



RESEARCH ARTICLE

Towards more culturally inclusive domestic toilet facilities in Australia



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Abstract

The topics on toilets, defecation and perianal cleansing may be perceived as taboo subjects in daily discussions but are markedly important from health and hygienical perspectives. In multicultural countries like Australia, no research attention has been given to domestic toilet hygienical requirements from the perspective of the society's cultural traditions or religious teachings. The Western sitting lavatories with toilet paper facilities are the most common toilet systems available in Australian homes, which may be contradictory to persons coming from non-Western backgrounds. Squat latrines used widely in many Asian countries are acknowledged to be more conducive for maintaining a healthy bowel system, but are unattractive to Westerners and also unsuitable for those with physical disabilities. Similarly, water is regarded as the most hygienical option for perianal cleansing in many cultures but is rarely used in Western cultures. This paper investigates the experiences of seven Muslim families living in Brisbane with respect to whether or not the Australian toilet systems in their homes meet their personal and familial requirements. This paper further explores whether modifications were made to their domestic toilets to meet these essential needs. Some design recommendations are presented, which are based on the extant literature on this topic as well as the findings from this study. These design options provide an opportunity for future research focussed on a universal toilet design solution that is adaptable and able to meet the needs of all users, especially for those countries with a multicultural population.

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1. Introduction: current world toilet habits

Home design is a unique, collaborative yet challenging exercise for architects, designers and builders because it involves design issues relating to personal and familial spatial requirements. These spatial necessities include a

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balance of private and social spaces as well as functional rooms or utility spaces (Othman, 2016; Heathcote, 2012; Smith, 1994; Lawrence, 1987; Altman and Chemers, 1984). Many of these specific requirements are derived from various influences such as generational cohorts' preferences (Mollaie and Othman, 2013), cultural traditions (Altman and Chemers, 1984) or religious teachings (Omer, 2010). These influences are reflected in the various measures taken to achieve particular objectives, including extending hospitality, ensuring privacy and maintaining modesty (Othman et al., 2015, 2014a, 2014b).

Housing designs have transformed considerably over the centuries. Likewise, toilet designs have changed from ancient latrines with basic flush system (Cromwell, 2015; Koloski-Ostrow, 2015; French and Duffy, 2014; Samuels, 2014; Matsui et al., 2003; Pathak, 1995) to advance electronically powered sitting bidets (Cromwell, 2015; Gregory and James, 2006). These days, various versions of sitting and squat toilet designs are developed and manufactured by plumbing companies to meet with different needs from toilet users from diverse cultures and backgrounds (Gregory and James, 2006). Such products are now available to meet with the clients' specific needs. Squat latrines, for example, are still widely used, mainly in Asian countries such as in India, Malaysia, Japan and China because of their long cultural traditions of using this toilet system (Ling, 2015b). Mullick and Kumar (2012, p. 617) further developed possible inclusive universal and accessible squat latrines that "offers an ergonomic solution that helps maintaining comfortable squat posture throughout the defecation" and can be used by almost all users. Medical practitioners and researchers argue that the current Western sitting toilet design does not offer proper posture to complete defecation (Ling, 2015a; Sikirov, 2003; Rad, 2002, p. 116) Despite an estimation of 4 billion people (two-third of world population) who still use squat latrines, this toilet system is still relatively unknown to Westerners from countries like North America, Europe and Australia (Ling, 2015b).

Cultural traditions and religious teachings have significant influences in the design, location and the way users use the toilets. The Indian traditional *vaastu shastra*, for example, involves careful site planning and orientation of rooms prior to designing a home (Patra, 2009, 2006). In *vaastu shastra*, toilets are recommended to be built along the Northern and Southern axes and located towards the Western sides; avoiding constructing any toilets, septic tanks or kitchen towards the North East side (Patra, 2014, 2009, 2006). Traditional Buddhist's *feng shui* teachings on the other hand, recommend that toilets are not located at the centre of the house because it is considered as the central focus or heart of *chi* that provides balance and vitality of a family (Too, 1999). Physical hygiene and cleanliness at home are part of important doctrines in many cultural traditions and religious faiths. Many religions relate cleanliness as an embodiment to a person's 'moral-existential system' and spiritual purity (Preston and Ritter, 2012; Zhong et al., 2010; Zhong and Liljenquist, 2006; Looy, 2004; Rozin et al., 1999).

