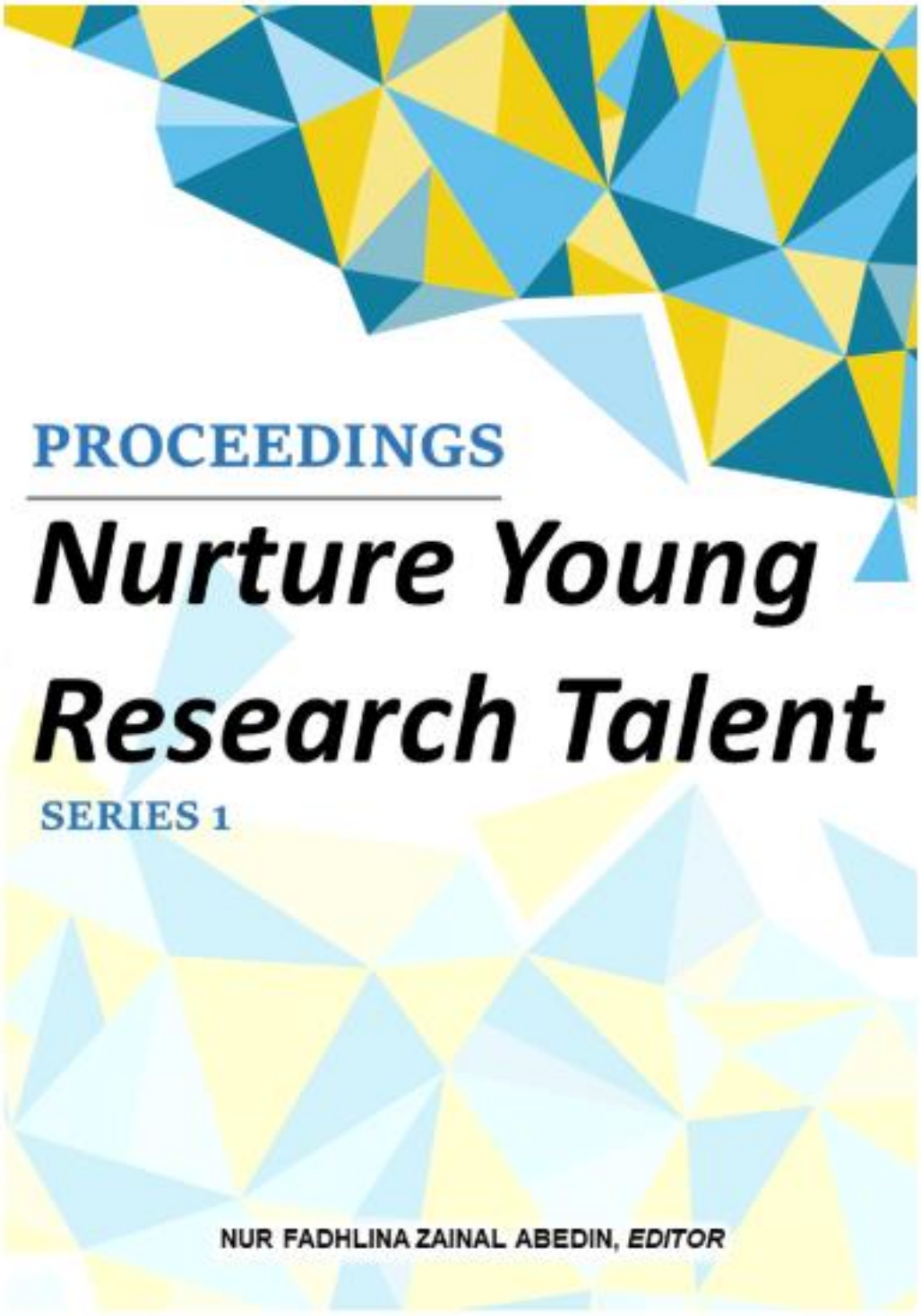
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NUR FADHLINA ZAINAL ABEDIN, EDITOR

Series 1

Nurture Young Research Talent

Nur Fadhlina Zainal Abedin, *Editor*

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Chapter 5

Water Conservation during Ablution: A Case Study at Al-Barokah Mosque Kampung Bukit Cherakah Jaya

