

THE RELATIONSHIP BETWEEN ZIKR (REMEMBRANCE OF ALLAH), HEART COHERENCE AND INTRAPERSONAL COMMUNICATION AMONG MUSLIM POSTGRADUATE STUDENTS FROM DIFFERENT COUNTRIES

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ABSTRACT

A good level of heart coherence is important for individuals to overcome the emotional and psychological stresses and conduct proper communication with one another. Zikr or remembrance of Allah, as the main pleasing performance to Allah, has direct effects on the emotional and psychological situation of Muslims. The levels of heart coherence and the effects of any intervention on the rhythmic actions and reactions of human heart are measurable through the use of heart rate variability (HRV)-biofeedback technology and HRV techniques. Thus, this study was conducted through the application of a mixed method research design, which included the use of HRV-biofeedback technology and some interviews, to assess the probable relationship between Ziki, heart coherence and intrapersonal communication of Muslim university students from different nationalities. This study had 20 participants from 10 different countries. From all participants, six of them were interviewed to support the HRV data through their direct views. The results from this study confirmed the existence of a close relationship between Zikr and the levels of heart coherence among the participants. Based on the results, Zikr performance had significant positive effects on the increase of heart coherence among the participants, and heart coherence is among the main factors that affect the process of intrapersonal communication within the human body. The results from this study may encourage individuals to perform Zikr performance as an effective treatment for their emotional and psychological disorders.

Keywords: Zikr, Remembrance of Allah, Heart coherence, Intrapersonal communication, Heart rate variability, Biofeedback.

INTRODUCTION

Coherent heart is associated with stability, well performance, harmony and fruitful intrapersonal communication. Through the increase of the levels of their heart coherence, individuals may have more successful personal and social lives. The coherent heart is connected with association, stability and well-organized energy use, and also with the coordination between diverse erratic mechanisms of human body (Jandt, 1973; McCraty & Shaffer, 2015; McCraty & Childre, 2010). Tiller et al. (1996) have introduced

physiological coherence term to explain the level of harmony, order and stability throughout the different rhythmic actions inside living bodies over an estimated period of time. Some actions and techniques like Zikr or remembrance of Allah and coherence techniques may help individuals to increase the levels of their heart coherence and have coherent hearts. Zikr as the main rewarding performance of Muslims for their Lord (Allah) which has direct influences on emotional, psychological and physical well-being of individuals may affect the levels of their heart coherence. Zikr, as a general religious and cultural practice among all Muslims throughout the globe, could international Muslim university students to have coherent hearts and proper social and academic performances.

The term of Zikr is derived from the word 'dzakara' which is an Arabic word which means remembering. Zikr also means remembrance and recitation of Allah through practicing speech. Zikr involves both mental and physical activities through behavior, attitude and reflection. Zikr is the most pleasing action to Allah and the best way of worship and it has spiritual and psychological benefits for individuals (Amin & Al-Fandi, 2008; Saleh, 2010; Khan, 2000). As Allah Subhanahu wa ta'ala says in Surah Ar Ra'd, "Who have believed and whose hearts have rest in the remembrance of Allah. Verily in the remembrance of Allah do hearts find rest" (13:28). Moreover, the performance of Zikr is easy and available any time, in any state and in any place, and does not require a particular schedule (Saleh, 2010).

The levels of heart coherence and heart rate variability (HRV) of individuals are assessable thorough the use of HRV biofeedback technology. According to McCraty and Shaffer (2015), heart rate variability, the change in the time intervals between adjacent heartbeats, is an emergent property of interdependent regulatory systems that operates on different time scales to adapt to environmental and psychological challenges. The heart coherence is assessable through the use of HRV-biofeedback technology, and the HRV frequency range for a coherent heart is from 0.04 Hz to 0.26 Hz (McCraty & Shaffer, 2015). Good HRV scores are associated with good human performance, harmony, order and stability, decrease of psychological distresses, reduction of problematic behaviors and concerns. Moreover, Jandt (1973) introduces biofeedback as intrapersonal communication, and through a study under the title of (biofeedback as intrapersonal communication) found that humans have an ability to control the functions of their body.

