EFFECT OF FAITH-BASED INTERVENTION ON DIETARY BEHAVIOUR CHANGE

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Abstract

Many religious teachings are in line with health objectives, thus providing great opportunities for faith-based health interventions. In this intervention, Islamic teachings were used as the mediator to change dietary behavior to control weight. The promoted dietary practices were voluntary fasting and food portion control. A quasi experiment was carried out to test the effectiveness of this faith based dietary intervention. Two dietary interventions were developed. One was the faith-based dietary intervention and the other was a basic dietary intervention. The intervention packages developed were then validated. Two groups of Muslim women were recruited for the study. The faith-based intervention group received an Islamic intervention package while the basic intervention group received a basic intervention package (i.e. without the faith components). Their baseline dietary practices were assessed prior to intervention and reassessed at 3 months post 'active intervention phase'. After 3 months of 'active intervention phase', the number of respondents who practiced voluntary fasting has increased significantly in the faith-based intervention group, while it was slightly reduced in the basic intervention group. As for food portion control practices, the number of respondents who practiced such control were significantly increased in both groups, however

the increment in percentage was higher in the faith-based intervention group. The encouraged behaviour changes were more significantly observed in the faith-based intervention group, thus indicating the effectiveness of this faith-based dietary intervention.

Keywords: faith-based intervention, behavior change, voluntary fasting, food portion control

1.0 Introduction

Global health statistics shows that obesity is a critical health problem in Muslim countries. According to the International Association for the Study of Obesity 2012, the prevalence of overweight individuals in Muslim countries in the Eastern Mediterranean Region was among the highest globally. Epidemiological analysis shows that between the genders, the overall prevalence is higher among women. For example, in Kuwait, the prevalence of obesity among adult females was 48% compared to 36% among their male counterparts. Similar findings were observed in Qatar (45% vs. 35%), Saudi Arabia (44% vs. 26%) and in Palestine (43% vs 24%). 1 Diabetes, one of the diseases that is associated with being overweight, was also highly prevalent in the Eastern Mediterranean Region. Six of the 10 countries with the highest prevalence of diabetes in the world were from the region namely Bahrain, Kuwait, Lebanon, Oman, Saudi Arabia and United Arab Emirates.2

In Malaysia, the third Malaysian National Health and Morbidity Survey (NHMS) 2006 reported the prevalence of obesity among ethnic Malays who are mostly Muslims at 29.8% (95% CI: 29.1,30.5). Furthermore, according to the recent NHMS 2011, the percentage has increased to 31.1% (CI: 29.9, 32.3) and the prevalence according to the type of occupation was highest among government officials 34.2% (95% CI: 31.5,37.1).3,4 According to a national survey which analyzed the odds of obesity among Malaysian women, the odds ratio for obesity was 3.13 among Malay women (compared to Chinese women) and 3.63 in Muslim women (compared to Buddhist women).5

The two causes found to be contributory toward being overweight globally and locally, were over consumption of energy and physical inactivity. Over the past four decades, the world food balance sheet for Middle Eastern countries has showed an increase of between 16-60% with an increase in fat consumption of between 13.6-143.0%. Among the contributing factors to this food transition (i.e. the increase in fat consumption) were increasing numbers of fast food outlets, improvement of socioeconomic status and urbanization. The trend changes were similar in Malaysia where the food balance sheet showed an increment of 19.5% and an increase in fat consumption by 82%. 6-11

An ideal intervention to control weight should focus on both factors i.e. dietary control and increasing physical activity. However, the focus of this intervention was to control overconsumption of energy which mainly occurs due to excessive food consumption. The choice of this focus was made as studies have shown that the physical activity among women especially the Malays was very low. A recent survey among women in urban areas show that only 22.3% of women in all races exercise and another survey among adult Malaysians show that only 14.2 % of Malays exercise and only 9% of Malay women do so.12-14Thus, a dietary intervention is expected to be better received and adhered to by the Malay women as compared to the promotion of exercise.

