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Review Article

A Survey on Relevant Malaysian *Fatwā* about Cadaver Concerning Tissue Engineering Research

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ABSTRACT

The development of scientific knowledge in the healthcare setting shall be geared to improve the health conditions of society. Perhaps, this is one of the reasons why Muslim jurists (*fuqahā*`) have acknowledged the importance of biomedical practices and thus, in principle, agreed on the permissibility of its practices. However, they also raise some Islamic jurisprudence (*fiqh*) and ethical issues about the methods and implications of biomedical practices. Despite the great discovery of articular cartilage tissue engineering, harm and therapeutic uncertainties spark the bioethical concerns, including the use of biological samples from a cadaver in the experimental setting. The study was done by utilising the secondary analysis of local Muslim jurists' opinions (*fatwā*) related to the sampling of tissue from the cadaver. The scenario of cadaveric tissue sampling can be linked to the *fatwā* on the issue of (1) donating cadaver for research purpose, (2) conducting post-mortem or autopsy, (3) embalming the human cadaver, and (4) donating cadaveric organs. The current *fatwā* has shown that honouring a human body is an essential aspect of Islamic law. Thus, researchers may need to consider other options such as obtaining the biological samples from living donor as alternatives in studying the articular cartilage regeneration.

Keywords: Articular cartilage, cadaver, experimentation, *fatwā*, tissue engineering

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INTRODUCTION

Degenerative joint disease has affected millions of people worldwide (Cross et al., 2014). To deal with this disorder, biomedical scientists have employed the concept of tissue engineering and regenerative medicine. It is a new multidisciplinary field that applies the principles of engineering and life sciences towards the development of a suitable biological substitute to restore, maintain and improve tissue or organ function (Langer & Vacanti, 1993). Scientific advances in biomaterial scaffolds, stem cells, growth factors as well as biomimetic environment have created opportunities to reconstruct a wide range of human tissues in vitro, including articular cartilage. The 3-dimensional (3D) tissue is formed and engineered using a combination of quality cell source, scaffolds and biologically active signalling molecules (Langer & Vacanti, 1993). These three main components are also known as "tissue engineering triad".

However, before the product of articular cartilage tissue engineering can be applied in human patients, it needs to go through various tests in non-clinical and clinical stages. Successful application of articular cartilage tissue engineering theoretically involves at least four different stages from the bench to bedside as shown below (Radzi & Munirah, 2016),

Stage I: In vitro phase, a non-clinical experiment in the laboratory.

Stage II: In vivo phase, an animal study or also known as pre-clinical or proof of concept experiment.

Stage III: Clinical trials, this part involves human subjects and requires several phases to complete.

Stage IV: Clinical application and regenerative medicine.

In non-clinical studies of articular cartilage tissue engineering, biological samples consisting of different types of cells have been tested to find the best cell source to develop functional articular cartilage tissue. Some of the samples are harvested from the cadaver through a medical procedure. As stated by the Cambridge Dictionary, 'sample' is defined as "a small amount of a substance that a doctor or scientist collects in order to examine it" ("Sample," n.d.). Meanwhile, the cadaver is defined as a dead human body or synonym with a corpse ("Cadaver," n.d.). Taking samples from the cadaver is also related to the term 'human biological sample' which is mentioned in the Malaysian Guidelines on the Use of Human Biological Samples for Research (National Committee for Clinical Research, 2015). The term denotes "all biological material of human origin, including organs, tissues, bodily fluids, teeth, hair, and nails; but not established cell lines" (National Committee for Clinical Research, 2015).

In the experimentation of articular cartilage tissue engineering conducted worldwide, the tissues taken from the cadaver were harvested, for instances, from the knee (Barbero et al., 2004, 2006; Biant et al., 2017; Chlapanidas et al., 2011; Cui et al., 2012; Kuiper & Sharma, 2015; Tampieri et al., 2008; Wang et al., 2011),

femur (Barandun et al., 2015; Candrian et al., 2009; Dell'Accio et al., 2003; Endres et al., 2007; Francioli et al., 2007; Krüger et al., 2014; Scotti et al., 2010; Secretan et al., 2010) and nasal septum (Candrian et al., 2008).

