

# Delivering a childhood obesity prevention intervention using Islamic religious settings in the UK

Childhood Obesity Prevention in Islamic Religious Settings Programme Management Group

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## Delivering a childhood obesity prevention intervention using Islamic religious settings in the UK: What is most important to the stakeholders?

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### ABSTRACT

Ten per cent of the childhood population in the UK are of South Asian (SA) origin. Within this population, over 40% are living with overweight or obesity. The majority of SA children are Muslim and attend Islamic religious settings (IRS) daily after school. Because of their reach and influence, IRS may be an appropriate channel for obesity prevention initiatives. We conducted 20 in-depth interviews with parents of children attending IRS, 20 with Islamic leaders, and 3 focus group discussions with 26 managers and workers of IRS in Bradford and Birmingham. Topic guides were developed, interviews and focus group discussions were audio-recorded, transcribed, and analysed thematically. Muslim parents, Islamic leaders and IRS staff were supportive of the delivery of obesity prevention interventions for children using IRS. Participants identified important components of an intervention including: Prophet Muhammad (PBUH) as a role model for healthy lifestyle; healthy diet, physical activity, and organisational behaviour change within IRS. Participants suggested that Islamic narrative on healthy diet and physical fitness could increase delivery uptake. Staff showed willingness to conduct physical activity sessions for boys and girls. Barriers for the intervention delivery were poor funding systems and time constraints for staff. All participant groups thought that it would be possible to deliver a childhood obesity prevention intervention. Interventions should be co-designed, culturally and religiously sensitive and combine the scientific guidelines on healthy living with Islamic narrative on importance of healthy diet consumption and physical activity.

### 1. Background

Obesity in children is associated with physical, social and psychological health problems, and tracks to adulthood, with subsequent increased risk of chronic diseases (Lobstein et al., 2004; Whincup et al., 2010). Forty per cent of South Asian (mainly Pakistani and Bangladeshi) children (aged 10–11 years) in the UK live with overweight or obesity compared with 32% within White British children (Office of National Statistics, 2017). Ethnic inequalities in obesity in the UK result from a combination of metabolic, socioeconomic, cultural and behavioural factors (Bhopal et al., 1999; Whincup et al., 2010), with social and environmental factors contributing the most (Law et al., 2007).

Dietary practices tend to be less healthy in South Asian young people and second generation migrant families (Gilbert & Khokhar, 2008). Halal (Islamically permissible) food and meat products are an essential aspect of the diet for South Asian Muslims (Rawlins et al., 2013) limiting their food purchasing choices. Average consumption of fruits and vegetables is also lower among the South Asian populations compared to the white British population (Leung & Stanner, 2011). Low levels of physical activity among South Asian children, particularly girls, is another important contributor to childhood obesity (Hornby-Turner et al., 2014). Cultural practices and beliefs, such as preference for driving instead of walking (Pallan et al., 2012) account for some of this behaviour. South Asian children and families are geographically

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concentrated in deprived areas (Falconer et al., 2014) which further increases risk of childhood obesity (Higgins et al., 2019; Salway et al., 2020). Interventions to enhance physical activity levels of South Asian children in the UK are lacking (Duncan et al., 2008). To our knowledge, only five studies worldwide have tested the effectiveness of obesity prevention programmes in this population (Brown et al., 2015). These programmes were based in schools with little or no parental involvement and had mixed results (Brown et al., 2015). Parental and family involvement in intervention and an enhanced understanding of cultural contexts are particularly important to address obesity among South Asian children (Pallan et al., 2012; Waters et al., 2011). Obesity prevention programmes for children outside of the school settings have not been explored as much, and may be more promising (Taylor et al., 2013).