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ABSTRACT

The act of performing ablution involves cleansing certain parts of body with clean water is a compulsory ritual for any Muslim before conducting the daily prayers. Due to this, water wastage is common among the Muslims and little effort has been taken to conserve water when performing the ablution. In this preliminary study, which was conducted at the Al Barokah Mosque Kampong Bukit Cherakah Jaya, Shah Alam, Selangor, it was found that no specific initiative on water conservation during ablution has ever taken place. In spite of the high water bills for five months, the self-audit on water usage was not carried out. Therefore, the aim of the study is to measure the consumption of water during ablution. This study also aims at educating the Jemaah on how to conduct the water audit. Comparing monthly water utilization bill in order to perform the water audit. A specially designed sticker is made purposely for the implementation of the study. The sticker contains information and procedures on how to consume water as minimum as 500 ml during ablution. These stickers were posted at each ablution point available in the mosque. Green indicators are also being used to indicate the positions of the water taps during ablution. Experiments and observations were conducted to measure and monitor the water consumption for the duration of three months. As a result of the knowledge imparted to the Jemaah, there was a slight reduction in the amount of water used for ablution over three consecutive months. Based on the water audit conducted from the month of October to December, it shows that as much as 17 cubic meters were saved. This project managed to reduce the consumption of water for ablution by 44% during these particular months. To encourage this act of water saving in future, further research on the attitude of Jemaah needs to be conducted to discover the reason behind this behavior so that it can be replicated in other mosques.

Key Words: ablution, water conservation and water consumption.

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1. INTRODUCTION

The act of performing Ablution or Wudhu is a mandatory religious routine for Muslims and it is repeated several times daily for prayers and other deeds. The ablution action requires the washing of mouth, nose, face, hands, swabbing on head, ears and feet (Johari, et. al 2013). The minimum of water used during ablution is less than a liter, which is in between 0.5 up to 0.68 liters (Al Mamun, et. al 2014; Mustafa al-Khin, 2005 in Hashim, et. al 2016).

If the amount of water used can be minimised to that particular usage, the water consumption can be controlled to the most effective used when performing wudhu. This is in-line with the teaching of Prophet Muhammad that encourages water saving even when performing wudhu. Anas Bin Malik RA narrated:

كَانَ النَّبِىُّ ﷺ يَغْتَسِلُ بِالصَّاعِ إِلَى خَمْسَةِ أَمْدَادٍ ، وَكَانَ يَتَوَضَّأُ بِالْمُدِّ

Translated as: “The Prophet (may the peace and blessings of Allāh be upon him) would perform ghusl with one sā’ to five mudd of water, and wudū with one mudd of water.” (Sahīh al-Bukhārī, Hadīth no 198).

The effective usage of water during ablution is fundamental to every Muslim. It is crucial for a mosque to sustain its water bills at its lowest in order to maintain its day-to-day operations. Smart consumption of water not only saves the mosque water bill but it will also help solving water conservation issue at national level. Similarly, water conservation is not just a religious issue but it is a national obligation especially when there is lacked of water resources. Countries in Asia and the Pacific have been aware on the importance of sustaining their water resources. Recommendations on policy actions for the countries’ leaders to improve water governance and guidance on investments to increase their countries’ water security were discussed thoroughly in the Asian Water Development Outlook (2013). In the Asia Pacific Water Forum, a comprehensive five dimensions of national water security elements were pointed out. They were the household water security, economic water security, urban water security, resilience to water related disaster and environmental security (Asian Water Development Outlook , 2013).

The consumption of water in mosque falls under the household security dimension as it contributes to the domestic used. In Malaysia the household data recorded that 211 liters water were used daily (Sobian, 2018). On the other hand World Health Organization recommended the usage to 165 liters per day (Jye, 2017). Average daily water consumption by a Malaysian was currently 300 litres, which is almost, double the benchmark recommended by the United Nations (Bernama, 2016). Clearly, Malaysia has overused of 45 liters water daily and the major contributor to this amount is domestic water consumption which is categorised into 30% of the water used outside the house, 19% used in the toilet, 15% for laundry, 12% for bathing, 9% for food and beverage, 9% leakage and 4% for other domestic uses such as cleaning services (Raduan, et. al 2018). The non-domestic consumption was categorized into three, which are the industrial, public uses of water and commercial. For application of water during ablution, it lies under the non-domestic consumption’s category of public uses of water such as shops, offices, schools and hospitals (Anang, et. al 2019).

According to Siwar et. al (2014) as he quote the Global Water Partnership 2012, the social dimension is eminence to build resilience in community during extreme water event through a hard or soft measure. Even the head Minister of Selangor has also urged the management of mosque and surau to play a much bigger role in reducing the high rate of water wastage especially during ablution by imposing the water conservation initiatives (Bernama, 2016). This is because (Asiah, et. al 2015), stipulated that currently there were

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about 6311 mosques in Malaysia. According to (Ahmad, et. al 2019) in personal communication, agreed that many residents that performed ablution in the mosque, do not know about water conservation. Even when the water bills were high for five months, the mosque committee members were clueless about it (Ahmad, et. al 2019). It was never occur to them, the amount of water used during ablution was the cause for it.