Intrapersonal communication, which happens within individuals' body and helps them to produce and transfer their messages to others properly, affects all other kinds of direct interactions among individuals. As stated by Rhodes (2009), intrapersonal communication competence and skills are the skill of understanding of feelings and practice of personal regulations. The process that individuals learn to overcome their physiological challenges including their heart rate is called interpersonal biofeedback (Kassel & LeMay, 2015). Biofeedback deals with the autonomic physiological process and is intensely related to the internal process of communication in the human body, and it deals with the autonomic physiological process and is intensely related to the internal process of communication in the human body (Jandt, 1973). According to Kassel and LeMay (2015), the biofeedback technology and tools enable people to assess their interpersonal biofeedback.

Generally, besides their university related and normal life stresses, international university students struggle to overcome the pressures concerning cultural issues as well (Lin, 2011). International students experience many personal, social, cultural, and academic difficulties which include their adjustment into the new social norms, cultural shock, isolation and homesickness, and different educational norms and systems (Toyokawa & Toyokawa, 2002). According to Newton and Ender (2010), because of the varied nature of environment in the university campus, students may face

some personal challenges such as interpersonal skills, managing and expressing of their feelings, tolerating differences, and establishing relationships. However, a coherent heart, good level of HRV, successful interpersonal communication and well performance skills may help international students to overcome such challenges. As pointed out, the development of social performance is associated with emotional responding and coherent heart. Whereas, the heart coherence (the balanced level of HRV) leads into the decrease of psychological distresses, and decrease of problematic behaviors and concerns, and improves academic achievements and social performance among students (McCraty, 1999; Childre & Rozman, 2003; Cornes & Frank, 1994; Ross, 2011).

Moreover, good HRV scores and coherent heart are also connected with the psychological flexibility, creativity and skills of individuals to deal faster with the affective, cognitive and physiological stresses, and the ability to decide when facing with many alternatives and to choose from the different options (McCraty et al., 2000; Lagos et al., 2008; Tiller et al., 1996; Ross, 2011). One of the main analysis that enabled researchers to assess the relationship between social behaviors and heart functioning is heart rate variability (Chandola et al., 2005; Kimberly, 2012). HRV analyses can explain the psychological and physiological state because of HRV connections with the autonomic nervous system (ANS) of the human body (Berntson & Cacioppo, 2008; Kimberly, 2012). The autonomic nervous system (ANS) which affects the human heart rhythmic actions has two parts which are: sympathetic nervous system (SNS) and parasympathetic nervous system (PNS). The high levels of activities of SNS associated with the *fight-and-flight* situation and cognitive and psychological stress, and the high levels of activities of PNS which are associated with the too much relaxation and laziness (Bernston et al., 1991; Jacob; 2010; McCraty & Shaffer, 2015; Tanis, 2008).

The cited verses from the holy Quran grant the positive effects of Zikr and remembrance of Allah on the heart rest and coherence. The main source of knowledge for Muslims is the Holy Quran (Ishak & Yusoff, 2015). Cited scholars emphasize on the relationship between Zikr and heart coherence. However, there are insufficient available works in the literature based on the assessment of the assertions of scholars through the application of technology mediated studies. Thus, this study aims to assess the relationship between Zikr and heart coherence among international students from different countries through the use of HRV-biofeedback technology. International students are university students who hold passports of different nationalities, leave their home countries, and are temporarily staying in foreign (host) countries for the purpose of higher education to further their studies (Huang, 2010; Berry & Sam, 1996).

THEORETICAL SUPPORT

Allah (SWT) says “Unquestionably, by the remembrance of Allah, hearts are assured” (13:28). Some new techniques and technology enabled researchers to assess the heart actions and reactions of human-beings. The Neurovisceral Integration Theory of Thayer and Lane (2000) focuses on the relationship between the emotional responding and heart rate variability. According to this theory, the range of cognitive, physiological, and behavioral processes that involved in emotional functioning are the basic parts of a larger autonomic biofeedback system. The Polyvagal Theory of Porges (1997) focuses on an evolutionary mechanism that understands human performance based on the genetically and acquired characteristics, and this process is associated with the autonomic nervous system. The acquired characteristics are based on the acquisition of an autonomic mechanism which influences human performance and their psychological well-being. Both of the polyvagal theory of Porges (1997) and the neurovisceral integration theory of

Thayer and Lane (2000) focus on the importance of HRV-biofeedback on the synchronized emotional responding and the capacity of individuals to control their internal abilities, and to have coherent hearts.