The procedure may be applied in the Malaysian setting, whereby local researchers have developed the platform for tissue engineering (Aa'zamuddin et al., 2018).[1] However, the procedure may raise bioethical concerns among the local Muslim scholars, whether the practices violate the Islamic law (*sharīʿah*) standards? Or, is the donation of cadaveric tissues for research purposes in articular cartilage tissue engineering research permitted in Islam? Until now, no specific *fatwā* has been given on the permissibility of using cadaveric tissue in the experimentation of articular cartilage tissue engineering. Thus, this paper presents relevant Malaysian *fatwā* related to the cells and tissues sampling from the dead human body in the research of articular cartilage regeneration.

Overview of *Fatwā* in Malaysia

The cadaveric tissue sampling in articular cartilage tissue engineering experimentation can be considered as a newly emerging issue in *fiqh al-nawāzil*,[2] a branch of Islamic jurisprudence that addresses contemporary issues. Such issues require *fiqh* reasoning (*ijtihād*) based on *uṣūl* (principles and precepts of *sharīʿah*) due to the lack of textual evidence on the upcoming issue. This *ijtihād* is conducted by *fuqahā`* or Muslim jurists who will provide the s*harīʿah* rulings (*aḥkām*) by consulting the primary sources of *sharīʿah,* which lead to the production of *fatwā*.

Fatwā can be defined as "an explanation or clarification to the problems of *sharīʿah* among the community which appears when there is no explanation or clarification clearly written in *al-Qur`ān* and *al-Sunnah*" (Buang, 2002; Khairuldin et al., 2018). Thus, the duty to produce the justification or reason for such ruling is carried out by a group of well-informed and knowledgeable scholars, i.e. *muftī* (Isa, 2016). In Malaysia[3], a *muftī* of a particular state has the authority to issue a legal opinion or *fatwā*. The *fatwā* issued by the *fatwā* committee – consisting of qualified Muslim jurists or scholars headed by a *muftī* – is considered to be the government's official view on issues

[1] In Malaysia, more than 21 research institutes are known to conduct the research and development in the tissue engineering field. The innovation, introduction, and improvement of tissue engineering are championed by five public universities which are designated by the Malaysian government as research universities. The universities are Universiti Kebangsaan Malaysia, Universiti Malaya, Universiti Teknologi Malaysia, Universiti Sains Malaysia, and Universiti Putra Malaysia.

[2] *Nawāzil* (plural form of *nāzilah*) is characterised by a set of features surrounding the issue, i.e. occurrence, novelty, significance and severity (Majd, 2015).

[3] Malaysia is headed by His Majesty the Yang di-Pertuan Agong (the King) which elected by the Conference of Rulers on every five-year term. The Conference consists of the Rulers (Sultans) of the nine states – Perlis, Kedah, Perak, Selangor, Negeri Sembilan, Johor, Pahang, Terengganu and Kelantan – in the Federation of Malaysia. Meanwhile, states of Malacca, Penang, Sabah and Sarawak are headed by the Yang di-Pertua Negeri (State Governor) appointed by the Yang di-Pertuan Agong every four-year term.

related to Islam. This is because the *fatwā* committee has been formally established under the provisions of the state law, enactment, or ordinance of Islamic Law in Malaysia according to Department of Islamic Development Malaysia (*Jabatan Kemajuan Islam Malaysia* [JAKIM]) (2017).

In the process of issuing a law or a *fatwā*, most states will generally use the final decree of *al-Shāfiʿī* school. If the final decree goes against the public interest, any final decree of *al-Ḥanafī*, *al-Mālikī* and *al-Ḥanbali* schools, or any other sect whose legal structure is close to these streams, may be referred to. If any chance, by referring to these final decrees, the *fatwā* committee is of the view that there is a conflict of interest to the public, then the *fatwā* committee may use its own *ijtihād*. The process is mentioned in the states law, enactment, or ordinance, for example, Section 54, Administration of Islamic Law Enactment (Selangor) 2003. According to JAKIM (n.d.), there is a total of fifteen official committees in Malaysia that can issue the legal view or *fatwā*. At the national level, it is known as the Consultative Committee of the National Council for Islamic Religious Affairs Malaysia (*Jawatankuasa Muzakarah Majlis Kebangsaan Bagi Hal Ehwal Ugama Islam Malaysia* [JMMKI]), and fourteen *fatwā* committees at the state level (including federal territories).[4]

METHODS

This study used mainly the library research method, a process involving identifying and locating relevant information, analysing main points, which leads to developing and expressing the ideas (Elmer E. Rasmuson Library, 2018). According to George (2008), library research method "involves identifying and locating sources that provide factual information or personal/expert opinion on a research question" which may be an important component of every other research method at a certain time. Then, the study utilised the textual analysis, a research method used by researchers in various disciplines, including communications, history, and health. The data generated from this method may come from different mediums, such as documents and web pages (Smith, 2017).