Water has been widely used for bodily cleansing as part of religious ritual washing and symbolises one's purification (e.g. Islam, Judaism and Zoroastrianism), sacredness (e.g. Hinduism and Shinto), wealth (e.g. Buddhism) and cleansing

of one's sin (or seeking spiritual refreshment and blessing) (e.g. Christianity) (Ahmad, 2015; Østergaard, 2012; Zhong et al., 2010; Abrams, 2003; Too, 1999). Toilet paper on the other hand, was initially used by the Chinese around 589 CE, as mentioned by Yan Zhitui, a Chinese scholar, painter and calligrapher (Needham, 1985). The use of toilet paper was only introduced to the Western countries in late 1800s (Cromwell, 2015; Ament, 2007). Joseph Gayetty first commercialised toilet paper in the United States in 1857, which was then followed by Zeth Wheeler who produced perforated toilet paper in 1871 and further by John Kimberly who established Kimberly-Clark Corporation in 1872 (Ament, 2007).

In recent years, a great deal of research focussing on the development of water-efficient and environmentally friendly toilets as well as more hygienical excreta disposal methods, especially in the third world countries (EOOS and The Water Engineering and Development Centre [WEDC], 2014; Ryoo et al., 2011). In 2001, the World Toilet Organization, a non-profit organization, was founded aiming to improve toilet and sanitation conditions across the globe (World Toilet Organization [WTO], 2015). World Toilet Day is celebrated on 19 November every year as an effort to raise this awareness on the importance on access to appropriate toilets and proper sanitation systems (World Toilet Organization [WTO], 2015). The "Reinvent The Toilet Challenge" was further initiated by Bill & Melinda Gates Foundation through the Water, Sanitation and Hygiene Program in 2011 aiming to provide better "sustainable sanitation solutions to the 2.5 billion people worldwide who do not have access to safe and affordable sanitation" (Bill and Melinda Gates Foundation, 2015; EOOS and The Water Engineering and Development Centre [WEDC], 2014, p. ii).

2. Research problem and aim

Australia has experienced a number of waves of human migration since the arrival of European settlers on The First Fleet at Botany Bay, Sydney on 24 January 1788 (Collingridge, 2008). This migration of people from various parts of the world has resulted in people bringing with them different cultural backgrounds, traditions, languages and religions (West and Murphy, 2010). At present, Australia's 23 million population consists of a multifaceted society with almost 300 different ancestries (Australian Bureau of Statistics [ABS], 2012a) and more than 300 different languages spoken (Australian Bureau of Statistics [ABS], 2012b). With the rapid transformation of Australian society, research is needed to provide new knowledge regarding social and cultural influences that affect the designs and suitability of Western domestic toilets for those of non-Western backgrounds living in Australia. This can contribute to the social sustainability measures to the current and future Australian housing system. Recent published research by this paper's authors in explored how Muslim families (Othman et al., 2014a) and international Muslim students (Othman et al., 2014b) in Brisbane live and adapt to the current Australian housing through the empirical tripartite principles of privacy, modesty and hospitality model. Another research examines the adaptability and livability

Table 1 Demographic profile of case study participants.

Pseudonyms	Case study participants						
	Aishah	Amina	Ahmet	Dewi	Soraya	Farid	Omar
Gender	Female	Female	Male	Female	Female	Male	Male
Profession	Full time	Full time/Own business	Full time	Student	Student	Student	Unemployed (disabled)
Age range	40-50	50-60	40-50	30-40	30-40	30-40	50-60
Ethnic background	Australian (Pakistan)	Egyptian	Palestinian	Indonesian	Iranian	Iranian	Malaysian
Years living in Australia	5th Generation Australian	31	27	3.5	3	3	30
Tenure status	Owner-occupier	Owner-occupier	Renter (private)	Renter (private)	Renter (private)	Renter (private)	Renter (city council)
House type	Detached 1-storey	Detached 2-storey	Detached 2-storey	Detached Queenslander	Townhouse	Apartment	Council flat
Number of household	2	2	3	7	3	3	2
Number of bedrooms at home	5	6	3	4	2	2	1
Number of washing closets (wcs) at home	1 toilet 1 bathroom 1 ensuite	2 toilets 1 bathroom 1 ensuite	5 toilets 2 ensuite	2 toilets 1 bathroom	2 ensuite	2 ensuite	1 ensuite

Table 2 Research findings from seven case study participants.