Islamic leaders play an influential role in shaping British Muslims' life choices with practising Islam (Dogra, 2019). Over two-thirds of British Muslims are of South Asian origin (Muslim Council of Britain, 2016) and data have shown 91% of South Asian Muslim children living in the city of Bradford go to a mosque or a madrasa (supplementary

schools for Islamic learning) after school for Islamic education (Dogra & Barber 2019). For afterschool and community-based health promotion interventions, Islamic religious settings (IRS) such as mosques, madrassas, Muslim community and sports organisations, or women's circles to study Islam can be useful venues to encourage healthy lifestyles, including promoting healthy eating and physical activity (Adab et al., 2014; Brown et al., 2019; Pallan et al., 2013; Sheikh, 2007; Tomalin et al., 2019). A systematic scoping exercise found IRS in the UK are often voluntarily involved in health promotion (Rai et al., 2019) and may be appropriate settings for the delivery of obesity prevention interventions. Previous research using this approach in relation to smoking cessation has proven to be acceptable and feasible (Ahmed & King, 2012; Ainsworth et al., 2013; Ghouri et al., 2006). To date there is limited evidence on whether a similar strategy could be useful in relation to healthy eating and physical activity promotion. There is uncertainty on how a childhood obesity prevention intervention could be delivered by using or involving IRS. The current study addresses this knowledge gap and dearth of literature. The aim of our study was to investigate how a childhood obesity prevention intervention using

**Table 1A**  
Parents of children age 5-11 years attending madrasa

ID	Initials	Age	Sex	Ethnicity	No. of children	Country of birth	Educational attainment
<b>Parents – Birmingham</b>							
1	KA	36	M	Bangladeshi	1	UK	PhD
2	FR	36	F	Pakistani	2	UK	Degree
3	AS	31	M	Bangladeshi	2	UK	Degree
4	NK	31	F	Pakistani	1	UK	Degree
5	SA	40	M	Pakistani	3	UK	Degree
6	DB	39	F	Bangladeshi	2	UK	Degree BSc
7	MN	38	F	Bangladeshi	2	UK	Degree
8	MQ	46	F	Pakistani	3	Pakistan	Degree
9	MN	41	F	Pakistani	3	Pakistan	Degree
10	SH	45	F	Pakistani	2	Pakistan	Masters
<b>Parents – Bradford</b>							
1	HA	35	F	Pakistani	2	UK	Postgraduate
2	NZ	37	F	Pakistani	3	UK	Degree
3	SM	45	M	Pakistani	4	Pakistan	GCSEs
4	TA	33	F	Pakistani	2	Pakistan	Degree
5	EK	34	F	Pakistani	2	Pakistan	Postgraduate
6	AR	40	M	Pakistani	4	UK	Postgraduate
7	DJ	44	M	Pakistani	3	Pakistan	Graduate
8	JR	30	M	Pakistani	2	UK	College
9	KM	32	M	Bangladeshi	2	UK	Degree
10	SK	30	F	Pakistani	2	UK	Degree

**Table 1B**  
Islamic leaders, workers and managers.

ID	Initials	Age	Sex	Ethnicity	Country of birth	Profession
<b>Islamic leaders, workers and managers – Birmingham</b>						
1	ZA	57	F	Pakistani	UK	Islamic leader
2	NW	49	F	Indian	India	Islamic leader
3	SU	36	M	Indian	UK	Madrassa teacher
4	KM	52	F	Arab	Algeria	Madrassa teacher
5	UH	27	M	Pakistani	UK	Mosque manager
6	RS	58	F	Pakistani	Pakistan	Muslim chaplain
7	FH	59	M	Arab	Yemen	Madrassa teacher
8	SS	30	F	Pakistani	UK	Islamic leader
9	NA	69	M	Pakistani	Pakistan	Madrassa teacher
10	AM	44	M	Pakistani	UK	Islamic leader
<b>Islamic leaders, workers and managers – Bradford</b>						
1	SS	38	M	Indian	UK	Madrassa teacher
2	WR	46	M	Pakistani	Pakistan	Madrassa teacher
3	MZ	24	M	Pakistani	UK	Islamic leader
4	ZK	53	M	Pakistani	Pakistan	Madrassa teacher
5	RN	27	M	Pakistani	UK	Madrassa manager
6	AA	28	M	Pakistani	UK	Madrassa teacher
7	ZB	44	M	Pakistani	UK	Madrassa leader
8	SI	26	M	Bangladeshi	UK	Islamic leader/madrassa teacher
9	SA	27	M	Pakistani	UK	Madrassa teacher
10	AH	29	M	Pakistani	UK	Madrassa leader