In this paper, JAKIM website of *Sumber Maklumat al-Aḥkām al-Fiqhiyyah* or Source of Information on Islamic Jurisprudence Rulings was used as the main source to screen and retrieve the relevant *fatwā*. As of May 2020, there are 604 JMMKI proceedings and 2,933 states *fatwā* that were listed on the website. General online search and websites of *Muftī* Department of each state were also scrutinised to complement the search. For the English translation of Quranic and *Sunnah* sources, Tanzil Project webpage (tanzil.net) – *Yūsuf `Alī* translation – and sunnah.com

[4] (1) Perlis *Fatwā* Committee, (2) Kedah *Fatwā* Committee, (3) Pulau Pinang *Fatwā* Committee, (4) Perak *Fatwā* Committee, (5) Selangor *Fatwā* Committee, (6) Islamic Legal Consultative Committee of Federal Territories, (7) Negeri Sembilan *Fatwā* Committee, (8) Melaka *Fatwā* Committee, (9) Johor *Fatwā* Committee, (10) Islamic Legal Consultative Committee of Pahang, (11) Terengganu *Fatwā* Committee, (12) Kelantan *Fatwā* Committee of Council of the Religion of Islam and Malay Custom, (13) Sabah *Fatwā* Council, (14) Sarawak *Fatwā* Board.

webpage were referred to, respectively. Local *fatwā* related to the sampling of tissue from the dead human body was retrieved from the abovementioned sources. The *fatwā* production, which involves the interpretation of main sources of Islamic law, was described.

RESULTS

The scenario of sampling tissue from the dead human body is related to *fatwā* of four issues, namely; (1) donation of the dead body for research purpose, (2) post-mortem or autopsy, (3) embalming the human cadaver, and (4) cadaveric organ donation. It is noted these four issues are related to the scenario of sampling from the dead body in articular cartilage tissue engineering experimentation whereby JMMKI and states *fatwā* committees gave the same rulings with either same *ṣīghah*[5] or different *ṣīghah* which are discussed below.

DISCUSSION

In 2014, JMMKI was briefed on the issue of the dead body donation by researchers from University of Malaya, and the committee has come out with a decision of prohibiting the donation of Muslim cadaver or dead body for research purpose. The decision (JMMKI, 2014) was in line with the *fatwā* issued by Islamic Legal Consultative Committee of Pahang (*Jawatankuasa Perundingan Hukum Syarak Negeri Pahang* [JFPahang]) (2014), Selangor *Fatwā* Committee (*Jawatankuasa Fatwa Negeri Selangor* [JFSelangor]) (2014), Kelantan *Fatwā* Committee of Council of the Religion of Islam and Malay Custom (*Jemaah Ulama' Majlis Agama Islam dan Adat Istiadat Melayu Kelantan* [JFKelantan]) (2014), and the other two *fatwā* bodies clearly mentioned the decision to accept ruling produced by JMMKI in their *ṣīghah*; Sabah *Fatwā* Council (*Jawatankuasa Majlis Fatwa Negeri Sabah* [JFSabah]) (2014) and Negeri Sembilan *Fatwā* Committee (*Jawatankuasa Fatwa Negeri Sembilan* [JFN9]) (2014).

The primary justification given by the committees for the impermissibility, or unlawful (*ḥarām*) decision is based on the principle of honouring and respecting the dead body based on the Islamic legal maxim or *fiqh* principle of *al-aṣl fi al-'irḍ al-taḥrīm* (original ruling on things which involve dignity and honour is prohibition). This general principle is based on the Prophetic *ḥadīth*:

> Verily your blood, your property and your honour are as sacred and inviolable as the sanctity of this day of yours, in this month of yours and in this town of yours. Verily! I have conveyed this message to you. (*Riyāḍ al-Ṣālihīn* [The meadows of the righteous] (n.d.), Book 18, *Ḥadīth* 1524).