Moreover, the Contact and Cohesion Theory of Sarwari (2017) focuses on Contact Initiation, Negotiation, Cognition, and Cohesion as the four steps for conducting proper interactions among individuals from different backgrounds. At the same time, this theory introduces seven pre-conditions for conducting successful interactions among individuals from various backgrounds in Asian context of communication as well. The proposed preconditions are: Coherent Competence, Coherent Heart, Self-knowledge, Purposefulness, Respect Differences, Shared Interests, and Flexibility (Sarwari, 2017), and the coherent heart is among the proposed preconditions of the Contact and Cohesion Theory, and biofeedback technology and techniques could help individuals to improve and evaluate their heart coherence.

Moreover, according to Kassel and LeMay (2015), HRV-biofeedback analysis is an assessment mechanism and intervention enables individuals to improve their flexibility and well-performance skills (Kassel & LeMay, 2015). HRV-biofeedback as an important psychophysiological intervention is significantly effective and helpful in the performance and flexibility, recovery and resilience, and uniqueness to relationships domains. These domains help individuals to be flexible, to recover from the upset internal communication and overcome the probable challenges, and to improve their self defensive abilities (Roisman, 2007; Tull, Barrett, McMillan, & Roemer, 2007; Guidano, 1991). Thus, the use of HRV-biofeedback technology and techniques to evaluate the effectiveness of Zikr on heart coherence may bring some interesting information in the interdisciplinary field of religion, communication and biofeedback technology.

LITERATURE REVIEW

The results from various studies indicate that the heart coherence decreases psychological distress, problematic behaviors, improves performance and academic achievements, and personal behaviors among students (Ross, 2011; Childre & Rozman, 2003; McCraty, 1999). One of the best ways that may help Muslim individuals to improve their heart coherence is Zikr and remembrance of Allah. According to the scholars, through Zikr individuals can find spiritual comfort and become closer to Allah (Amin & Al-Fandi, 2008; Saleh, 2010; Khan, 2000). Zikr has direct influences on behaviors of individuals and help them to change their behaviors and attitudes positively (Senik, Nubli & Zamani, 2013). The results from a study on the effectiveness of Zikr on psychological changes of individuals showed that Zikr has positive effects on individuals' psychological well-being (Senik et al., 2013). Moreover, the use of some technologies such as HRV-biofeedback helps researchers to assess the levels of heart coherence among individuals and the probable changes through the intervention of some actions or techniques such as Zikr and the Quick Coherence Technique of HeartMath Institute (2016).

Biofeedback refers to a kind of therapy through the use of sensors attached to the human body to measure body functions, and it helps individuals to know actions and reactions of their bodies. The received information from bodily functions may help individuals to control body functions properly (Krans, 2016). According to Jandt (1973), biofeedback is a process that utilizes electrophysiological instruments to indicate individuals' learning to know and control different bodily functions. Every physiological process which can be observed and monitored is the potential source of biofeedback and could provide biofeedback. A technique that helps people to learn how to control functions of their body such as their heart rate variability is called biofeedback, and

biofeedback gives the power for individuals to control their body, use their thoughts properly, and to improve their physical performance (Mayo Clinic Staff, 2016).