**Table 2**  
Participants suggestions on considerations for obesity prevention interventions using IRS

Theme	Participant group	Suggestions
Prophet Muhammad as role model	mother, Bradford	<i>I would feel relieved, happy and enthusiastic if my child will come home from madrassa and say, "mum, this is healthy eating, that is not, our Prophet used to eat this food or that.</i>
Prophet Muhammad as role model	Male Islamic leader, Birmingham.	<i>The simple diet, like dates and vegetables that Prophet Muhammad ate are not expensive and he never eat much and always let a portion in stomach empty while portion sizes in South Asian households are ridiculously big.</i>
Prophet Muhammad as role model	Mother, Bradford	<i>These days, people have no idea how Prophet Muhammad used his mosque in his time; there were children playing, non-Muslims coming, learnings good manners, discussion on community affairs, and openness to women.</i>
Prophet Muhammad as role model	Father, Birmingham	<i>If an Imam or a teacher in IRS is saying healthy eating is part of being Muslim, which is true, that will change people.</i>
Prophet Muhammad as role model	Female IRS worker, Bradford	<i>Prophet Muhammad never had two or three dishes in one day and always had one dish a day.</i>
Prophet Muhammad as role model	Female IRS leader, Birmingham.	<i>The foods mentioned in Quran like dates, olives, figs, pomegranates, grapes, lentils and honey and many more should be encouraged as healthy options.</i>
Prophet Muhammad as role model	Mother, Bradford	<i>Prophet Muhammad told us to divide stomach in three parts when we eat; first to be filled with food, second with water, and third to remain empty. The message is to eat less.</i>
Prophet Muhammad as role model	Male Islamic leader, Bradford	<i>To eat excessive is haram (forbidden).</i>
Prophet Muhammad as role model	Male Islamic leader, Bradford	<i>The Prophet Muhammad has advised us to walk to the mosques and told that every step of walking to mosque has a spiritual merit and reward.</i>
Cultural influence: Diet	Mother, Bradford	<i>Our people are in denial about accepting that their dietary practices are unhealthy and there is a lot of glorification of unhealthy food. We are just foodie people.</i>
Cultural influence: Diet	Female Islamic leader, Birmingham	<i>A chubby/plump child is perceived as a healthy child.</i>
Cultural influence: Diet	Mother, Bradford	<i>My daughter is a little overweight. Whenever I speak with someone in community about it, they are like "shut up and stop complaining, this is not an issue".</i>
Cultural influence: Diet	Female Islamic leader, Birmingham	<i>Rubbish bin bags are always double in our South Asian streets during Ramadan.</i>
Cultural influence: Diet	Male IRS worker, Bradford	<i>While Prophet Muhammad said to keep one portion of stomach empty when you eat, I was surprised when one child shared this joke that one portion is for food, second for water and third is for dessert.</i>
Cultural influence: Gender and physical activity	Mother, Birmingham	<i>Physical activity in same class for 5-9 years old boys and girls in IRS is alright with me, but it should be in separate classes for girls when they are 10 years or above this age.</i>
Cultural influence: Gender and physical activity	(male Islamic leader, Bradford).	<i>If we start physical activity in same space for both boys and girls which I personally think is OK, some community members might say, 'why is an IRS doing it'?</i>
Cultural influence: Gender and physical activity	Male Islamic leader, Bradford	<i>Rather than saying segregated physical activity, I will say same-sex physical activity is more inclusive for the community we are talking about.</i>
Cultural influence: Gender and physical activity	Female IRS worker, Birmingham	<i>We have got like Amir Khan in boxing and Sir Mohammad Farrah in athletics, but no Muslim female role models at national level.</i>
Cultural influence: Gender and physical activity	Mother, Birmingham	<i>Poor child is up on his feet since seven/eight o'clock, has a quick breakfast and rush to school, back home and have a quick snack or whatever is available, rush to madrassa and back home in evening. Asian families usually eat late so a child eats around 7-8pm and then straight to sleep, you imagine eating at eight o'clock, then go straight to sleep, when does your body digest that?</i>
Cultural influence: Gender and physical activity	Female IRS worker, Bradford	<i>I have witnessed some young mothers giving mobile phones to children to make them finish their meal and others using electronic devices as babysitting tools.</i>
Facilitators	Mother, Bradford	<i>The school that my daughter goes to have a madrassa straight after school, so I don't have to take her out for Islamic learning once she is home from school. This just makes it easy.</i>
Facilitators	Islamic leader, Bradford	<i>In past there was a project by Bradford Clinical Commissioning on dental hygiene, 'Smile with the Prophet', where CCG community health workers provided a pack of toothpaste, toothbrush and some instructions to madrassa. This was a great success for dental health promotion as children, parents and IRS management took part in it enthusiastically.</i>
Facilitator	Male, Islamic leader, Bradford.	<i>As children are not supposed to pray five times daily, but we teach them postures, I think we can divide kids into small groups and ask them to compete with each other on Islamic prayer postures with speed.</i>
Facilitators	Female Islamic leader, Birmingham.	<i>Kids love to run and play and I think halls in madrassa are best available spaces to be utilised.</i>
Facilitators	Father, Birmingham	<i>Children need to be told other than just from their parents on things like drink plenty of water and avoid fizzy sugary drinks, preferably by a doctor visiting IRS.</i>
Barriers	Female Islamic leader, Bradford	<i>Some of the madrassa are in houses, some in small buildings with small classrooms that doesn't provide enough space for physical activities, only few lucky one has massive hall available.</i>
Organisational changes within IRS	Male IRS worker, Bradford	<i>Workers can make a policy to declare their madrassa pizza and coke free</i>
Organisational changes within IRS	Female IRS worker, Bradford	<i>Drumsticks and chips from take-aways, samosa and pakora are the things that mosque management committee can ban from serving on various occasions.</i>
Sedentary time	Father, Bradford	<i>We need to downsize our screen time for children, if it's not healthy for us, then it's not Islamic.</i>
Sedentary time/sleep	Islamic leader, Birmingham	<i>In summer, children shouldn't be coming to mosques and should get some sleep as isha (night) prayer is usually around 10pm, whatever is optional should stay optional.</i>