This shows that Malaysia should take some measure to control the massive use of water. This study helps by employing a simple measure that is performed by Prophet Muhammad when taking a wudhu. Therefore, this research is conducted to discover the usage of water when performing ablution in a mosque.

The objectives of this study are to measure the amount of water used during performing ablution and to develop a self-audit on water conservation during performing ablution for Al Barokah mosque.

There are various concepts and dimensions of water security as (Siwar, et. al 2014) stressed that demand for water is growing each year due to the increased number of population. Water is a social issue and it is depleted, polluted and mismanaged (Siwar, et. al 2014). About 670 million people in Asia have limited access to water supply. Lack of availability and limited access to water have impedes individual and communities from greater social and economic benefits (Siwar, et. al 2014).

On the other hand, (Kelly, et. al 2015) mentioned that awareness on water consumption is limited to simple action. Although respondents were aware of the need to save water however the attitude towards conservation did not reflect the saving behaviour (Kelly, et. al 2015). Even in the United Kingdom, people were not aware of the severity of water scarcity issues within the country (Owen, et. al 2009). Whereas in Malaysia, Suratkon et. al (2014) suggested that much water is wasted during the process of performing ablution. This happened when the tap water was left running. This research was trying to demonstrate the practicality of saving the greywater that running free during performing ablution. On the contrary, research conducted by (Prathapar, et. al 2006), stressed that the amount of water used in the mosque is only 2 litre per day which is not economical to greywater treatment. Al Mamun et. al (2014) also suggested for the recycle of the ablution wastage. The recommendation was to filter the ablution water for the use of landscaping in the university surrounding.

It is a mandatory for Muslims to have the right ethics when dealing with water consumption because it is a part of Muslims' akhlaq. Although Islam put greater emphasis on cleanliness and sanctity, it never allows for excessiveness water usage during ablution (Raduan, et. al 2018). Almost 30-47 percent of treated water is wasted during performing ablution, as half of the water tap flows directly into the drain without any contamination (Zaied, et. al 2016).

Hashim et. al (2016) stated that the wastage of water during ablution would lead to the shortage of water resources if it were not dealt with efficiently. It is imperative to use water efficiently when performing ablution. This research indicated that respondents used seven times amount of water than used by Prophet Muhammad. A huge amount of water was used when the teachings of Prophet Muhammad was ignored. There are a few solutions from this research as to overcome the problem. The used of different water taps instead of pipe, watershed and pipe sensor technology were among the suggestions. Johari et. al (2013), on the other hand, through their research investigated the Muslim understanding towards their knowledge on ablution and tool to control behavior when performing ablution. The lack of knowledge in ablution leads to wastage of water when performing ablution (Johari, et. al 2013). Therefore, this research tried to educate the villagers by giving them knowledge of water conservation during performing ablution. At the

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same time, the amount of water used was also measured to ascertain the effectiveness of ablution knowledge that was imparted to them

2. METHODOLOGY

2.1 Area of Study: Al Barokah Mosque Kampong Bukit Cherakah Jaya

The study is conducted at the area of Al Barokah Mosque Kampong Bukit Cherakah Jaya, Shah Alam, Selangor. The village is one of the small villages in the Bukit Raja borough of Petaling district, under Kapar parliament. It is surrounded by major roads tthat lead o the Town of Meru, Bukit Kapar, Puncak Alam and Shah Alam. The village population is around 150 families (Petaling District Office, 2020). The residents work in the agricultural, fishery, orchard, animal farming and majority in the small-scale industry. There are two religious schools, the primary and secondary schools.

