Available Online at www.e-iph.co.uk
Indexed in Clarivate Analytics WoS, and ScienceOPEN

E-B Environment - Behaviour Proceedings Journal

AcE-Bs2022Cherating

https://www.amerabra.org

10th Asian Conference on Environment-Behaviour Studies

Holiday Villa Beach Resort, Cherating, Malaysia, 08-09 Jun 2022

e-IPH e-International Publishing House Ltd., United Kingdom

Integration of Islamic Personality in Radiation Protection Practice among Muslim Radiographers

Hairenanorashikin Sharip [1,2], Siti Noorsuriani Ma'on [1], Mohd Zulkifli Abdullah [1], Cintami Farmawati [3]

[1] Faculty of Business and Management, Universiti Teknolgi MARA (UITM) Malaysia,
[2] Faculty of Health Sciences, Universiti Teknologi MARA (UITM) Malaysia,
[3] Faculty of Ushuluddin, Adab and Da'wah, Institut Agama Islam Negeri Pekalongan (IAINP) Indonesia

hairena@uitm.edu.my, sitinoor123@uitm.edu.my, m_zulkifli@uitm.edu.my, cintamifarmawati@gmail.com
Tel: +60332584484

Abstract
This paper discusses the integration of Islamic personality elements in radiation protection practices. Although many guidelines have been introduced, non-compliance cases still occur among radiographers. Personalizing Islamic Personality could give a solution for Muslims. A narrative literature review has been done involving the content analysis and related documents. The review is elaborated according to selected themes. Islamic Personality integration could be done by aligning professional obligations as radiographers and religious obligations as Muslims. Various professional traits applicable to Muslim radiographers have been identified. However, a specific Islamic Personality inventory needs to be developed specifically for the medical imaging field.

Keywords: Radiation protection, Muslim radiographers, Islamic Personality, Compliance

DOI: https://doi.org/10.21834/ebpj.v7i20.3341

1.0 Introduction

Medical imaging, also known as radiography, is the field of medicine in which radiographers produce various images of body parts for diagnostic or treatment purposes using sophisticated and ever-evolving equipment technology (Brooks & Brooks, 2015). Radiographers are medical imaging practitioners who specialize in imaging human anatomy to diagnose and treat disease. Ionizing radiation is a form of energy that removes electrons from atoms and molecules of materials (Martin et al., 2018). In medical imaging, ionizing radiation (IR) is employed in general x-rays, mammography, computed tomography scans, fluoroscopic procedures, and nuclear medicine examinations.

Ionizing radiation has sufficient energy to influence the atoms within living cells, ultimately causing harm to their genetic material (DNA) (Wang, Wang & Qian, 2018). Even the cells in our bodies are exceptionally competent in repairing this damage (Martin et al., 2018); nonetheless, if the damage is not repaired correctly, a cell may die or become cancerous (Wang, Wang, and Qian, 2018). Extremely high radiation exposure can result in acute health effects, including skin burns and acute radiation syndrome (Martin et al., 2018). Exposure to low amounts of radiation does not create immediate health consequences but is a slight contributor to the overall risk of developing cancer (Rühm, Laurier& Wakeford, 2022). Concerning the effect of ionizing radiation, thus protecting patients, staff, and the public during any medical imaging procedure should be prioritized by attending radiographers.

DOI: https://doi.org/10.21834/ebpj.v7i20.3341

The International Atomic Energy Agency (IAEA) defines radiation protection as protecting individuals from the detrimental effects of exposure to ionizing radiation and the techniques to achieve that protection (Rahman, 2019). International Commission on Radiological Protection (ICRP) proposed a radiation protection system with its three principles: justification, optimization, and individual dose limitation (Seeram & Brennan, 2016). The first principle is evaluating each requested radiological examination should have a good medical reason to be performed and ensure the benefit of having the examination is always outweighed by the risk. The second principle of optimization is to employ techniques that may minimize radiation dose to patients and staff without sacrificing the clinical information for diagnostic purposes. Finally, the third principle is to ensure exposure to a radiation dose should not exceed the appropriate limit.