Pseudonyms	Case study participants						
	Aishah	Amina	Ahmet	Dewi	Soraya	Farid	Omar
Type of toilets	Sitting toilet	Sitting toilet	Sitting toilet	Sitting toilet	Sitting toilet	Sitting toilet	Sitting toilet
Previous experience using squat toilets	No	Yes	Yes	Yes	Yes	Yes	Yes
Issues relating location of toilets (e.g. facing qiblah)	No	No	No	No	No	No	No
Methods used for perianal cleansing	Water	Water	Water	Water	Toilet paper	Toilet paper	Water
General issues with Australian toilet systems	No	No	No	Yes - timber flooring is an issue for using water perianal cleansing	No	No	No
Modifications made to existing toilets	<ul style="list-style-type: none"> • <i>Shattaf</i> installed in every toilet and ensuite 	<ul style="list-style-type: none"> • <i>Shattaf</i> installed in every toilet and ensuite 	<ul style="list-style-type: none"> • <i>Shattaf</i> installed in every toilet and ensuite 	<ul style="list-style-type: none"> • Jug filled with water 	<ul style="list-style-type: none"> • Behavioural change - use toilet paper first and clean with water later 	<ul style="list-style-type: none"> • Behavioural change - use toilet paper first and clean with water later 	<ul style="list-style-type: none"> • <i>Shattaf</i> installed • Disabled accessible toilet facilities installed by Council

of Australian homes for these Muslim families with respect to their cultural traditions and religious faith (Othman et al., 2014c). These studies provide new knowledge in the influences of cultural and religious influences that provide useful information for architects and designers when dealing with Muslim clients in Australia.

As a multicultural country, there is an opportunity for future provision of culturally inclusive toilet systems in Australia. However, no research has yet been conducted relating to these diverse requirements. Most architects and designers currently have little understanding of the cultural sensitivities when it comes to toilet habits. Many assume that the standard Western sitting toilet and the use of toilet papers are acceptable in all cultures. As an example, the application of *shattaf* is currently an ‘arguably’ popular option among Muslim users as when using water for perianal cleansing because it “aligns with the Islamic jurisprudence” (Othman, 2016, pp. 333). Notwithstanding, there is no current study on the effectiveness of use of *shattaf* as an additional toilet accessory.

The aim of this paper is to explore how Muslims in Brisbane, Australia, use and adapt with the current Australian Western style toilets that are installed in their current Australian designed homes. Looking into the housing design at a micro-level, this study examines how their Islamic cultural traditions and religious influences affect the usability and suitability of their current Western domestic toilets. This paper further investigates if any modifications or renovations were made to their existing lavatories to suit with their personal and familial requirements.

3. Methods

The research adopted an exploratory case study analysis using phenomenological approach to explore the lived experience of Muslim families living in suburbs of Brisbane, within the context of the domestic toilet facilities, participants’ behaviours and activities within their homes (Moustakas, 1994). An exploratory research aims to examine a phenomenon or phenomena that is currently not clearly defined (Neuman, 2011). The qualitative data for this study were derived from face-to-face and semi-structured in-depth interviews, which lasted between 60-120 min.

3.1. Participants

Seven participants were recruited through Islamic organisations in Brisbane and snowball sampling (two case study participants). All participants were married and aged between 30 and 60 years. Two of the case study participants were home owners while five other case study participants rented their properties through private home owners. Three participants were home renters and postgraduate students while one was disabled (on a wheelchair) living in council’s rented property. Observation and photographs (upon consent) were also used to gather information related to toilet designs that were not discussed during interview sessions. Pseudonyms are used to ensure confidentiality and anonymity of all information gathered from case study participants.