Islamic religious settings in the UK could be delivered.

## 2. Methods

We used a qualitative research methodology. Our methods were in-depth interviews and focus group discussions and our analysis was thematic. We took an inductive approach where the aim was for the findings to arise from the voices of participants. As such, we did not apply an existing theoretical framework to the dataset.

### 2.1. Participants

We conducted 20 in-depth interviews with Islamic leaders and 3

focus group discussions with IRS workers/managers (n = 26), another 20 in-depth interviews with parents of children (5–11 years old) attending IRS. We recruited research participants from two English cities with a high density of South Asian Muslim population, Bradford (24%) and Birmingham (22%). Research participants were recruited from three categories of people (parents of children attending madrassa, Table 1A; and Islamic leaders, IRS workers/managers; Table 1B). Purposeful sampling sought to include participants with a range of markers of identity like geographical location (Bradford, Birmingham), sex (male, female), ethnicity (Pakistani, Bangladeshi, Indian), place of birth (UK or abroad), and first language (English or others).

Of the parent sample, 12 were mothers and 8 were fathers, 15 were Pakistani and 5 were Bangladeshi, with an age range of 30 to 46. Parents

**Table 3**

Participant suggestions for potential components for an obesity prevention intervention using IRS

Theme	Participant group	Suggestions
Diet	Parents	Imams can educate children about avoiding fizzy or sugary drinks.
Diet	IRS workers	The madrassa should organise healthy eating days or weeks for children.
Diet	Parents (mothers)	Mothers suggested that men in South Asian families should get involve in kitchen and learn about healthy diet.
Diet	Islamic leaders	IRS workers should be trained by professionals and experts on how to communicate children about healthy diet.
Diet	All	IRS workers and management can make an effort to introduce fruits as reward to children for good performance and stop giving sweets and candies.
Diet	IRS workers and leaders	On celebrating the Quran learning accomplishments of children, instead of throwing a pizza and coke party, a healthily cooked biryani dish and fruits can be served.
Diet	Islamic leaders	IRS can start healthy eating classes to educate children by combining it with Islamic narrative on healthy food.
Physical activity	Parents, and Islamic leaders	Playing, running, hula hoop, stretching for 5 minutes, pilates, yoga, in each hour, physical games like 'British Bulldog charge', after-IRS sports clubs, circuit training, body pumping, and other mainstream sports like football, cricket, cycling, and karate classes were recommended by parents with short durations for activities during weekdays and long over weekends; some suggested fixing a day for physical activity at IRS.
Physical activity	Parents and Islamic leaders	The premises of the madrassa were viewed as more suitable than mosques for physical activity.
Physical activity	IRS workers	Improving or providing physical infrastructure like installing a basketball hoop on the wall inside IRS.
Physical activity	IRS workers	Bodily postures of Islamic prayers (standing upright, bending and bowing down body, standing again, and prostration) were viewed as a robust PA that doesn't require any extra arrangements; similarly children maintaining right posture while sitting on floor for learning was viewed another good technique.
Physical activity	Parents and Islamic leaders	Walking children to IRS for pick and drop and creating safe routes and streets with parents or volunteers supervising high visibility jackets on can be another ways of doing physical activity.