Radiation Protection Culture (RPC) is defined as the combination of knowledge, values, behaviors, and experience of radiation protection in all its aspects for patients, workers, population, and environment, and in all exposure situations, combining scientific and social dimensions related to radiation protection and safety (Ploussi & Efstathopoulos, 2016). Embedding safety and protection at a cultural level within an organization among radiographers is the most effective way of delivering the aspired performance in protecting both professionals and patients. Protection focuses on people and behavior (culture) to prevent harm to workers and others when hazardous equipment is being operated.

A set of four ethical values that are common or at least acceptable to the broadest possible range of cultures have been identified, which reasonably well agree with ICRP's principles (Cho et al., 2018). These values are beneficence/non-maleficence, prudence, justice, and dignity. Beneficence and non-maleficence do more good than harm, while prudence means keeping exposure as low as reasonably achievable (ALARA). While in the element of justice, tolerability and equity ensure the radiation exposure does not exceed the socially unacceptable levels and reduce inequities in the dose distribution. Finally, for the element of dignity and autonomy, radiographers need to treat people with respect and involve stakeholders.

Due to the increasing use of ionization radiation for diagnostic and therapeutic purposes, implementing RPC in medical imaging is significantly essential and needed (Ploussi & Efstathopoulos, 2016). The direct impact of RPC implementation is the substantial reduction of radiation dose on both patients and staff. A strong RPC enables more efficient diagnosis and treatment and helps minimize harmful effects. Since radiographers play a significant role before, during, and after radiographic examinations, compliance with radiation protection practices is highly needed. With the implementation of the radiation protection principle and radiation protection culture, each examination is expected to be optimized to obtain a quality diagnostic image while keeping the patient dose as low as possible.

Although there are many established guidelines for radiation protection in medical imaging fields, these guidelines could not guarantee adherence from radiographers due to limited legal standing, as they are lacking in terms of punitive measures for non-compliance cases (Zainuddin, 2018). Radiographers demonstrated a good knowledge of hazards associated with the diagnostic use of ionizing radiation and protection mechanisms from such hazards. However, their good knowledge had little impact on radiation protection practices which were found to be poor (Eze et al., 2013). Sharma et al. (2016) also found a 'knowledge-practice gap' exists in using personal protective devices among radiographers, with only 22% of the respondents applying lead gloves to the patients during the procedure. Radiographers chose not to comply with the guidelines as they found it took a longer completion time if protective shielding to the patients was applied (Lewis et al., 2021). While this practice is unethical and considered a medico-legal issue, some radiographers were unaware that they could be penalized for the absence of appropriateness and optimization criteria during a radiological procedure (Paolicchi et al., 2015).

The insufficient level of radiation protection awareness (Algohani et al., 2018) and unsatisfactory level of radiation protection practice (Abuzaid et al., 2019) are also faced by Muslim radiographers worldwide. Non-compliance will introduce extra radiation doses to the patients and the public. This practice is unethical and harms patients more, affecting their quality of life. According to Zainuddin (2018), reinforcing safety initiatives could be done by appreciating the Islamic worldview. Aligning Islamic values into medical imaging practice could be accomplished through the aspect of Islamic personality (Ruzlan & Zainuddin, 2018). It is seen that infusing the element of Islamic personality in radiation protection practice could be an alternative to ensure consistency in the adherence to the practice. Thus, this paper aims to review the concept of Islamic personality, which can be applied in radiation protection practice in the medical imaging field. The main objectives are to explore Islamic personality elements from Al-Ghazali's view and discuss the integration of Islamic personality elements in radiation protection among Muslim radiographers.

2.0 Methodology

This narrative literature review involves content analysis and the use of documents related to the topic studied. It involves the only topic of interest without a specific search strategy and no predetermined research question to obtain a broad perspective on a topic. Instead, it retrieves related information on the research topics (Chua, 2011); and has three essential aspects: introduction, content, and conclusion (Idris, 2013). First, the author conducted a literature analysis of the reading materials. Then, the review is elaborated according to the organized themes in discussing the element of Islamic personality from Al-Ghazali's view in radiation protection practice among Muslim radiographers. This method of analysis attempts to provide a descriptive explanation of all the elements the author investigates in the field of study.