The donation of the dead body for research purpose is considered as transgressing the previously mentioned *fiqh* principle as the human body needs to be honoured. There is textual evidence that highlights the need to respect for the human

[5] The way *fatwā* or verdict is expressed in words or tenses.

body whether the man is alive or dead, e.g. funeral preparation including bathing, shrouding, doing prayer for, and burying the dead body. The committees emphasised the ruling by stating that the need to use Muslim cadaver in research was not considered as a state of urgency, and there were other alternatives that could be utilised for the research purpose.

The scenario of taking samples from the dead body for research is also related to the issue of post-mortem or autopsy. The issue has been discussed twice by JMMKI (1984, 2004), JFKelantan (2006), and twice by Terengganu *Fatwā* Committee (*Jawatankuasa Fatwa Negeri Terengganu* [JFTerengganu]) (1994, 1999). The *fatwā* given by JFKelantan mentioned on the reference to the previous *fatwā* made in 1989, which the procedure was permissible under the emergency condition and the committee had come out with a guideline in conducting a post-mortem.

The guideline produced by JFKelantan is in line with the one produced by the JAKIM (2015). On the other hand, JMMKI has discussed the ruling of post-mortem on the dead body, which is not categorised as a criminal case. The committee has decided that the original law of conducting surgery procedure on the corpse is illegal, but it is permitted in the event of urgency such as studying the disease, identifying the cause of death as well as doing research and for education purpose especially in medicine:

> [Authors' translation] The original ruling of performing surgery on a deceased is prohibited; however, it is permissible in a desperate situation when it becomes a necessity such as conducting research on diseases, identifying the cause of death and in research as well as education especially in the field of medicine. (JMMKI, 2004).

As emphasised by JFTerengganu, in these recent years, the post-mortem or autopsy has been applied in hospitals which yet to be introduced during the early time of the Islamic era as the practice has not been developed. However, *al-Imām al-Nawāwī* has mentioned in his book *al-Majmū'*, which was cited by the committee as the followings (which also become part of *ṣīghah* in JMMKI legal ruling, 1984):

> [Authors' translation] If a dead person had swallowed a precious gem belonging to the other person and it is demanded by the owner, then his belly must be parted and then the gem needs to be returned to its owner; and if a pregnant woman has died and the child she conceived is still alive then it is permitted to dissect her abdomen to retrieve the child for the purpose of preserving one's life even by harming one part of the corpse. (JFTerengganu, 1994, 1999).

Both *fatwā* given by JFTerengganu in 1994 and 1999 were more focusing on the investigative aspect of post-mortem whereby the procedure was to be used for the protection of public benefit or interest

(*maṣlaḥah ʿāmmah*) in solving the criminal case. It was mentioned in its *ṣighah*, one of the objectives of the autopsy is to prevent harm (*mafsadah*) by charging the criminal based on the proof obtained from the investigation.

On the other hand, in its second *fatwā* of the post-mortem, the committee stated the permissibility to take any pieces from the dead body for research as evidence in the court or medical research with limited circumstances when the study was necessary or in an urgency by which justice could not be performed without the post-mortem, para 11:

> [Authors' translation] The taking of any of the deceased body parts for research following a post-mortem as evidence in court or for a medical research purpose is permissible in urgent situations in which the research is really needed or in a condition of necessity whereby justice cannot be upheld without the post-mortem. (JFTerengganu, 1999).

Muftī Department of Federal Territory (2015) in its official website also discussed the issue of post-mortem through the section of *irshād al-fatwā* (*fatwā* guidance) and *bayān li al-nās* (explanation for humankind). The *muftī* was invited to a conference of "Autopsy: A Choice or Necessity through Islamic Perspective" on 17th November 2015 which was also attended by forensic and medical experts in Malaysia. The *Muftī* Department was also entrusted to present two papers on "post-mortem and sampling pieces of the human organ during post-mortem for investigation and research" on 4th April 2016. They reported the issue as a new problem in *fiqh al-nawāzil* as mentioned by Dr. Abu Bakar Abu Zaid, Allah has mercy upon him, and citing *Faḍīlah Shaykh* Dr *Muḥammad Muḥammad al-Mukhtār al-Syanqitī*, Allah has mercy upon him, in *Aḥkām al-Jirāḥah al-Ṭibbiyyah* (The Regulations of Medical Surgery):

> [Author's translation] I did not find and discover any *nās* (textual proof) among the earlier jurists who talked about the permissibility of the post-mortem for learning etc. (*Muftī* Department of Federal Territory, 2016).