3.2. Data collection

Participants were asked a range of open-ended questions regarding: a) the current toilet designs facilities and locations within their current homes b) participants’ experiences and issues regarding the use of current toilets within their homes; and, c) and modifications or changes made to their toilets to meet their familial or personal requirements. Some photographs of the toilets were taken upon consent from the participants as visual data information through the Ethics Consent forms. However, not all participants gave permission for their domestic toilets to be photographed for privacy reasons. Participants’ demographic information was provided by participants at the end of interviews (see Table 1).

4. Results

The following discusses the research findings from the qualitative data gathered from the lived experiences of the seven case study participants relating to their domestic toilets:

4.1. Usability, suitability and location of current toilets

All case study participants’ homes were equipped with Australian Western sitting toilet systems (see Table 2). There were no complaints or issues raised from any of the case study participants regarding the suitability and usability of their sitting toilets in comparison to squat toilets. In fact, Omar, who is disabled, prefers using the sitting toilet because it is more accessible than using the squat toilets. Furthermore, the lavatory is furnished with disabled toilet suite installed by the Brisbane City Council, as well as other disabled facilities throughout his Council flat (see Table 2).

Ahmet and his family are satisfied with the number of water closets in his home (see Table 1 and Fig. 1), especially when entertaining his guests or extended families:

There are so many bathrooms in this house, which is an unusual design for a house. The architect put seven toilets in this house. So if there are male guests are sitting outside and they want to perform wudhu (ablution), there are two guest toilets downstairs and there is also a tap outside. There are three toilets downstairs, four toilets upstairs, there are so many!

However, Ahmet is aware of the difficulties in maintaining and cleaning these toilets (seven water closets in total for three households) (see Fig. 1). Ahmet regularly monitors his water usage to ensure that the water bills fall within the acceptable budget.

In summary, all case study participants were satisfied with the locations of toilets, their usability and suitability to perform perianal cleansing and meet with their Islamic hygienical jurisprudence. All case study participants, with the exception of Aishah, a fifth generation Australian born Muslim, acknowledged that they have previously used squat toilets in countries where they came from. However, they have adapted with the Western toilets and no complaints were reported with any bowel issues while using sitting



Fig. 1 Floor plan of Ahmet's home showing the numbers and locations of washing closets. Source: Author.

toilets. Issues regarding location of toilets were not raised by any case study participants suggesting that they were satisfied with their toilet placements and meet with their Islamic requirements (not facing *qiblah*).

4.2. Water versus toilet papers

All case study participants reported that water is used for perianal cleansing. However, Soraya and Farid highlighted that since Western toilet facilities were installed in their rented homes, both have adapted through behavioural change by using toilet papers but perform proper cleaning in the shower cubicle afterwards (see Table 2). Referring themselves as modern Millennial (Generation Y) Muslims, both Soraya and Farid claim that they are used to using toilet papers when in overseas (study or travel purposes). Both participants reported that their domestic toilets in Iran are provided with both water and toilet paper facilities.

Unfortunately, both stand-alone toilets in Dewi's home were not provided with any *shattafs*. Dewi further highlighted that the use of *shattaf* was not possible due to the house's timber floor construction. Dewi, her family and her

Christian flatmate (and family) used a jug filled with water from the nearest tap locations instead (as shown in Fig. 2 and Table 2):

We don't use toilet papers because it is not our custom. We use the jug and fill with water and bring into toilet. That is what we use every time. I think this is not only a Muslim issue because my flatmate and his family, who are not Muslims, also prefer to use water. So it is just a cultural matter, I think. However, when I visit my other Muslim friends who are Australian permanent residents, they have toilet papers in their toilets.

Aishah and Ahmet, who regularly receive guests from different backgrounds, ensure that all the guest toilets are provided with toilet papers and toilet floors are kept dry and clean for their convenience (see Table 2). Omar further highlighted that it is vital for his toilet to be kept dry at all times for his safety while getting off and onto his wheelchair.

Overall, despite minor issues faced by Dewi and her households, all case study participants managed to adapt with their Australian Western style toilets in their homes



Fig. 2 Floor plan of Dewi's home showing source locations for jug of water. Source: Author.