According to Frank et al. (2010), through the use of particular equipment and a computer monitor, individuals get helpful feedback to enhance control over their bodily functioning, and biofeedback enables individuals to see inside of their bodies and to control the action and reactions of their physiology. The use of biofeedback could be helpful on the improvement of well being, performance and physiological changes (Mark & David, 2009). HRV-biofeedback is used as an indicator to stage communication apprehension (Behnke & Carlile, 1971; Porter, 1974). McCraty and Shaffer (2015) argue that, heart rate variability (HRV) is the changes in the time intervals between nearby heartbeats, and it is a developing property of inter-reliant regulatory mechanisms which functions in different time scales to deal with psychological and environmental challenges. A favourable level of HRV reflects well performance and healthy function, a natural self-regulatory capability, and flexibility (McCraty & Shaffer, 2015). Based on Thayer (2007), to guide well-organized portion of cognitive and awareness resources, the use of HRV is essential for competent performance in a demanding environment where delayed reply and behavioral embarrassment are key; while, low HRV enlarged risk of stress disclosure. Furthermore, fruitful intrapersonal and coherent heart influence the process of direct interactions among people, and interactions among individuals are among the most serious and effective parts of human performance (Jandt; 1973; Sarwari & Wahab, 2016; Sarwari, Ibrahim & Nor Ashikin, 2016)

Based on the HRV power spectrum, the HRV frequency ranges are categorized under the three main frequencies as the high frequency (HF), low frequency (LF), and very low frequency (VLF). The HF includes the band of 0.15 hertz to 0.4 hertz and reflects the parasympathetic actions. The LF includes the band of 0.04 hertz to 0.15 hertz, and is also called the mid-frequency band. There is a suggestion that LF mirrors sympathetic activities and the ratio of the LF/HF bands is contentiously used to evaluate balance between parasympathetic and sympathetic activities. Finally, the VLF band is the range of 0.003 hertz to 0.04 hertz and indicates low HRV and is associated with increasing risk of unpleasant results (McCraty & Shaffer, 2015). The desirable HRV for a healthy adult with coherent heart is from the range of 0.04 Hz of LF to 0.26 Hz of HF (McCraty & Shaffer, 2015). Based on the assertions of the cited scholars and the availability of technologies to assess HRV and heart coherence, evaluation of the relationship between Zikr performance and heart coherence may add some new and interesting information in the literature.

METHODOLOGY

A mixed method research design through the application of the heart rate variability (HRV) and interview data collection procedures was applied to conduct this study. According to Creswell and Plano Clark (2007), researchers use a mixed method research design to strengthen their findings. The Quick Coherence Technique (QCT) which was developed and introduced by HeartMath Institute was used. The QCT includes the three data collection and coherence technique stages which are: heart focus, heart breathing, and heart feeling. In the heart focus step, the participants will be asked to focus on the location and actions and reactions of their hearts. The heart breathing stage asks the participants to focus on the process of breathings while he breathes deeply, and the heart feeling stage asks the participant to remember a pleasant moment and try to re-practice that moment (Tanis, 2008; HeartMath.org, 2016). According to McCraty and Shaffer (2015), the results from various studies have confirmed the helpful effects of coherent

training through emphasizing on projected actions based on the positive emotions on improvement of physical, emotional and psychological well-being among different people.

Prior to the HRV data collection procedure, the required information about HRV biofeedback technology were given to the volunteered participants. At the same time, the printed copies of HRV data collection consent which included information about the data collection procedure, time limitations and required sessions were given to the volunteer participants to read carefully. Once the volunteers accepted the conditions, then the data collection procedure were conducted. The HRV data collection procedure included eight sessions which were: baseline 1 (2 minutes), heart focus (2 minutes), heart breathing (2 minutes), heart feeling (2 minutes), baseline 2 (2 minutes) and three sessions under the Zikr performance which named below. To compare the results from the heart focus, heart breathing and heart feeling stages with results from Zikr, three stages of Zikr performance which included 1) **Subhanallah** (Glory be to Allah), 2) **Astaghfirullah** (I beg Allah for forgiveness), and 3) **Alhamdulillah** (Thanks be to Allah) were chosen. The participants were asked to recite any of these holy words for two minutes in silent. In the first stage of data collection, the data were collected under the three proposed steps of QC plus a baseline step prior to the QCT stages, and also in the second data collection procedure the data were collected under the three mentioned stages of Zikr (remembrance of Allah), plus a baseline stage prior to the Zikr stages data collection.