It was reported by *Muftī* Department of Federal Territories that there were two rulings on conducting post-mortem; permissible (*ḥalāl*) and prohibited (*ḥarām*) which had been convened by the Muslims jurists globally. Among the *fatwā* bodies and jurist figures that come out with *ḥalāl* ruling were *Hayʾah Kibār al-ʿUlamāʾ* (Council of Senior Scholars) of Saudi Arabia on 1976, *Majmaʿ al-Fiqh al-Islāmī bi al-Makkah al-Mukarramah* (Islamic Jurisprudence Academy) on 1987, *Lajnah al-Ifta'* (*Fatwā* Department) of Jordan on 1977, *Lajnah al-Ifta' al-Azhar* (*Fatwā* Department) of Egypt on 1971, *al-Shaykh al-Azhar*, *al-Shaykh Yūsuf al-Dajawī*, *al-Shaykh Hasanayn Makhlūf*, Egypt *Muftī*, *al-Shaykh Ibrāhīm al-Yaʿqūbī*, *al-Shaykh Saʿīd Ramaḍān al-Būṭī*, *al-Shaykh* Dr *Maḥmūd Nāẓim al-Nasīmī*,

and *al-Shaykh* Dr *Maḥmūd ʿAlī Sarṭāwī* (*Majallah al-Azhar*, 6/472, 1935) (*Muftī* Department of Federal Territory, 2016). Meanwhile, the jurist figures that gave the *ḥarām* ruling were *al-Shaykh al-Azhar*, *al-Shaykh Muḥammad Bakhīt al-Muṭī'ʿī*, *al-Shaykh al-ʿArabī Abū Iyād al-Tabkhī*, *al-Shaykh Muḥammad Burhān al-Dīn al-Sanbuhlī*, and *al-Shaykh Muḥammad ʿAbd al-Wahhāb al-Buḥayrī* (*Muftī* Department of Federal Territory, 2016).

The proponents of post-mortem use two methodologies on the permissibility of post-mortem. First, the use of deductive analogies (*qiyās*) of post-mortem for educational purpose with (1) the surgery to save a living fetus within a dead pregnant woman, (2) the extraction of dead fetus from the woman bodies due to safety issues, and (3) the extraction of valuable items swallowed by a dead person.

Second, the jurists use the principle of Islamic legal maxim; (1) if two *maṣlaḥah* collide, choose the stronger one, and if there is a collision between two *mafsadah*, choose with the lesser consequences to prevent more prominent harm. In this situation, the *maṣlaḥah* of education and finding evidence is more preferred than to hasten the burial and funeral preparation. (2) That without which an obligation cannot be fulfilled is an obligation (*mā lā yatim al-wājib illā bihi fahuwa wājib*). There is a need for research and study in the medical field related to post-mortem to confirm on the anonymity of the information. Thus, a post-mortem is permissible in Islam.

For the opponent of the post-mortem, they use the proof (*dalīl*) from the *Qur`ān* and the *Sunnah*. The verse in *Sūrah al-Isrā'* (*Qur`ān*, 17:70), emphasises on the honour of human being and thus, the procedure in post-mortem is considered as disrespecting the deceased by slicing and cutting the dead body. In one *ḥadīth*, Prophet *Muḥammad* P.B.U.H was advising the commander in a war to be conscious and cognizant of Allah, and also to observe the manners in war, including the prohibition to mutilate dead bodies:

> It has been reported from *Sulaymān bin Buraydah* through his father that when the Messenger of Allah P.B.U.H appointed anyone as leader of an army or detachment he would especially exhort him to fear Allah and to be good to the Muslims who were with him. He would say: Fight in the name of Allah and in the way of Allah. Fight against those who disbelieve in Allah. Make a holy war, do not embezzle the spoils; do not break your pledge; and do not mutilate (the dead) bodies; do not kill the children. (*Ṣaḥīḥ* Muslim [Authentic *Ḥadīth* Collections of Muslim] (n.d.), 1731 a, b Book 32, *Ḥadīth* 3, also mentioned in *Jāmiʿ al-Tirmidhī* [*Ḥadīth* Compilation of *al-Tirmidhī*] (n.d.b), 1617 Book 21, *Ḥadīth* 80, and *Sunan Ibn Mājah* [*Ḥadīth* Collections of *Ibn Mājah*] (n.d.), Vol. 4, Book 24, *Ḥadīth* 2858).