The World Health Organization, particularly the Eastern Mediterranean Regional Office has documented the possible benefits of using religion in promoting health. Documents entitled 'The Right Path to Health, Health Education through Religion' and 'Health Promotion through Islamic Lifestyles' mirror their aspirations.15-17 In fact, Muslim countries are encouraged to seek their own health solutions and to not depend on researches carried out in countries which do not share cultures similar to their own.

Muslims believes that Islam is a comprehensive religion and its teaching offers a complete way of life as well as solutions to all spiritual and physical problems. Thus, a Muslim believes that Islamic teachings provide numerous health solutions. The main task was to identify religious teachings which are in line with the desired health objectives. The ultimate health objective in this intervention was to control weight and the aim of this intervention was to change dietary behaviour. The promoted behaviour changes were to practice voluntary fasting and to control food portion. The effect of these behaviour changes could reduce the total amount of food consumed and thus help in reducing the excess weight of an overweight Muslim.

2.0 Methods

This study was approved by Research Committee of Universiti Kebangsaan Malaysia Medical Center. Consents were obtained from cluster guardians and each participant.

Two intervention packages were developed. Table 1 shows the similarities and differences between the two intervention packages. Both groups were briefed on the appropriate food portion to be taken according to the available food groups as explained in the Malaysian Food Pyramid Guideline 2010. Both groups were taught on how to estimate food portion sizes and how to monitor their food intake amount themselves using a food diary.

Table 1: The similarities and differences between faith-based intervention and basic intervention

	Faith-based package	Basic package
Briefing		
Food quantity estimation (Food Pyramid 2010)	√	√
Instruction on how to use food diary	√	√
Relevant religious information	√	X
Printed material	√	√
Food diary		
- Guideline to estimate food quantity	√	√
- Religious reminders	√	X
4 booklets on relevant religious information	√	X

However, in the Islamic intervention package, the briefing sessions stressed on the relevant religious teachings to practice voluntary fasting and to control the quantity of food intake. These were supported by relevant information in the form of printed materials. These faith-based intervention printed materials were developed using information from the two main sources of Islamic teachings that are the Quran and the hadith. The inputs were obtained from team members who were known to be credible in their knowledge on the teachings of Islam. The printed materials consisted of four booklets and a food diary. The content of the four booklets covered knowledge concerning the importance of a Muslim to stay healthy, fasting ethics, voluntary fasting, the reward of fasting, prohibition of excess food consumption, and Islamic planning and motivation. The food diary was prepared to help respondents to monitor their food portion control. The pages in the food diary were interspersed with relevant religious reminders from the Quran and the hadith. The pages on days recommended to voluntarily fast was colored to alert respondents about it. This Islamic dietary intervention package was given to the faith-based intervention group. The basic intervention group, meanwhile, received a basic dietary intervention package which includes information on 'how to estimate food quantity' and 'what is the appropriate food portion'. The basic intervention group did not receive the four related religious information booklet, nor they were briefed on them and their food diary was devoid of Islamic reminders.

All printed materials developed for this study (i.e. the booklets, food diary and the questionnaire) were validated and tested for its reliability. It was initially pre-tested among 5 government staff from different occupational positions in a selected public university. A pilot test was then carried out among 30 government staff also from different occupational positions in a selected local government office. The representation from different occupation positions was to ensure 'convergent' and 'discriminant' validity. Validity tests for 'readability' was carried out using 'Flesh-Kincaid Grade level'. The tests showed that the printed materials were appropriate for persons aged 16 and above. The 'index of difficulty' was within the acceptable range (0.12-0.66) except for 2 questions which were rated as 'too easy' (>0.66).