3.0 Result and Discussion

3.1 Personality from Al-Ghazali's view

According to Al-Ghazali (1988), personality is a unity between the actions of the soul, which are internal, and bodily behaviors, which are external. The internal aspect was more influential in the sense of the embodiment of one's personality. Personality is divided into four essential aspects, which are al-qalb (heart), al-ruh (spirit), al-nafs (soul), and al-'aql (mind).

The heart (al-qalb) is a round-shaped lump of flesh located to the left of the human chest, also known as the physical heart. It also carries a subtle meaning of divine and spiritual. The heart is the reality of a human being that can acquire knowledge and be responsible for Allah SWT's commands and prohibitions (Al-Ghazali, 2000). This spiritual heart has a very close relationship with the physical heart; every trait born in the heart will affect the limbs (Al-Ghazali, 2000).

Spirit (al-ruh) is a subtle mass originating from a physical heart cavity and spreading to all body parts with intermediate veins and muscles (al-Ghazali 2000). It is also a subtle attribute of human beings who is able to know something.

Al-nafs means the soul, which encompasses the power of anger and lust in human beings. It is the reality of man himself, characterized by various natures depending on the situation. Nafs al-mutmainnah, or a calm soul, is illustrated with the nature of serenity, glory, and the height of glory. Nafs al-lawwamah, or the soul of remorse, is a state of mind that does not attain complete tranquility. Finally, Nafs al-ammarah, an instinct of evil, is described as a form of encouragement that leads to meaningful actions and behaviors violating the noble ethics of life.

The intellect (al-aql) is the power of thinking associated with the ability to know something. The mind has the energy to judge something good and evil. Therefore, it plays a role in the formation of the human personality. Al-qalb, al-ruh, al-nafs, and al-'aql are interior elements that will shape everything related to individual personalities, including attitudes, views, perceptions, motivations, behavior, etcetera. Al-Ghazali (1988) says that the whole human personality is directed by the heart (Al-qalb). Therefore, the heart plays a vital role in determining whether an individual's personality or behavior is good or bad in an individual's life. Therefore, Al-Ghazali (1988) says that the formation process of personality in an individual must begin with the purification of the heart (qalb).

3.2 Comparison between Al-Ghazali's view and western theory of personality

Al-Ghazali's personality description describes his philosophical views based on the faith of Islam. However, if it is to be compared with Western psychological theories such as psychoanalysis, behaviorism, and humanistic, some of them have similarities and differences in several aspects.

Sigmund Freud's theory of psychoanalysis stated that personality consists of three main components, namely id (instinctual urges), ego (balance between id and superego), and superego (social demands) (Sham et al., 2013). From the psychological theory of behaviorism, human personality results from individual learning processes in the environment, which can be seen and measured empirically (Sham et al., 2013). In this theory, the environment's role is emphasized in forming personality through a deep learning process. Roger, the founder of the humanistic theory, argues that humans move towards self-perfection on external aspects that can be seen only (Sham et al., 2013).

The Western perspective of human personality is visible from the external factors based on the human relationship with fellow human beings (Sham et al., 2013). However, to Islamic scholars such as Al-Ghazali, the human personality includes man's relationship with his God or internal factors (spirituality). Although there are similarities and differences from both points of view, both can be used to understand the human personality. The views given by Western scholars can be applied as long as it does not contradict the teachings of Islam, while the views of Islamic scholars such as al-Ghazali should be the primary reference.

3.3 Development of a good personality from Al-Ghazali's view

he development of a good personality can be achieved through self-purification (tazkiyatunnafs), which are mujahadah al-nafs (struggle against immoral and evil characteristics) and riyadah al-nafs (managing and training oneself to begin performing good deeds gradually) (Sham et al., 2013). While riyadah al-nafs emphasizes excellent character traits and practices, mujahadah al-nafs focuses on avoiding the features and practices of mazmumah (vile). These two principles work together to help Muslims realize their full potential as Muslims.