Fig. 3 Installation of *shattafs* in Aishah's and Amina's homes. Source: Author.

and did not hinder with their daily domestic activities, especially when performing ablution (*wudhu*). All participants further admitted that their water and electricity bills are generally higher than the average Australian families due to the five-prayers-a-day requirements.

4.3. Modifications applied to toilets

Aishah, Amina, Ahmet installed handheld bidets or *shattafs* in each of their lavatories for more effective use of water

for cleansing (see Table 2). Omar's toilet underwent major refurbishment by Brisbane City Council, where *shattaf* along with all disabled accessible toilet facilities were installed to ensure his safety.

Fig. 3 shows the installation of *shattafs* in guests' toilets of Aishah's (left) and Amina's (right) homes. Toilet papers were also provided in these toilets for the convenience of non-Muslim guests or for those who prefer the use of toilet papers instead of water. There was also a small plastic watering container in Amina's guest toilet on the window sill (right picture in Fig. 3) for assistance during performing the

ablution (washing of feet). Both toilets were kept dry and clean for guests.

Soraya and Farid were satisfied with their Australian Western style toilets and did not require any modifications to meet their current lifestyles. Aishah, Amina and Ahmet further highlighted that *shattafs* were also used for other purposes such as performing *wudhu* or general cleaning the toilet floors and walls. Overall, only minor modifications (with the exception of Omar's toilet to meet disabled safety requirements) were made (see Table 2). None of the participants reported any use of additional stools to assist with 'squatting experience' while using their sitting toilets.

5. Discussion and recommendations

The study has investigated the lived experiences of seven Muslim families in adapting to the Western toilet systems in their homes in Brisbane. The findings from the study suggest water is used in most case study participants' toilets for perianal cleansing. However two of the case study participants adapted by using both methods (toilet papers initially and water afterwards) since they were living on rented properties.

5.1. Personal choice and behavioural changes in toilet behaviours in modern society today

Nowadays, the use of water and toilet papers for perianal cleansing are the two main methods for perianal cleansing. While toilet paper is preferred in Western countries due to least direct contact with faeces, water is considered in many cultures as the most hygienical way to perform perianal cleansing after defecation (Cromwell, 2015; Abdul Rahim, 2005). Islamic teachings provide two options for Muslims to perform perianal cleansing: a) *istinja* using water - or; b) *istijmaar* using papers, tissues or other hard objects such as stones, if water is unavailable (Abdul Rahim, 2005). These options provide alternative methods for Muslims depending on the availability of resources or materials. The latest decree (*fatwa*) from Turkey's Directorate of Religious Affairs (Diyanet) in 2015 allows Muslims to use of toilet paper if water is not available (Özgenç, 2015). However, it is important for Muslims to further clean these perianal areas with water prior to performing religious rituals such as daily prayers. Based from the research findings (see Table 2), most participants (Aishah, Amina, Ahmet, Dewi and Omar) comply with the use of water for perianal cleansing with the additional *shattaf* installation, while Soraya and Farid are able to adapt using toilet papers instead. The findings from this study further demonstrates that case study participants find it easier to adapt with the use of Western sitting toilets instead of squatting latrine than opting to switch using of toilet papers instead of water because of the Islamic hygienical jurisprudence on *istinja*. Islamic hygienical jurisprudence on the leniency on using toilet papers in *istijmaar*, is proven not yet a popular option by many Muslims despite the recent *fatwa* (Özgenç, 2015).

There are no mandatory guidelines regarding specific toilet design guidelines in Islam in comparison to some other teachings such as in *vaastu shastra* (Patra, 2009, 2006) or *feng shui* (Too, 1999; Pathak, 1995). However, some

Islamic scholars recommended that toilets should not face Mecca or qiblah despite recommending that houses are constructed to face qiblah (Omer, 2010). This is based on the interpretation of Prophet Muhammad's utterances (hadiths) regarding etiquettes during defecation:

When you go to defecate, do not face towards the qiblah or turn your back towards it, rather face towards the east or the west (Narrated by Al-Bukhary & Muslim).