The religious information was validated by 3 religious experts from the Department of Al-Quran & Sunnah, Faculty of Islamic Studies, Universiti Kebangsaan Malaysia. The dietetic content was validated by 2 dietetic experts from the Department of Nutrition & Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, while the appropriateness of language used was checked by a Bahasa Melayu language teacher from Sekolah Kebangsaan Presint 8 (2), Putrajaya. 'Test and retest' method was adopted to test the reliability of the questionnaire. The interval between the two tests was 2 weeks. The statistical test carried out was 'Cronbach Alpha' consistency test for the numerical responses and the 'Kappa' test for categorical answers. The Cronbach Alpha value for the knowledge and attitude questions was 0.4 and 0.7 respectively. The value for knowledge questions was poor but could be improved if two identified questions were removed, but due to the necessity of these questions, they were retained. The value for practices questions were within the range of 0.7-0.9. In short, validity and reliability tests showed that all printed material developed for this study were within the acceptable range.

The variables assessed as baseline were the socio-demographic, socioeconomic characteristics and body mass index category. The voluntary fasting practices and the food portion control practices were assessed through the number of respondents who practiced them. These dietary practices were assessed at baseline (prior to intervention) and reassessed 3 months post 'active intervention phase'. An important potential confounding factor i.e. the level of religiosity was also assessed. Level of religiosity was measured using a validated questionnaire which has been repeatedly used to study the association of religiosity and the selection of banking in Malaysia. [18]

The active intervention phase was the whole month of Ramadan. The month of Ramadan was chosen to be the 'active intervention phase' due to the uniqueness of

Ramadan's environment where it facilitates these behaviour changes (i.e. fasting and food portion control). There is less food distraction during Ramadan since the availability of food public is scarce. Furthermore, Ramadan is viewed by Muslims as a spiritual and also a physical training camp to leave what is religiously perceived as bad and to acquire that which is perceived as good. Thus these moderating factors added on to the effect of the desired behaviour changes. With increased correct knowledge and understanding about the promoted behaviour and skill to be practiced, there will be an increase in the chances for behaviour changes.

This was a quasi-experiment study among overweight Malay Muslim women working as government officials. Two states in Malaysia were selected and the offices within the state were chosen randomly through a one stage random cluster sampling. The main inclusive criteria were BMI >25 kg/m^2 and the main exclusive criteria were the inability to fast. Characteristics of the two groups at baseline were compared using *t* and *Chi square* tests. To detect pre to post behaviour changes *McNemar* test was used and to find out the success of this faith-based dietary intervention, the magnitude of changes between the two groups were compared. All significant level was set at $p<0.05$.

3.0 Results

Fifty-six Muslim women were recruited in the faith-based intervention group and eighty-four in the basic intervention group. Table 2a and 2b show that the sociodemograhic, the socioeconomic, the body mass index and the voluntary fasting practices characteristics of the two groups were comparable. However, there were significantly more respondents who control food portion in the basic intervention group compared to the faith-based intervention group. The baseline level of religiosity was also comparable.

At 3 month post active phase, the number of respondents who turned up for follow up was 48 (85.7%) in faith-based intervention group and 62 (73.8%) in the basic intervention group. As shown in Table 3, after 3 months of active intervention phase, the number of respondents who practiced voluntary fasting increased significantly only in the faith-based intervention group, while it was slightly reduced in the basic intervention group. As for food quantity control practices (Table 3), the number of respondents who practiced food quantity control were significantly increased in both groups, but the percentage of increment was higher in the intervention group.

Table 2a: Comparison of age, household income and BMI variable at baseline between respondents in faith-based intervention group and basic intervention group

Variable	Faith-based intervention (N = 56)	Basic intervention (N = 84)	*t* value	*p* value
	Means ± sd.	Means ± sd.		
Age	36.65±10.16	39.84±10.28	1.81	0.07
Household income (RM)	3471.63±1978.89	3368.92±2212.33	0.33	0.76
BMI (kg/m^2)	31.01±4.07	31.14+4.26	0.17	0.86

t = *t* test, significant at $p<0.05$

Table 2b: Comparison of marital status, dietary practices and religiosity level at baseline between respondents in faith-based intervention group and basic intervention group