3.4 Personalizing Islamic Personality in radiation protection practice among Muslim radiographers

According to Zainuddin (2018), a Muslim radiographer should be aware that Allah has assigned him as a Vicegerent on earth. As vicegerent, Muslim radiographers must enjoin good and forbidding bad (Quran, 3:110). Furthermore, as vicegerent on earth, Muslim radiographers must not do destruction on earth as stated in Holy Quran (5:64; 7:85). As a result, Muslim radiographers should feel accountable for their department's radiation protection programs. Furthermore, they must understand that diagnostic imaging procedures are performed to benefit patients. Therefore, the benefits of the procedures should always outweigh the risks to the patients. This concept corresponds to the principle of justification in the radiation protection principle and the ethical concepts of beneficence and non-maleficence.

In addition, Muslim radiographers are accountable for ensuring that the patient's radiation exposure is as low as possible. Higher radiation exposures are connected with an increased risk of cancer and other radiation-related disorders. In addition, it may create genetic mutations in sperm and ovaries, which may result in impairment in future kids. Consequently, Muslim radiographers must protect patients, the general public, themselves, and future generations against the harmful effects of ionizing radiation. This statement is consistent with Maqasid al- Shari'ah's (objectives of the Islamic law) principle, which is preserving life (al-nafs).

A Muslim radiographer acknowledges the existence of his Creator and maintains his spirituality or connectedness to Allah in the form of Ibadah (worship) (Zainuddin, 2018). Worship is not only confined to the five pillars of Islam and six pillars of faith but also responding to all that Allah has decreed as doing a good deed and refraining from evil. Fulfilling the professional obligation to adhere to radiation protection measures in medical imaging is a form of Ibadah. Even though the current principles and guidelines originated from the West, Islam does not reject and accepts them as there is no evidence of transgression to the Creator. Complying with radiation protection practices is a good deed, and Allah will give good rewards in the Hereafter for their good deeds (Quran 30:44). It is in line with the concept of riyadah al-nafs in self-purification. According to Ahmad Radzi (2018), the sense of responsibility to fulfill the professional requirement

as radiographers and Amanah as the vicegerent of Allah can be inculcated in Muslim radiographers by constantly reminding themselves that they are responsible for their deeds (Quran, 36:54).

According to Ahmad Radzi (2018), six fundamental safety principles formulated in a general setting that uses ionizing radiation, which radiographers can apply, align with Islam's teaching. The principles are responsibility for safety, justification of facilities and activities, optimization of protection, limitation of risks to individuals, protection of present and future generations, and prevention of accidents. Therefore, it is suggested that the Islamic perspectives of fundamental radiation safety principles should be incorporated into the radiation protection training and displayed in the department to improve the radiation protection culture among Muslim radiographers.

The integration of Islamic values into medical imaging practice could be done through the aspect of Islamic personality (Ruzlan & Zainuddin, 2018). Thus, out of ten professional guidelines in medical imaging examined, they have determined nineteen professional traits applicable to Muslim radiographers. These traits are 1) respectful, 2) safe practice, 3) safe activity, 4) equality, 5) trustworthiness, 6) honesty and integrity, 7) truthful, 8) responsible and accountable, 9) compassionate, 10) wisdom and 11) being up-to-date, 12) competence, 13) teamwork, 14) self-reflection, 15) dignity, 16) ethical behaviors, 17) adhere to laws and regulations, 18) effective communication, and 19) continuity of knowledge and skills development. Therefore, these traits can be aligned to form a set of Islamic Personalities applicable in medical imaging.

3.5 Measurement tools in Islamic Personality

Muslim scholars have come up with various tests to facilitate one's understanding of Islamic personality. Table 1 shows the previously developed Islamic personality tests or instruments, which are the Muslim Religiosity-Personality Inventory (MRPI), Islamic Behavioral Religiosity Scale (IBRS), Psychological Measure of Islamic Religiousness (PMIR), Integrative Islamic Personality Inventory (IPI), Ummatic Personality Inventory (UPI), and Moral Character of Muslim Personality (MCMP). Each test or instrument has different construct and dimensions based on the purpose of its development. These tests were used widely in different disciplines of study and research areas. The impact of these Islamic personality models assists in understanding the relationships between the Islamic personality factors and real-life activities. However, although these models are applicable in investigating the Islamic personality on many occasions, the criteria for addressing the Islamic personality in radiation protection practice among radiographers is still little to suggest. Furthermore, as a part of medicine, the medical imaging field has a nature that is different from pure medicine. Thus, there is a need for specific aspects of Islamic personality applicable to the nature of medical imaging practices. Thus, adopting and adapting the concept of Islamic personality from Al-Ghazali's view for use in the medical imaging field could be helpful.