Physical activity	All	Prophetic sports like running, swimming, archery, horses riding were encouraged.
Sedentary time	Islamic leaders	Parents need to be educated that children shouldn't be keeping awake for night prayer in summer times.
Sedentary time	Parents	Making rules on using electronic devices during week days and weekends help in keeping structured sleeping patterns.

had between one and four children. Of the Islamic leaders, workers and managers sample, 14 were Pakistanis, 3 were Indians (Gujratis), 2 were Arabs and 1 was Bangladeshi, with an age range of 24 to 69. 13 Islamic leaders, workers and managers were born in the UK, 4 in Pakistan, 1 in India, 1 in Algeria and 1 in Yemen.

## 2.2. Researchers and language

The interviews and focus group discussions were conducted by two researchers (SD and KR). SD is male, fluent in Punjabi, Urdu, Arabic, Persian, and English, and based in Bradford. KR is female, fluent in Punjabi and English, and based in Birmingham. SD conducted interviews with most male participants and KR with mainly female participants in order to facilitate access. All interviews and focus group discussions were conducted in English as this was preferred by participants. Participants used words in Arabic, Urdu, and Punjabi while responding in English, particularly while discussing Islamic rituals or South Asian food habits.

## 2.3. In-depth interview and focus group discussion

A topic guide was developed from a literature review and prior learning from other related work, including a scoping review and mapping exercise (Rai et al., 2019). The topic guide was tailored to each participant group (parents, Islamic leaders, IRS managers and workers) but had substantive components which were similar throughout. We focused on examining attitudes and beliefs in relation to: healthy dietary habits, physical activity, sleep/sedentary time and structural/organisational changes within IRS, and tailored a topic guide after team discussed findings from initial interviews. All participants gave written, informed consent to take part in the study. In-depth interviews and focus group discussions were audio recorded and transcribed verbatim. Pseudonyms were used. The duration of in-depth interviews was 45–60 min and 60–90 min for focus groups.

## 2.4. Analysis

Thematic data analysis (Braun & Clarke, 2012) followed five stages: data familiarisation, theme identification, indexing, charting and mapping the data. NVivo 12 was used to organise coding. SD and KR collaboratively developed the coding framework, based on repeated reading of transcripts and discussion of their fieldwork impressions. They each coded the same four transcripts against the initial coding framework and then iteratively modified it. SD, KR and LS then met to discuss how the data fitted against the codes and the final framework of codes and sub-codes was agreed. SD then conducted further interpretative work to write up the findings, sense checking with KR and LS where appropriate.

During coding of interviews, we were aware of overt saturation and repetition of responses from participants. Therefore, the research team decided to code half (20 out of 40) of the in depth interviews transcripts and all 3 focus group transcripts in NVivo 12 and then read the rest of the transcripts (remaining 20 interviews), only explicitly coding if data was discordant. We ensured that the interview transcripts selected for coding were representative of the dataset as a whole by taking 10 from Bradford and 10 from Birmingham, making sure that 10 were parent participants and 10 were Islamic leaders, workers and managers. This 50/50 split also continued for gender with 10 being male and 10 being female interviewees.