Variable	Faith-based intervention (N = 56)	Basic intervention (N = 84)	χ value	*p* value
	f(%)	*f*(%)		
Marital status				
Single	14(25.0)	12(14.3)	2.57	0.28
Married	42(75.0)	72(85.7)		
Dietary practices				
No. practice voluntary fasting	34(60.7)	62(73.8)	2.67	0.10
No. practice portion control	22(39.3)	49(58.3)	4.88	**0.03**
Religiosity level				
Strongly religious	15(26.8)	24(28.6)	0.05	0.82
Moderate/casual	41(73.2)	60(71.4)		

χ^2 = *Chi square* test, significant at $p<0.05$

Table 3: Voluntary fasting and portion control practice changes in faith-based intervention and basic intervention group.

	Variable	Baseline N(%)	3 months post Ramadan N(%)	Different (%)	Change (%)	*p* value
Faith-based intervention (N=56)	**Voluntary fast**	34(60.7)	45(80.4)	+19.7	32.5↑	**<0.01**
	Portion control	22(39.3)	33(58.9)	+19.6	49.9↑	**<0.01**
Basic intervention (N=84)	**Voluntary fast**	62(73.8)	61(72.6)	-1.2	1.6↓	1.00
	Portion control	49(58.3)	62(73.8)	+15.5	26.6↑	**0.02**