Each of the data collection session for both of the QCT and Zikr stages took two minutes. For the data collection procedure, the HRV biofeedback technology which are available in the emWave PC (1.0) software and device were used. The emWave PC (1.0) device and is a handy and easily applicable tool and the emWave device and software are unquestionable for the HRV data collection. Furthermore, the emWave is a trustable technology (Tanis, 2008). During the data collection, the emWave device was plugged into a laptop and its ear sensor was connected to the ear of the participant to collect the data. The emWave software was already installed in the laptop. Prior

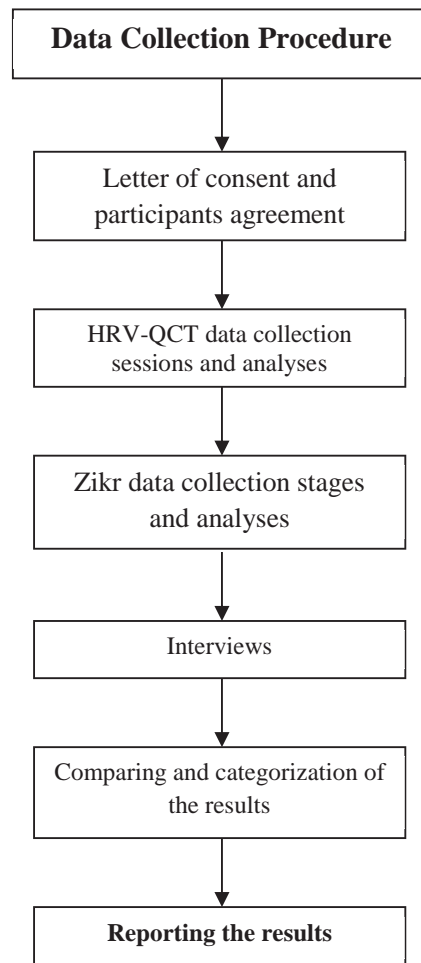
The HRV-biofeedback as the promising mechanism for the rising HRV is becoming more popular to be used in the HRV setting of studies (Rene, 2008; Pignotti & Steinberg, 2001). Rene (2008) also argued that the findings of a study on the effectiveness of a handy biofeedback tool regarding the mental problems confirmed that the HRV - biofeedback is a safe and non-invasive device. The emWave software and devices which are easily applicable and scientifically validated help individuals to achieve alignment and coherence through easily applicable exercises and feedback. At the same time, emWave technology enables individuals to collect their pulse data analyze coherence through the user-friendly data and graphics which will be displayed on their PC screens (HeartMath, 2016).

The data collection procedure of this study took around two weeks from early February to mid-February 2016. The data were collected from the volunteer participants in their rooms in the international residential college of the mentioned university based on the self-agreement of the participants. The data collection procedure had eight sessions: four stages for the QCT and four stages for the Zikr based data collection steps. The received and visible scores from the emWave software were transferred into the SPSS statistical pages and were analyzed through the descriptive test of SPSS.

To support the HRV data through the direct views of some participants, six volunteers were interviewed as well. To conduct the interviews, an interview protocol was designed which included a package of five open-ended questions to enable the participants to state their direct views based on their personal feelings and experiences of their daily Zikr and their heart coherence and psychological well-being. All interviews

were conducted under the guidance of this protocol and were digitally audio-recorded. The interviews were transcribed and were divided under the RQs, the research themes and emerging themes from the answers of the interviewees. For the interviews coding and analyses procedures, the method of constant and comparison which was developed by Glasser and Strauss (1967) was used. Based on this method, three steps were applied to code and analyze the recorded interviews. The required steps are: transcribing the interviews, categorization of the data, and identifying and categorizing the themes that mirror the data set (Sherburne, 2009). The interviews were transcribed and analyzed and the salient parts of the views of the interviewees are directly quoted in findings section below. Figure 1 below illustrates the data collection and analyses procedures.

Figure 1: The data collection and analyses procedures



PARTICIPANTS

This study had 20 participants from international postgraduate students of a Malaysian public university, namely University Malaysia Pahang. The participants were all male Muslim international students. As Zikr is a global cultural and spiritual practice for all Muslims, the participants of this study were sharing the same religious experiences in their personal and social lives. The participants were between the age of 22 and 39, and they came from 10 different countries. From all participants, 11 of them were master

students and nine others PhD students. Based on their personal agreements, six of them were interviewed to support the HRV results.