This guideline was implemented in London's Olympic Park for the 2012 Olympic Games where toilets were built not facing qiblah as a strategy to make the venue more welcoming and sympathetic to their Muslim toilet users (Peterkin, 2008). Islamic teachings on toilet habits also focus on good etiquettes and behaviours upon entering and leaving the lavatories (Omer, 2010). For example, it is recommended that Muslims to enter the toilet using the left foot while leaving using the right foot (from Al-Bukhary and Muslim). Similarly, for hygienical purposes, it is recommended that the left hand is used for perianal cleansing (using water) because the right hand is commonly used for eating (assuming the person is right-handed).

5.2. Recommendations for culturally inclusive domestic toilets

In order to provide culturally inclusive domestic toilets and culturally-adaptable homes in Australia, it is important that architects, builders and designers are aware of these diverse preferences. The use of *shattaf* is an economical toilet addition example that can be easily installed in any domestic toilets and available in many local hardware stores (Bidets, 2014; Handspray, 2012). Nevertheless, careful considerations need to be taken on proper drainage system that is previously installed in these homes. As an example, a stand-alone lavatory closet in a typical Australian home does not usually have any floor traps in because of the typical use of toilet paper. Therefore, it is important that home dwellers or renovators are aware of this situation prior to *shattaf* installation.

The use of toilet converters or squat/step stool for an improved 'squatting experience' while using the Western sitting toilets are too, becoming more popular in recent years because of its health benefits to users (Squatty Potty, 2015; Ling, 2015c). However, they may not be suitable or safe to be used on sitting toilets that are installed with narrow plastic or soft polypropylene seats. They may require wider and stronger toilet seats that are made of stronger materials such as fibreglass, synthetic rubber or timber bumpers that can prevent the toilet seat from shifting while performing these near squat positions (Big John Products, 2015). Further toilet support for any wall mounted toilets is also required to prevent any wall or toilet breakages while using toilet converters (Big John Products, 2015).

Architects and designers can further explore innovative floor design solutions in ensuring toilet floor area is kept dry and clean. One example that can be further designed and developed is a similar toilet strong fibreglass floor tray concept that is used in caravans or motorhomes (Australian Motorhomes, 2015; Suncamper Motorhomes, 2015). Another

possible approach is the introduction of low height enclosure around toilet area to ensure other parts of bathroom area is kept dry and clean when using a *shattaf* during perianal cleansing. The use of covered or protected toilet paper holders may be useful when facilitating both *shattaf* and toilet papers. Safety, accessibility and mobility measures need to be fully considered when designing domestic toilets for users with disabilities, especially those with wheelchairs.

Finally, when applying traditional design principles of *vaastu shastra* and *feng shui*, architects and designers a need to be mindful that both teachings originate from countries located in Northern Hemisphere (India and China). Any housing design or renovation in countries in Southern Hemisphere such as Australia may require such design recommendations to be reversed or mirrored to comply with these principles. Further research on *vaastu shastra* and *feng shui* guidelines relating to Southern Hemisphere locations are required in order to provide better understanding and accurate information to architects, designers and home builders or owners who are interested to apply these traditional guidelines in their building designs.

6. Conclusion

The research acknowledges that despite following similar Islamic faiths, the seven Muslim families interviewed managed to adapt with the use of Western sitting toilets without any major difficulty. Muslims in Australia may have different interpretations of Islamic teachings while living in a Western context. This does not determine one's religiousness but one's ability to adapt themselves through minor modifications or behavioural changes to comply with their traditional traditions or religious faiths. The contribution of this exploratory study is limited and may not be applicable to those of different cultural or religious backgrounds because of its small sample from one focus group and within one city. Further research using larger population sample at state or national level and with participants from different cultural or religious backgrounds may provide better understanding on the feasibility and suitability of the use of squat toilets and *shattaf* in the country. However, the recommendations from the research findings provide useful new knowledge to architects, builders, and home renovators who previously are not aware of these variations of toilet habits. Future research and design explorations by researchers, architects and designers are essential in order to offer universal design solutions for culturally adaptable and inclusive toilet systems that can accommodate the needs of the users from diverse backgrounds and traditions.

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