## 3. Findings

Overall, Islamic leaders, IRS staff and Muslim parents in Bradford and Birmingham thought that it would be possible to deliver childhood obesity prevention interventions using Islamic religious settings. Participants discussed the practicalities around the delivery of an intervention and identified the following themes as important intervention components: Using example of Prophet Muhammad as a role model on healthy life style; tackling cultural influences on healthy diet and physical activity, and the need for organisational behaviour change within IRS. However, their willingness to engage with an IRS based intervention had caveats around certain components of delivery. Table 2



presents the themes, practicalities and caveats around delivering childhood obesity prevention interventions in IRS.

**Islamic narrative on healthy lifestyle as a delivery component:** We learned that the life of the Prophet Muhammad, his physical fitness and his daily routine, as they are communicated in mosques to British Muslims and taught to South Asian children in madrassas, are strongly viewed by participants as perfect for role modelling. The Islamic narratives on His food habits, sleeping patterns and physical fitness are understood as an embodiment of living an ideal healthy life. Parents, Islamic leaders and both male and female workers of IRS unanimously expressed their strong belief that children can learn about avoiding sedentary behaviours and taking up healthy eating if stories about the Prophet Muhammad are recounted in interesting ways. Participants mentioned that the best way to encourage people to avoid eating junk food and/or adopt healthy dietary habits is to introduce food items in their kitchen that Prophet Muhammad used to eat.

Many participants, particularly the younger IRS workers (aged 20–40 years), expressed that some South Asian community members and Islamic leaders in the UK have a limited understanding of mosques; using them only for daily ritual worship. On the other hand, Prophet Muhammad's mosque was exemplary, including people from diverse backgrounds, encouraging social and community activities, such as sports, and opportunities for learning languages and community relations. We learned that young IRS workers were eager to expand the scope of activities in IRS beyond ritual worshipping and wanted to involve experts on healthy lifestyles visiting frequently and working in partnership with Islamic leaders.

Most participants agreed that Islamic narrative on healthy dietary practices, if disseminated by making it relevant with modern life, can influence people's food habits positively. Participants shared many examples from Islamic narrative in the form of the sayings of Prophet Muhammad, quotes by Islamic scholars, learning from Islamic practices, and stories for children that, in their view, can be narrated through IRS to encourage dietary behaviour change. Participants agreed that Quran and other Islamic narrative strongly advocate serving and consumption of modest and not extravagant food. Islamic leaders explained that the South Asian community should be educated that to inflict bodily harm is strictly forbidden in Islam and unhealthy dietary habits cause bodily harm in the long run. All participants also acknowledged that IRS can use Islamic narrative to promote physical activity and healthy sleeping habits. Islamic leaders said some children come to madrassa to memorise the Quran and they could encourage healthy sleeping habits. Islamic leaders also acknowledged that parents need to be educated not to bring young children to night prayers during summer in the mosque.

There were clear cultural influences on diet, physical activity and sleeping behaviours that South Asian parents and Islamic leaders viewed as problematic. These were considered targets for obesity prevention interventions.

**Diet and cultural context:** Research participants perceived a number of unhealthy habits are embedded in South Asian culture, including cooking multiple dishes for meals, over-eating, and unhealthy food choices. There are also cultural perceptions around fat being healthy in children, and many don't view childhood obesity as a problem. Parents commented that they receive negative remarks from relatives and community members if their children look slim. Islamic leaders acknowledged that there are no Muslim organisations raising awareness about healthy eating or maintaining a healthy body weight. IRS workers mentioned that they know families where women start making food a month before Ramadan. Mothers commented that family members and relatives become judgemental and young women are labelled as "un-trained" if food is cooked and served using low salt, fat and sugar. Islamic leaders shared that families are pressurised to offer large amounts of food (like a feast) regularly in IRS.