McNemar test, significant at $p < 0.05$

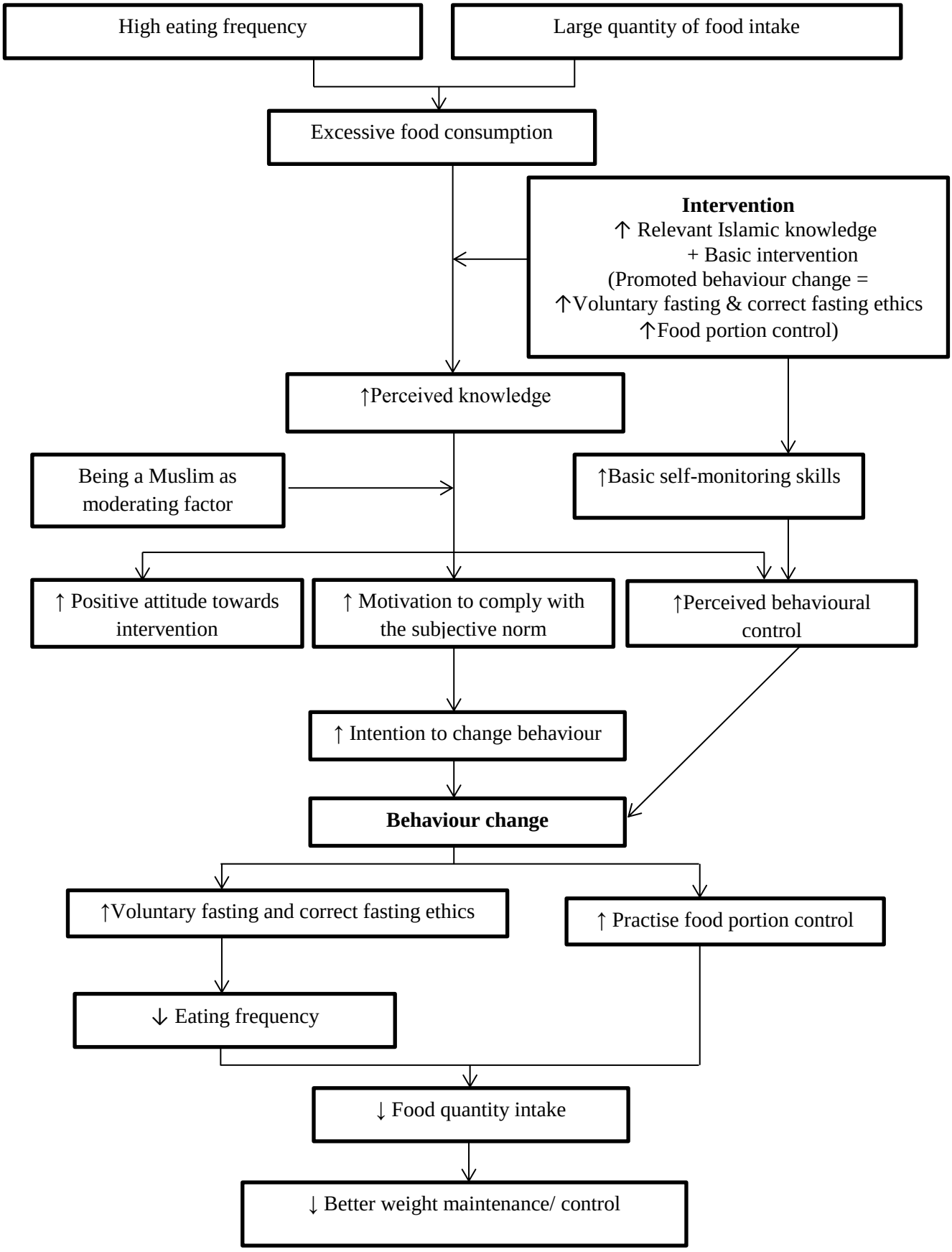

Figure 1: Islamic intervention to change dietary behavior

4.0 Discussion

At baseline the sociodemograhic and socioeconomic characteristics were expected to be comparable as respondents were among government officials from all category. Since this intervention was aimed at evaluating a faith-based intervention, the level of religiosity was measured at baseline to detect if it was a pre intervention confounder. However the results show that it is not likely since the levels were comparable. This was also an expected comparison as all respondents were Malay Muslim women. The body mass indexs of the respondents from both groups was comparable since one of the main inclusion criteria was being overweight. However, the result shows that the basic intervention group was better in their portion control practices.

Many studies have shown that weight lost during Ramadan was regained within 2 weeks to 1 months post Ramadan, which is probably due to the return to pre Ramadan dietary habits. 19-21 Thus behaviour changes in this study was reassessed at 3 months post Ramadan. The results show that at 3 months post Ramadan, 'voluntary fasting' increased significantly only in the faith-based intervention group, whereas 'portion control' increased significantly in both groups but the percentage was higher in the faith-based intervention group. Thus, there is a strong indication that the promoted behaviour was more pronounced in the faith-based intervention group. A possible explanation for the differences in behaviour changes lies in the different intervention packages received.

To discuss behaviour change, a few theories need to be explained. The two main theories used in this intervention were the theory of Knowledge Translation and Exchange (KTE) and Theory of Planned Behavior (TPB). According to the Knowledge Translation and Exchange (KTE) theory, increased knowledge in an intervention improves translation of tacit knowledge to explicit knowledge. Clear explicit knowledge contributes in developing the related skills. The behaviour theory used in this intervention was the Theory of Planned Behavior (TPB). This theory explains that behaviour change is greatly influenced by behavior intention. Behavior intention in turn is influenced by three main predictors i.e. attitude, subjective norm and perceived behavior control. KTE works synergistically with TBP.22-24

The other main influence of a behaviour change is the goals and objectives set by the individual. A well thought out plan or higher order goal will increase effective behavior change. The selection of behavior to change depends on the behavior perceived as what is most effective, when the most suitable opportunities arise and also the timing for most easy initiation where the distractions are minimal. Other important considerations in behaviour change intervention are the intermediating and moderating factors. An intermediate factor is

the factor placed between the cause and effect sequences in an intervention. Perceived knowledge is a known intermediate factor and also a strong predictor in TPB. Moderators are a unique set of characteristics belonging to a group of people and they influence behaviour intervention in all stages. 25-26In this study the moderator was the religion of the respondents i.e. Islam. Being Muslim, they are affected by Islamic teachings and its celebrations such as Ramadan.