FINDINGS

The results from both sections of the data, the collected data under the proposed stages of the Quick Coherence Technique (QCT), and also the received data for the Zikr (remembrance of Allah) stages were analyzed separately through the descriptive test of SPSS to find out the mean and standard deviation scores for each step. Based on the results, both of the QCT and Zikr had positive effects on the increase of heart coherence of the participants, but Zikr had more positive effects on the increase of the levels of heart coherence among the participants. For the first section of heart rate variability (HRV) data under the CQT steps, the *M/SD* scores for the baseline stage which was collected without intervention of any technique were: $M = 17.2$, and $SD = 13.9$. But, though the use of the QCT stages, the participants got better scores and the results showed the positive effects of the use of the QCT on the increase of heart coherence of the participants. For the heart focus stage, the *M/SD* scores were $M = 19.6$, and $SD = 13.4$, for the heart breathing the scores were $M = 22.1$, and $SD = 12.8$, and for the heart feeling stage the *M/SD* score were $M = 21.7$, and $SD = 12.3$.

For the data which were collected under the intervention of Zikr, the *M/SD* scores for the baseline which was collected without any intervention were $M = 16.9$, $SD = 12.7$. But, under the Zikr stages the scores increased significantly. As the *M/SD* scores for the first stage of Zikr were $M = 22.6$, and $SD = 12.3$, for the second stage the scores were $M = 25.4$, and $SD = 11$, and for the third stage the scores were $M = 25.8$, and $SD = 11.4$. The HRV scores showed the positive effects of the QCT and Zikr on the increase of HRV scores. Based on the results, Zikr had stronger positive effects on the results. Table 2 below illustrates the *M/SD* scores of participants for all stages of both sections of the data collection procedure.

Table 2: Illustrates the *M/SD* scores of the participants for both sections of the data

Data collection stages	Mean	SD
QCT		
Baseline	17.2	13.9
Heart focus	19.6	13.4
Heart breathing	22.1	12.8
Heart feeling	21.7	12.3
Zikr		
Baseline	16.9	12.7
Subhanallah	22.6	12.3
Astaghfirullah	25.4	11
Alhamdulillah	25.8	11.4

Based on the results, the Zikr stages helped the participants to have regular pulse graphs as well. The figures below illustrate the irregular pulse graph of a participant for the baseline session and his regular pulse graph for a stage of data collection through the intervention of Zikr.

Figure 2: The irregular pulse graph of a participant for the baseline session

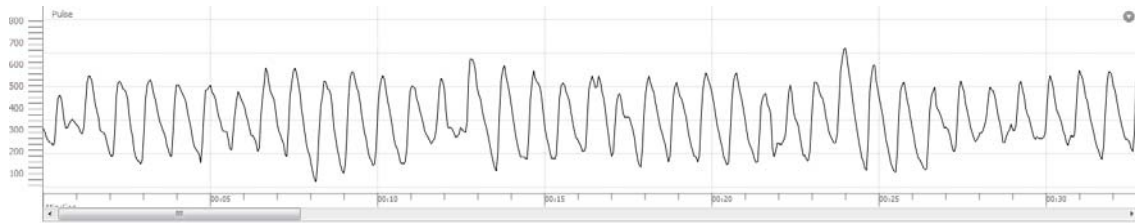
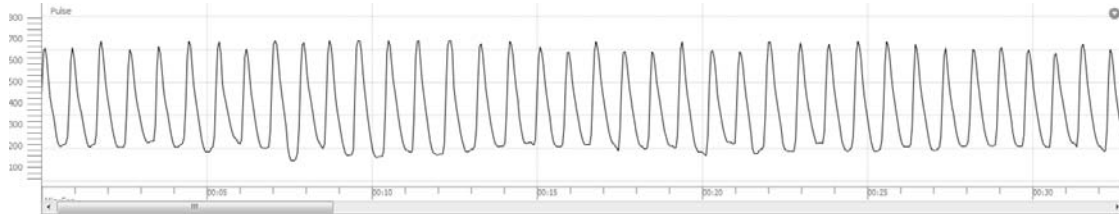