**Gender of a child and physical activity:** Cultural taboos among South Asian communities around physical activity in girls, particularly after reaching puberty, was a frequently cited barrier hindering the

scope of activity for South Asian girls. This was partly around the practicality of where they could change clothes, but also related to mixing of girls and boys in unsupervised spaces. The majority of participants said that they would prefer physical activity for girls in IRS to be conducted by female instructors. As boys and girls attend IRS in separate classes already, most of the research participants maintained that separate physical activity classes can be more acceptable to South Asian communities. However, some parents and Islamic leaders were receptive to the idea of boys and girls taking part in physical activity together in the same session. Islamic leaders maintained that there is diversity within South Asian communities in terms of how they view mixing of sexes in gatherings. IRS workers shared that more inspirational female sport role models are needed from British Muslim communities to encourage physical activity.

**Sleep and sedentary patterns:** Research participants indicated that the majority of South Asian Muslim families living in the UK don't maintain healthy sleeping patterns for children. Some parents informed us that children in South Asian families often sleep late resulting in drowsiness in school. In addition to unstructured sleeping patterns, excessive screen time was also discussed as an issue, leading to less time for physical activity. IRS workers related that younger children have recounted watching TV until 9–10 pm. Islamic leaders also acknowledged that parents often buy mobile devices for young children and without parental control, these keep them awake till late at night.

**Practical barriers and facilitators around intervention delivery:** Financial limitations and physical restraints of IRS were mentioned as potential barriers to management allowing health promotion activities. Participants explained that most of the mosques and madrassas are self-funded by attendees, through collections after Friday prayers and on other occasions. Teachers and workers within IRS usually work as unpaid volunteers. Therefore workers may resist taking on additional workload. The buildings used and physical infrastructure of IRS can also act as barriers. Research participants implied that delivery of interventions during week days would be a challenge because of limited time and would need to be delivered by complementing madrassa curriculum, over the weekend or by fixing a day during the week.

A potential lever was around collaboration between IRS, schools and the health service. Parents and Islamic leaders related previous instances when there were benefits from collaboration between IRS and other organisations. Such a partnership was considered convenient for parents and provides an obvious setting for children to engage in physical activity. Another example was related to collaboration with a CCG. Partnership with experts was also viewed positively. Suggestions put forward by participants as to how various components of an intervention could be practically enacted are detailed in [Table 3](#).

#### 4. Discussion

We found that Islamic leaders, IRS workers and Muslim parents were all supportive of the delivery of obesity prevention interventions for children by IRS staff or professionals collaborating with IRS. Prevalent behaviours rooted under cultural influences such as unhealthy dietary habits, large portion size, and limited physical activity were deemed contrary to Islamic teachings by all participants. South Asian Muslim parents and Islamic leaders in Bradford and Birmingham considered that reference to Quranic scripture and the example and life of the Prophet Muhammad (as a role model) offer opportunities for teaching children about healthy eating and physical activity. Although there were some reservations by few parents about the acceptability of delivering physical activity sessions, particularly for girls, IRS managers/workers, Islamic leaders and most of the parents were willing to run same-sex sessions. Other barriers were related to time, space and funding constraints. Collaboration with external organisations such as schools and the health service presents potential opportunities.

Mainstream health promotion messages and interventions tend to be uniform and without considering the varying needs and responses of

ethnic, religious or other sub-groups (Salway et al., 2020). The available data on health behaviours and health inequalities are mostly collected on measures like ethnicity or socio-economic status of marginalised groups. The intersectionality of ethnicity and religion and how the Islamic narrative on obesity prevention becomes instrumental in behaviour change for one or more ethnic groups has not been the part of public health recommendations and health promotion interventions. This study provides intersectional analysis on how various markers of identity like religion, ethnicity, and deprivation can be incorporated in designing complex health interventions (Liu et al., 2016) while targeting high risk groups like South Asian Muslims in the UK. The absence of Islamic narrative in available mainstream health promotion plans and policies targeting South Asian or other Muslim communities may limit the scope of successful delivery of any intervention. The assumptions behind efficiency of biomedical models of health interventions and the generic logic of 'public health' assuming high risk 'publics' as homogeneous (Hinchliffe et al., 2018) can be problematic. Co-production of interventions between researchers, policy makers, and members of public, including religious leaders is more likely to address the high rates of childhood obesity among South Asian children in the UK.