Table 1: Previously Developed Islamic Personality Tests

Test Instrument	Construct/Dimension	Aim/Usage
Muslim Religiosity-Personality Inventory (MRPI) (Krauss et al., 2005).	1. Islamic Worldview 2. Religious Personality	To measure the level of belief, knowledge, and views on Islam as well as the noble values practiced in Islam.
Islamic Behavioral Religiosity Scale (IBRS) (Abou-Youssef et al., 2011)	1. Islamic Doctrinal 2. Intrinsic Religiosity 3. Extrinsic Religiosity 4. Quest	Used by marketers to measure the degree of customers' religiosity and it could be associated with the customer behavior and work as a predictor to purchase designs
Psychological Measure of Islamic Religiousness (PMIR) (Abu-Raiya et al., 2008).	1. Islamic Beliefs 2. Islamic Ethical Principle and Universality. 3. Islamic Religious Struggle 4. Islamic Religious Duty, Obligation, and Exclusivism 5. Islamic Positive Religious Coping and Identification 6. Punishing Allah Reappraisal 7. Islamic Religious Conversion	Fill the gap in the empirical studies on Muslims and in mental health research.
Integrative Islamic Personality Inventory (IIPI) (Ismail and Tekke, 2015)	1. Tawhid 2. Nubuwwa 3. Self-dimensions	To identify the major domains of Islamic personality using Western and Islamic sources.
Ummatic Personality Inventory (UPI) (Othman, 2008).	1. Ibadah 2. Amanah 3. 'Ilm	Assessing self-introspection (muhasabah) and self-improvement (islah).
Moral Character of Muslim Personality (MCMP) (Al-Ammar, Ahmed, and Nordin, 2012).	1. Cooperation 2. Striving by wealth and self 3. Reconciliation 4. Voluntary charity 5. Truth 6. Fulfilling promises	To promote the behavior of schoolchildren, college students, and some forms of psychological stressors.

7. Forgivingness
8. Steadfastness

4.0 Conclusion

Developing an instrument for assessing Islamic personality elements in the practice of radiation protection based on Al-Ghazali's view is hoped to become a significant effort in promoting radiation protection culture among Muslim radiographers. By applying the concept of Islamic personality, a Muslim radiographer does not only comply with their professional obligations but is also fulfilling his obligations as a Muslim towards his religion. This effort is hoped to become the initiating point towards building a better perspective and practice of Islamization in the medical imaging field.

References

Abou-Youssef, M., Kortam, W., Abou-Aish, E., & El-Bassiouny, N. (2011). Measuring Islamic-driven buyer behavioral implications: A proposed market-minded religiosity scale. Journal of American Science, 7(8), 728-741.

Abu Raiya, H., Pargament, K. I., Mahoney, A., & Stein, C. (2008). A psychological measure of Islamic religiousness: Development and evidence for reliability and validity. The International Journal for the Psychology of Religion, 18(4), 291-315.

Abuzaid, M. M., Elshami, W., Shawki, M., & Salama, D. (2019). Assessment of compliance to radiation safety and protection at the radiology department. International Journal of Radiation Research, 17(3), 439-446.

Ahmad Radzi, H.S.B (2018). Integrating the Islamic perspectives in the fundamental safety principles to improve radiation protection culture among Muslim diagnostic radiographers. International Journal of Allied Health Sciences, 2(2), 339-346

Al-Ammar, F. K., Ahmed, I. H., & Nordin, M. S. (2012). Moral character of Muslim personality: Scale validation. Journal of Education and Practice, 3(16),118-128.

Al-Ghazali, A. H. M. B. (2000). Muhammad. Ihya''Ulum al-Din. Cairo: Dar al-Taqwa li al-Thurath.

Al-Ghazali, A. I. A. H., & ibn al-Ghazali, M. (1988). Ihya'Ulumuddin Jiwa Agama. Terj. Tk. Hj Ismail Yaakub Sh. Kuala Lumpur: Victory Ajensi.