According to the opponents of the post-mortem, the procedure is clearly related with the general prohibition mentioned in the *ḥadīth*, plus, there are also other *ḥadīth* that mention the same prohibition to cut or slice the dead body.

The issue is then explained with the point of human honour and dignity (*karāmah insāniyyah*) which stresses on the prohibition of killing another Muslim without reason permitted by *sharīʿah*. In Islam, a Muslim's sacrosanctity is reserved even after his death. As reported by *Abū Dāwud* (3207 Book 21, *Ḥadīth* 119), The Prophet P.B.U.H said, "Breaking a dead man's bone is like breaking it when he is alive". With regards to the commentary on this *ḥadīth*, *al-Imām al-Ṭībī*, *al-Imām Ibn Mālik,* and *al-Imām Ibn Ḥajar al-ʿAsqalānī* stated that the dead should not be treated or disregarded with dishonour (Habib, 2012). *Al-Imām Ibn Ḥajar al-ʿAsqalānī* mentioned in *Fatḥ al-Bārī* (9/142), "the wisdom from this *ḥadīth* is that the honour of a believer (*mu`min*) lasts even after his death. His honour remains the same as when he was alive" (Habib, 2012). From the *ḥadīth*, the action of damaging the *mu`min*'s skeleton is prohibited, so do the post-mortem.

Subsequently, the opponents use *qiyās* of; (1) *ḥādith* stating on the prohibition to sit on a grave as the action will cause disrespect to the dead people in the grave even though the action did not involve any direct contact with the dead people (*Jāmiʿ al-Tirmidhī* [*Ḥadīth* compilation of *al-Tirmidhī*] (n.d.a), 1050, Book 10, *Ḥadīth* 86; *Sunan al-Nasā`i* [*Ḥadīth* collections of *al-Nasā`i*] (n.d.), 2045, Book 21, *Ḥadīth* 229; *Sunan Abū Dawūd* [*Ḥadīth* collections of *Abū Dawūd*] (n.d.), 3225, Book 21, *Ḥadīth* 137). Thus, it is prohibited to do any damage to the dead body or exhuming the grave, and therefore, stronger prohibition is imposed on the post-mortem as the procedure will cause more damage. (2) There are Muslims scholars that prohibit the surgery on the dead pregnant woman to save the living fetus even though it is considered as an emergency (*al-maṣlaḥah al-ḍarūriyyah*) (Abdi, 2018). Thus, the procedure of post-mortem is strongly prohibited.

The proof or *dalīl* from the principle of Islamic law is also used in prohibiting the post-mortem; (1) *al-ḍarar lā yuzāl bi al-ḍarar* (harm cannot be removed by another harm). Thus, to learn the mechanism of illness or pathology to remove the disease by inflicting harm on the dead body through post-mortem is not permissible. (2) *lā ḍarar wa lā ḍirar* (one should not cause harm, nor should he reciprocate harm with harm) taken from a *ḥadīth* (*Muwaṭṭa` Mālik* [Systematic *Ḥadīth* Collections of *Mālik*] (n.d.), Book 36, *Ḥadīth* 31). The principle is used as a reason to prohibit the post-mortem as the action will definitely cause damage or harm to the dead body even though there is benefit from the procedure.

From the above explanation, the *Muftī* Department has come out with a conclusion to allow the post-mortem on non-Muslim, but not permissible on the Muslim dead body unless there is a need to conduct the

procedure in order to solve a criminal case or to identify a disease by reiterating the legal rulings given by JMMKI in 1989 and 2004. In its website, JAKIM has produced the post-mortem guideline from an Islamic perspective with the latest update on 23rd November 2015 which acknowledges the need for post-mortem to retrieve pieces from the dead body for medical research in item 4.2 (the objective of post-mortem) and 4.4 (necessity for post-mortem).