As illustrated in Figure 1, in the faith-based intervention, there was an increase in the relevant religious knowledge through the briefing sessions and printed materials. This resulted in an increased 'perceived knowledge' of Islam which served as an intermediate between intervention and behaviour change. The increased perceived knowledge combined with the moderating factors of being a Muslim, enhanced the effect of this faith-based intervention. 27 Increased related faith knowledge brought with it increased insights about these recommended behaviour change (i.e. voluntary fasting and portion control). This enhanced positive behavioral belief and the positive evaluation of these behaviors, and thus positively influenced the attitude (the first behaviour intention predictor in TPB). The Islamic insights also strengthened the normative beliefs that these behaviour changes were commendable acts and thus increased the respondents' motivation to comply with the subjective norm (the second behavior intention predictor in TPB). Specifically for voluntary fasting, it is viewed as a virtuous act known for its desirable religious outcome. This further enhanced the positive 'attitude' and 'subjective norm' (the first and second behavior intention predictor) in TBP.

The basic intervention strategy used included imparting 'self-monitoring skills' with the help of a self-monitoring tool i.e. the food dairy. Enhancing skills contributed to an increased 'perceived behavioral control' (the third behaviour intention predictor in TPB) which was also a direct consistent predictor to behaviour change. Furthermore, the selection of carrying out the intensive phase during Ramadan allowed an easy initiation environment which was appropriate since distractions such as food availability was minimal during the day. 28-29. After the intensive phase (Ramadan) the perception about one's ability to practice voluntary fasting has increased as respondents had just passed a month long period of Ramadan fasting.

The faith-based intervention group has two specified goals. The first goal was to control excess weight and the second goal was to obtain rewards in the next life. This additional goal was emphasized in the group through briefing sessions, printed materials and reminders. This higher order goal can increase behaviour intention and produce more

effective behavior change. Therefore, the suggested behavior changes were more evident in the faith based intervention group compared to the basic intervention group. To sum up, behavior intention is the main key for behavior change. Faith-related goals can strengthen intention and its implementation. The magnitude of positive behavioral changes was more pronounced in the faith-based intervention group. The motivating factors might be higher in the faith based intervention group as they received an additional faith-based goal. A modifying factor such as faith can be very influential and is likely to be effective in changing behaviors.30-34

When practicing voluntary fasting, the dietary pattern is altered. The frequency of meals was reduced compared to a non-fasting day. Many studies have supported the hypothesis that reducing frequency of meals could contribute to weight lost. Thus it was hoped that by practicing voluntary fasting regularly among those who are overweight, it will help control the total food quantity consumed and this will contributes to weight control.

The limitation of the study was in its design which was a quasi-experiment which allows doubts of internal validity. However, the design was improved with the use of a control group. Another limitation was, there were many other potential confounders which were not looked at in this study which could potentially influence the results. This article concentrated only on the self-reported behaviour changes. There might be some information bias due to this self-reporting method. Nevertheless, the focus was on the innovation i.e. the faith-based dietary intervention.

5.0 Conclusion

At 3 months post Ramadan, the encouraged behaviour changes were significantly more pronounced in the faith-based intervention group, thus indicating that the effectiveness of this faith-based intervention in changing dietary behavior. Changes in dietary behavior could reduce food quantity consumption, thus it may help to control weight. This intervention could be adopted as a national health promotion program for the targeted group nationwide. Since the active intervention phase is in Ramadan, there is a fixed schedule for annual revitalization of the program. Faith-related goals can drive ongoing pursuits with or without immediate tangible health outcomes. This could prevent respondents from ‘giving up’ due to failed attempts and it could serve as a strategy toward sustainable behavior change. There are great potentials in many other faith-based interventions as well and it is only wise to take full advantage of them.

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