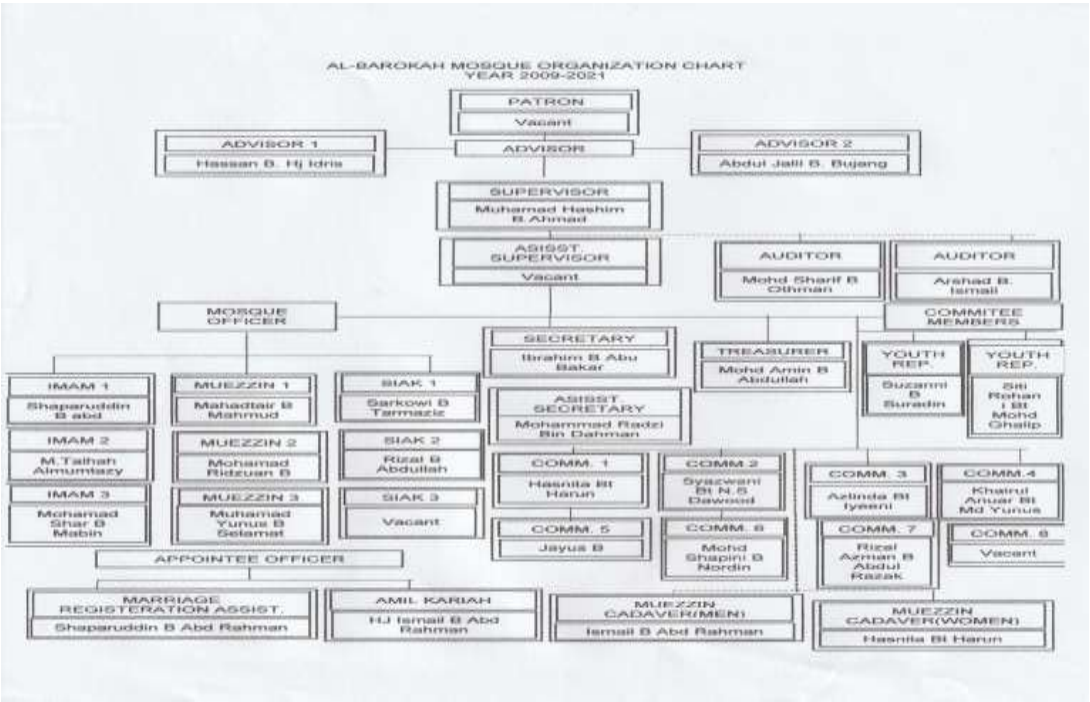

Figure 2.1: Al Barokah Mosque Management Committee (Source: Al Barokah Mosque, 2019)

Masjid Al Barokah is the mosque built on a 2 acres land for the villagers in 1992 (Jabatan Agama Islam Selangor, 2020). It is the only mosque located at Kampong Bukit Cherakah Jaya. It can accommodate about 500 Jemaah during Friday prayer. It has two separated ablution area intended for male and female. There are a total of 20 ablution points where 17 ablution points at the male ablution area and three ablution points at the female ablution area. In addition, there is a pond (Kolah) that also being used for performing ablution. The ratio of the ablution points is about 4% the total mosque capacity of 500 Jemaah, which is lower than the recommended ratio of 5% (Standards Malaysia, 2014). The mosque is managed by a committee lead by a Supervisor or *Nazir* as shown in figure 2.1.

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2.2 The Ablution H2O Saver Visual Booster

The study use special designed sticker known as "The Ablution H2O Saver Visual Booster" as the main tool that acts as an injection of sustainable water consumption to the Jemaah of the mosque. The sticker as shown in figure 2.2 is self-explanatory, and it educates the Jemaah on how to use water effectively while performing ablution as required by Prophet Muhammad pbuh. The size of the sticker is 175 mm long and 125 mm wide in size and made of 3M Vinyl and Bi-axially Oriented Polypropylene (BOPP) material.

Figure 2.2: the Ablution H2O Saver Visual Booster (Source: Field Work, 2019)

2.3 Procedure on applying the 'Ablution H2O Saver Visual Booster' sticker

The sticker were posted at the strategic places inside the ablution area, step-by-step direction on how to conduct the procedure is explained in table 2.1.

Table 2.1: Direction on how to apply the 'Ablution H2O Saver Visual Booster' sticker

Step 1	Step 2	Step 3	Step 4
Identify all 20 ablution points at the ablution area (male and female) inside the mosque	Apply the sticker on top of each ablution point	Conduct a water measurement to determine the position of minimum flow.	Apply the green tape at the tap position that will provide minimum flow of 500 ml in 90s
			

2.4 Average Mosque User

By referring to table 2.2, the number of respondents observed in this research was 1273. The respondents who are the Jemaah that used ablution facility are observed throughout

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five-prayer time in a period of seven days (Suratkon, et. al 2014; Radin, et. al 2016). The determination of numbers of attendance to the mosque is important as it can be used to justify the amount of water consumed during ablution (Radin, et. al 2016). This method of data collection was also utilized and pioneered by Radin et. al (2016).