Following the issue of post-mortem, JMMKI (1993) has decided that preserving or embalming the corpse in the case of emergency is permitted. However, if embalming the dead body is not for emergency (*ḍarūriyyah*) reason, i.e. for exhibition purpose, then the procedure is impermissible as agreed by JMMKI (2011) supported – with the same *ṣīghah* – by JFN9 (2017) and JFSelangor (2011). The committees argued that, in Islam, the deceased had the honour, value, and human rights that must be respected and preserved just like a living person. The surgical procedures and embalmment on the dead body for the purpose of exhibitions and to be demonstrated in various forms and actions are contrary to the *sharīʿah*. However, to educate the public on human anatomy, it can be done using other exhibition materials such as photographs and artificial materials without using real human bodies.

However, in the issue of organ donation from the dead person, the rulings given by the *fatwā* bodies are based on the therapeutic purpose, and not on the research purpose. These can be seen through the permissible rulings if the recipient (patient) is in the dire needs of the organs, i.e. the recipient will die if he or she did not undergo organ transplantation immediately. Different from the articular cartilage tissue engineering experimentation, the retrieved pieces of tissue will end up in the laboratory and processed gradually with multiple testing or analyses. It can be noted that, even though it is a matter of life and death of the prospective recipient, the terms and conditions stipulated by the *fatwā* bodies still can be considered strict and firm in order to protect the sanctity and honour of the dead body and the deceased family.

The *fatwā* of donating eye tissue (cornea) from the Muslim deceased was also discussed by Perlis *Fatwā* Committee (*Jawatankuasa Syariah Negeri Perlis*) (1966) on 5th June 1966.[6] In the preliminary discussion, two committee members agreed on the permissibility of eye tissue donation while two others disagreed with the donation, which finally the *muftī* (chairman) was asked to give his opinion that resulted in the permissibility of such action. The decision was forwarded in another meeting whereby the *Fatwā* Council of Perlis further discussed on the issue using the *dalīl* taken from the *Qur`ān* and *Sunnah*. The discussion finally led eight council members to agree on the permissibility while the other five members disagreed with the decision to allow the donation. Based on the votes, the donation of eye tissue is considered permissible. Meanwhile, JMMKI (1970)

[6] As requested by Ministry of Health Malaysia through a letter (KK 11031(50) dated 6th November 1965).

and JFSabah (2009) gave the same ruling (permissible) on the donation of eye tissue (including the heart) of the deceased with stipulated terms and conditions.

It can be appreciated that local Muslim scholars have tread carefully in discussing the matter related to utilising cadaver for medical purposes. The current *fatwā* produced by the *fatwā* committees has shown that honouring a human body is a very important aspect. Even though the intention of using biological samples from a cadaver is for research purpose as in articular cartilage tissue engineering experimentation, the Muslim researchers still need to consider the bioethical concerns from the Islamic perspective. The researchers may need to consider opting for other options such as using the biological samples from living donors as alternatives to obtain cell sources in studying the articular cartilage regeneration. These alternatives perhaps raised minor *fiqh* issues compared to the above scenario.

CONCLUSION

In searching for the treatment for degenerative joint diseases, the researchers of articular cartilage tissue engineering have been utilising cell sources through cadaveric tissue sampling. Thus, there is a need to screen the practices from an Islamic perspective, through the analysis of relevant local *fatwā*. Verily, the experiments are essential to developing a new treatment in the tissue engineering field to produce functional articular cartilage tissue. However, it is far more critical for Muslim researchers to ensure their conduct and practices to be in line with the *shariʿāh*. The researchers are advised to refer to the *fatwā* committees or religious bodies prior to adopting or adapting the international biomedical practices, before implementing the technology in Muslim societies, i.e. Malaysia. For instance, the researchers may search for the best alternatives of cell sources such as opting for sampling the tissue from the living donor instead of the cadaver. In general, there are relevant *fatwā* which can be linked to the practices of tissue engineering research in regenerating an articular cartilage tissue. The *fatwā* can be used as key references for the researchers in conducting their studies, to be in line with *shariʿāh*. Despite new efforts to align researches in articular cartilage tissue engineering with the *shariʿāh*, further study needs to be designed to develop a permissible (*halāl*) environment of articular cartilage tissue engineering experimentation.

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