lead to the death of that animal before slaughter (bleed-out) and does not affect blood loss, would you regard this meat as Halal?	<ul style="list-style-type: none"> • Yes • No • Not sure 	<p>165 (53%)</p> <p>101 (32%)</p> <p>48 (15%)</p>	<p>CI 47 to 58%</p> <p>CI 27.2 to 37.5%</p> <p>CI 11.7 to 19.7%</p>
If you answered No to the preceding question, please state why? (This question was skipped by 279 respondents)	<ul style="list-style-type: none"> • Pre-slaughter stunning is against Islamic law • Stunning is painful/can injure animals • Stunning may result in the death of animals before 	<p>20 (57%)</p> <p>5 (14%)</p> <p>5 (14%)</p>	<p>CI 40.9 to 72%</p> <p>CI 6.3 to 29.4%</p> <p>CI 6.3 to 29.4%</p>

	<p>slaughter</p> <ul style="list-style-type: none"> • Would avoid stunned meat because they have little or no knowledge about it • Stunning obstructs bleed-out 	<p>4 (11%)</p> <p>1 (3%)</p>	<p>CI 4.5 to 26%</p> <p>CI 0.5 to 14.5%</p>
<p>If an animal is slaughtered without any form of stunning, do you consider any of the following to apply? (you may choose more than one option) (This question was skipped by 32 respondents)</p>	<ul style="list-style-type: none"> • The animal will feel reduced pain because the knife acts as a stun • The animal will feel pain • There is improved blood loss in comparison with stunned animals 	<p>169 (60%)</p> <p>94 (33%)</p> <p>56 (20%)</p>	<p>CI 48.3 to 59.3%</p> <p>CI 25.1 to 35.2%</p> <p>CI 14.0 to 22.4%</p>
<p>If an animal is slaughtered whilst it is alive, followed immediately with stunning, would you regard this practice as Halal? (This question was skipped by 82 respondents)</p>	<ul style="list-style-type: none"> • Yes • No 	<p>159 (69%)</p> <p>73 (31%)</p>	<p>CI 62.3 to 74.2%</p> <p>CI 25.8 to 37.7%</p>

Table 4. Additional Halal slaughter requirements provided by 105 respondents.

Additional Halal slaughter requirement	No. of respondents	95% CI
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The name of Allah (God) must be recited	63	50.4 to 68.9%
The knife/ blade must be sharp	9	4.6 to 15.5%
Animal welfare is important	26	17.5 to 33.8%
Animals must not see other animals being slaughtered or the sharpening of the knife	5	2.1 to 10.7%
Animal must be orientated to face Qibla (Grand mosque in Mecca)	2	0.5 to 6.7%
Animal must be a Halal animal	2	0.5 to 6.7%
The slaughterer must be of a sound mind	1	0.2 to 5.2%
Animal must be slaughtered with a single movement of the knife	2	3.5 to 6.7%
The animal must be in a state of fear, this aids rapid bleed-out	1	0.2 to 5.2%