School based interventions for health promotion have concluded that parental involvement is associated with better outcomes (Brown et al., 2019). Interventions using IRS which involve parents, children and community leaders therefore have the potential for greater effect. Islamic narrative on healthy living combined with healthy lifestyle recommendations by health authorities in the UK could influence behaviour among South Asian communities. Available evidence shows high reach through IRS where most of health promotion interventions are targeting physical activity already (Rai et al., 2019). Our findings support the view that IRS in the UK are progressive social organisations for inculcating obesity prevention behaviours among children, parents and community members. IRS are sites for practising religious beliefs and can act as sites for promotion of a healthy beliefs about diet, physical activity among high risk groups. By using IRS, evidence based recommendations on physical activity and healthy diet combined with Islamic narrative on healthy living could be disseminated effectively to a captive audience i.e. children, parents, families, and communities.

Our study highlights the potential for IRS to support healthy lifestyle behaviours rather than hinder them as suggested by a previous study which suggested that by attending IRS afterschool, South Asian Muslim parents might compromise their children joining an after-school physical activity club (Pallan et al., 2012). On the contrary, the evidence in our systematic mapping of IRS in the UK indicates that the infrastructure, organisation and delivery of physical activity for children by IRS staff are already occurring; with some IRS acting as afterschool physical activity clubs (Rai et al., 2019). Our fieldwork observations informed us that some IRS workers and managers were from the second, third or fourth generation of ethnic minority, with a dynamic view on IRS as local community hub providing different services more than ritual prayers and learning. Based on speculation about places of worship or IRS leaders, academics and researchers might be inclined to believe IRS teachers live with obesity; hence a 'fat priest' preaching how to prevent obesity might not be effective. On the other hand our participants, particularly males and females madrasa teachers, were young (mostly in 20s) with active and athletic bodies. Our study findings suggest academics working on health promotion within religious or cultural settings or targeting ethnic minorities should view staff and attendees in the settings as 'active participants' rather than 'passive recipients'. We advocate emphasising and identifying facilitators in cultures and religions for health promotion rather than focusing on barriers within them.

We learned that an intervention to promote obesity reduction in IRS should consider the caveats of each setting for example the physical space to perform physical activity in some smaller madrassas. An intervention targeting behaviour change for obesity prevention should relate more with the lived experience of British Muslims attending IRS.

Adaptation of complex interventions and health promotion programmes according to the needs of local settings can increase intervention acceptability (Liu et al., 2012). Place-based groups in these settings, with involvement of local leaders and IRS staff in intervention delivery could result in high uptake of activities. A toolkit designed specifically for training IRS staff on delivery of intervention components and offering educational and informative material could prove to be effective. The contents of this toolkit needs to be co-produced and complement the madrasa curriculum using Islamic narrative on healthy living by combining it with obesity prevention recommendations by NHS, PHE and NICE guidelines.

## 5. Limitations

We collected data from parents, Islamic leaders, and managers/workers of IRS separately. Mixed focus group discussions of all categories research participants may have revealed more insights about the scope of health promotion intervention in IRS. However, this might have presented another challenge of social desirability and less open or frank conversations. Our findings are specific to IRS in areas of large South Asian populations in the UK, but may not reflect the views of South Asian populations in smaller areas. Most of our participants, particularly females, were highly educated reflecting the current educational trends among 3rd generation South Asians (parents of younger children) and greater access to this group.

## 6. Conclusion

Overall, Islamic leaders, IRS staff and Muslim parents thought that it would be possible to deliver childhood obesity prevention interventions through Islamic religious settings. The application of lessons from the life and physical fitness of Prophet Muhammad and Islamic narrative on healthy living could potential overcome South Asian cultural context where unhealthy practices around diet and physical activity are prevalent. We recommend that tailored, localised and targeted obesity prevention interventions for high risk groups such as South Asian children in the UK are developed and evaluated for uptake, retention, fidelity and effectiveness. The involvement, engagement and coproduction with high risk groups to prepare the content and design of interventions is imperative to ensure it is culturally sensitive. We recommend health promotion agencies and authorities look beyond traditional delivery settings and consider using IRS or other sites of cultural significance with captive audiences for the delivery of targeted health interventions. Health promotion messages can include cultural/religious narrative to support scientific evidence where appropriate and this may increase the relevance of the message to recipients.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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