Algohani, K. A., Aldahhasi, A. A., Algarni, A. H., Amrain, K. Y., & Marouf, M. A. (2018). Awareness of radiation protection measures among radiologists and non-radiologists. The Egyptian Journal of Hospital Medicine, 70(3), 371-375.

Ali, M. M. (2011). Holy Quran. Ahmadiyya Anjuman Ishaat Islam Lahore USA.

Brooks, M. L., & Brooks, D. L. (2015). Basic Medical Language-E-Book. Elsevier Health Sciences.

Cho, K. W., Cantone, M. C., Kurihara-Saio, C., Le Guen, B., Martinez, N., Oughton, D., ... & ZöLzer, F. (2018). ICRP publication 138: ethical foundations of the system of radiological protection. Annals of the ICRP, 47(1), 1-65.

Chua, Y. P. (2011). Kaedah penyelidikan (Vol. 1). McGraw Hill (Malaysia) Sdn Bhd.

Eze, C. U., Abonyi, L. C., Njoku, J., Irurhe, N. K., & Olowu, O. (2013). Assessment of radiation protection practices among radiographers in Lagos, Nigeria. Nigerian medical journal: journal of the Nigeria Medical Association, 54(6), 386.

Idris, N. (2013). Penyelidikan dalam pendidikan. McGraw-Hill Education.

Ismail, N. A. H., & Tekke, M. (2015). Development and initial validation of integrative Islamic personality inventory. Advances in Environmental Biology, 9(18), 163-171.

Krauss, S. E., Hamzah, A., Juhari, R., & Hamid, J. A. (2005). The Muslim Religiosity-Personality Inventory (MRPI): Towards understanding differences in the Islamic religiosity among the Malaysian youth. Pertanika Journal of Social Sciences & Humanities, 13(2), 173-186.

Lewis, S., Downing, C., & Hayre, C. M. (2022). Using the theory of planned behaviour to determine radiation protection among South African diagnostic radiographers: a cross-sectional survey. Journal of Medical Radiation Sciences, 69(1), 47-55.

Martin, A., Harbison, S., Beach, K., & Cole, P. (2018). An introduction to radiation protection. CRC Press.

Paolicchi, F., Miniati, F., Bastiani, L., Faggioni, L., Ciaramella, A., Creonti, I., ... & Caramella, D. (2016). Assessment of radiation protection awareness and knowledge about radiological examination doses among Italian radiographers. Insights into imaging, 7(2), 233-242.

Ploussi, A., & Efstathopoulos, E. P. (2016). Importance of establishing radiation protection culture in radiology department. World journal of radiology, 8(2), 142.

Rahman, M. H. (2019). Radiation hazard, safety, control and protection. Faridpur Medical College Journal, 14(2), 100-103.

Rühm, W., Laurier, D., & Wakeford, R. (2022). Cancer risk following low doses of ionising radiation–Current epidemiological evidence and implications for radiological protection. Mutation Research/Genetic Toxicology and Environmental Mutagenesis, 873, 503436.

Ruzlan, S. M. M., & Zainuddin, Z. I. (2018). Addressing Islamic Values in Medical Imaging Professionalism. IIUM Medical Journal Malaysia, 17(1).

Seeram, E., & Brennan, P. C. (2016). Radiation protection in diagnostic X-ray imaging. Jones & Bartlett Publishers.

Sham, F. M., Hamjah, S. H., & Mohd. Jurairi Sharifudin. (2013). Personaliti dari perspektif al-Ghazali. Penerbit Universiti Kebangsaan Malaysia.

Sharma, M., Singh, A., Goel, S., & Satani, S. (2016). An evaluation of knowledge and practice towards radiation protection among radiographers of Agra city. Sch J Appl Med Sci, 4(6), 2207-10.

Wang, J. S., Wang, H. J., & Qian, H. L. (2018). Biological effects of radiation on cancer cells. Military Medical Research, 5(1), 1-10.

Wilson, L. J., & Newhauser, W. D. (2020). Justification and optimization of radiation exposures: a new framework to aggregate arbitrary detriments and benefits. Radiation and Environmental Biophysics, 59(3), 389-405.

Zainuddin, Z. I. (2018). 02| Personalizing Radiation Protection in Medical Imaging: An Islamic Approach. Revelation and Science, 8(1).