Figure 3: The regular pulse graph of a participant under the intervention of Zikr



INTERVIEW RESULTS

From all 20 participants of this study, six of them were interviewed to strengthen the results through their direct views. All interviews were conducted under the guidance of an interview protocol. The interviewees of this study were: 1) a Master student from Algeria, 2) a PhD student from Bangladesh, 3) a Master student from Indonesia, 4) a PhD student from Egypt, 5) a PhD student from Pakistan, and 6) a Master student from Yemen. The answers of the all interviewees were transcribed and analyzed separately, and the salient parts of their answers are used in the upcoming paragraphs.

All interviewees of this study focused on the effectiveness of Zikr performance (remembrance of Allah) on their heart coherence, and emotional and psychological situations wellbeing. Based on their answers, their daily involvements in Zikr performance helped them to have stronger control on their hearts and emotions, and to increase their heart coherence. Based on the answers of some interviewees, Zikr performance helped them to overcome the daily personal and environmental challenges of their lives in a multicultural university environment. For example, interviewee 2 said that “When I am out of my home country and stay with different people, daily strange things cause me to feel depressed and experience emotional disorder and I try different ways to overcome such personal problems. Sometimes, I walk; sometimes I listen to music and sometimes I perform Zikr. Mostly, I overcome the mentioned challenges and repair my emotional mood when I perform Zikr, especially when I pray in *Masjid* (Mosque) and perform Zikr after prayer.” It means that, Zikr has powerful effects on the daily lives of Muslim students who stay and study out of their own countries.

Their daily prayer and Zikr performance helped the participants to deal with their challenging lives in a different environment. For instance, interviewee 1 said that “Prayer and Zikr performance are among the main strategies for me to control my negative emotions and to deal with the challenging life in a completely different environment.” Interviewee 3 also said that “I do perform Zikr when I start my daily academic tasks, especially when I go to present something and perform Zikr when I finish my duties. It means that the Zikr performance is an important part for my life to control my emotions and to keep calm.” Moreover, participant 6 said that “When I face some personal problems at the university campus or face any harassing statement or action from other students, I try to control myself through the remembrance of Allah and Zikr performance, and it works properly.” Based on the quoted views of the interviewees, performance of

Zikr besides its religious values could be used as an effective strategy for reduction of anxiety, and also for the increase of heart coherence and self-control abilities as well.

Zikr performance can help individuals to have happier lives and increase their positive emotions and be more energetic. Interviewee 4 said that “When I perform Zikr or pray I feel more comfortable and happier. After prayer and performance of Zikr I feel more energetic and think positively.” Participant 5 also said that “Prayer and Zikr performance recharge my body and my soul. Actually, when I am tired of my busy life, my daily prayers and remembrance of Allah helps me to recover easily and be prepared for different parts of my personal and social lives.” These statements show that Zikr performance is a real gift and a powerful and effective strategy for Muslims to increase their positive emotions and self-esteem and deal with the daily personal and environmental challenges in their lives.

DISCUSSION

This study was conducted to evaluate the relationship between Zikr (remembrance of Allah) and heart coherence of Muslim international postgraduate students. This study used the heart rate variability (HRV) biofeedback technology and the Quick Coherence Technique (QCT) to assess the HRV scores of the participants. According to McCraty and Shaffer (2015), and Tanis (2008), the use of HRV and coherence techniques is helpful for individuals to improve their heart coherence and performance. Also, through the intervention of Zikr the three sessions of the HRV data were collected, and Senik et al. (2013) have focused on the positive effects of Zikr on the personal lives of individuals.