Table 2.2: Typical daily attendance at the Al Barokah's mosque

Prayer Time **Days**	**Subuh** **(Dawn)**	**Zuhur** **(Mid-day)**	**Asar (Late** **Afternoon)**	**Maghrib** **(Sunset)**	**Isyak** **(Nightfall)**	**Total**
Monday	26	21	20	37	39	143
Tuesday	27	48	23	38	33	169
Wednesday	32	19	20	32	27	130
Thursday	25	17	25	34	28	129
Friday	35	306	20	36	32	429
Saturday	27	16	15	31	26	115
Sunday	31	28	30	36	33	158
						1273

Source: field work 2019

3.0 DATA ANALYSIS AND DISCUSSION

Table 3.1: The Amount of Water Consumed by Jemaah during the Ablution

Process of Ablution	Time Allocation for Implementing the ablution Process (Zaied, 2016) (seconds)	Amount of Water Consumed during Ablution with Full Stream (Liter)	Amount of Water Consumed during Ablution with Small Stream (Liter)
Hand and mouth	14.1	0.47	0.1
Face	17.7	0.74	0.09
Arm and Elbow	12.2	0.37	0.06
Top frontal part of Head and Ear	22.2	0.75	0.15
From Toe to Ankle	24.4	1.04	0.14
Total	**90.7**	**3.37**	**0.54**

Source: field work 2019

Based on the data above, the amount of water used during ablution in 90.7 second before the reminder is apply is 3.37 litre, compared to 0.54 litre average amount of water after the reminder is applied which is parallel with the research of (Al Mamun, et. al 2014) that mention 1 mudd equivalent to 0.544 litre which is in proper manner prescribed in hadith Al-Bukhari and Muslim that states the Prophet Muhammad used to performed ablution with 1 mudd of water.

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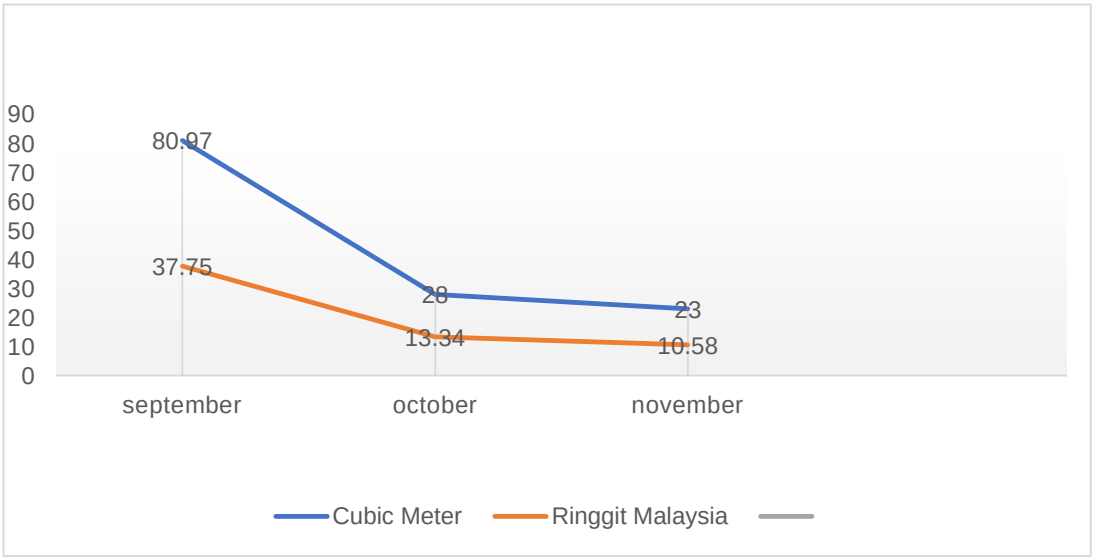

Figure 3.1: Comparison of water usage from September to December (Source: SYABAS, 2019)

In the month of September, the water usage is very high if compared to the month of October and November. As a proof that the community have acknowledge on how to conserve water during performing ablution, there are slight reduction in the amount of water used in three month. The graph in figure 3.1 shows that there are 57.97cubic meter difference in total from September to November. Owen et. al (2009) mentioned that through building engagement and understanding of the wider issues around water shortage helped people to understand the importance of water conservation.

4.0 CONCLUSION

In general this study was conducted to measure the water consumption during ablution. The results from the observation show that 1273 people use the mosque weekly. Before the installation of the sticker, which was implemented in September 2019, a total of 80.97 cubic meters of water were used. After the sticker reminder installed, the water usage per cubic meter dropped significantly in the first month and continued to decline in the following month to 23 cubic meters in November 2019. The decline from September to November accumulated to 44% of the water usage, which translates to 57.97 cubic meters, was successfully reserved. To encourage this act of water saving in future, further research on the attitude of Jemaah needs to be conducted to discover the reason behind this behavior so that it can be replicated in other mosques.

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