The results from this study confirmed the effects of the use of coherence techniques and Zikr on the increase of the levels of heart coherence among individuals, the results also indicate the effectiveness of Zikr performance on the increase of heart coherence of the participants. Based on the results, Zikr has important impact on the internal activities of human body and help individuals to increase their good HRV scores and the levels of their heart coherence. The results illustrated that Zikr had more influences on the heart rhythmic actions of individuals rather than the Quick Coherence Technique. Based on descriptive results, Mean scores for the three stages of the Quick Coherence Technique (QCT) were 18.6, 2.1, and 21.7 respectively; whereas, the scores for the three stages of the Zikr data collection procedures were 22.6, 25.4, and 25.8 correspondingly. The results indicate a remarkable level of positive changes in the levels of the Mean scores of the participants between the QCT and the Zikr data collection stages, and according to Aidoo (2012), the higher Mean scores show the better situation in personal characteristics. The interview results also supportive of the HRV results regarding the effectiveness of Zikr performance of the increase of heart coherence among Muslim individuals. These findings are supportive of the above mentioned assertions of scholars, and also these findings were supported by Amin and Al-Fandi (2008), and Saleh (2010) who argued that Zikr has spiritual and psychological benefits for individuals.

The results from the data which were collected through the intervention of Zikr showed that Zikr helps individuals to have normal heart actions and reactions and normal pulse graph. Based on the results, Zikr has positive effects on the heart coherence and heart actions and reactions of Muslim individuals, and Zikr helps them to have coherent and healthier hearts; also, their coherent heart and well-performance abilities could help them to conduct successful interactions with other individuals. Moreover, the holy Quran strongly grants the effects of Zikr on the well-being of Muslims' hearts, as says “Verily in the remembrance of Allah do hearts find rest” (13:28). The results from this study show

that Muslims can improve their coherence and internal abilities through the performance of daily Zikr.

The answers of interviewees also included some interesting information on the effectiveness of Zikr performance on the increase of their heart coherence and positive emotions. The results from the interviews also focus on the positive effects of Zikr performance on the decrease of depression and emotional disorder. Based on the results from the interviews, their daily prayers and Zikr performance help Muslim individuals to overcome the probable challenges in their lives and control their emotional and psychological state easily. Based on the answers of the interviews, Zikr performance helps Muslim university students who stay and study in international university campuses to have happier lives and be more successful on their daily tasks by increasing their heart coherence and positive emotions. The results from this study are quite new and may help researchers to pay attention on the relationships between Islamic recitations and human performances. More studies on the relationship between Zikr performance, human communication and heart rate variability (HRV)-biofeedback through the use of some different tools and techniques may add more information in the literature.

PRAGMATIC IMPLICATIONS

Heart coherence, psychological well-being and well-performance will remain among the important desires of individuals, especially university students. Modern universities and organizations may also expect their students and staff to have control on their personal emotions and perform well. Thus, universities and organizations could improve the levels of the heart coherence, psychological well-being and creativity of their Muslim students and staff by encouraging them to be involved in Zikr performance. Universities and organizations could also try to innovate and establish some particular model kits and methods on the relationship between Zikr performance and bodily actions and reactions of human beings to help Muslim individuals to have coherent hearts, successful interactions and happier social lives.

CONCLUSION

This study assessed the effects of Zikr performance on the levels of heart coherence of Muslim postgraduate students of a Malaysian public university through the use of HRV-biofeedback technology and the Quick Coherence Technique (QCT). The results from this study confirmed the positive effects of coherence technique and Zikr on the increase of heart coherence of the participants. Based on the results, Zikr performance had significant positive effects on the increase of the levels of heart coherence. The Zikr performance helped the participants to increase their good HRV scores as well. The Zikr performance also helped the participants to have regular and stable heart activities and fruitful intrapersonal communication.

The results from this study showed that Zikr has positive effects on the internal parts of bodies of individuals. Muslim individuals can achieve a coherent heart through their daily Zikr performance and overcome their psychological and emotional stresses and challenges. Based on the results from this study, Zikr performance helps Muslim university students, who stay in a multicultural collegiate environment, to overcome the environmental challenges, to have coherent hearts, and to conduct proper interactions with one another. The results from this study may add some new information in the literature regarding the relationship between Zikr, heart actions and reactions and social lives of individuals. The results may encourage Muslims individuals to pay more

attention on the relationship between Zikr performance and their emotional and psychological well-beings.

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