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Diet and eating habits of expectant parents and families in Ras Al Khaimah, Emirates: an exploratory study

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Abstract

Background. Obesity is a problem that has reached epidemic proportions around the globe, attaining an alarming level in Arab Gulf countries. Poor diets and a lack of essential nutrients being consumed by pregnant women has been acknowledged, and it is recognised that parental eating habits and preferences can contribute to the development of unhealthy diets in children. However, there have been no studies exploring diet and eating habits that have targeted expectant parents and their families in the United Arab Emirates (UAE).

Aim. To explore the diet and eating habits of expectant parents and their families during pregnancy and test the feasibility of introducing an EatWell Assist workshop and diary, to increase awareness of healthy eating to improve family diet and nutritional status.

Method. Participants were recruited from three study sites in Ras Al Khaimah, UAE. Initially, a purposive sample of 20 expectant mothers and 10 expectant fathers were interviewed. Phase 2 of the study recruited 15 expectant mothers and five female family members or close friends to attend one of three EatWell Assist workshops and complete a diary for four weeks. Thematic analysis of interview transcripts and simple analysis of the structured questionnaire was undertaken.

Results. The thematic analysis identified seven main themes for expectant mothers' current diets and eating habits. These were: knowledge and understanding, eating patterns, fast foods, using supplements, likes and dislikes, body image, influences. Five similar main themes emerged for expectant fathers but the theme, 'no supplements', was in contrast to expectant mothers' 'using supplements', and 'body image' did not emerge. Overall, the findings demonstrated the workshop evaluations were positive and participants gained knowledge and valued the opportunity to attend. Completing an EatWell food diary enabled expectant mothers to improve their diets and eating habits.

Conclusions. Expectant parents' current diet and eating habits were significantly influenced by the availability of a Western diet as well as traditional foods and cultural eating preferences. There was some improvement in healthy eating behaviours after attending a healthy eating workshop and keeping a daily food diary. Expectant fathers' work commitments and women's preferences inhibited opportunities for them to receive healthy eating education. Strategies to engage with expectant fathers need to be implemented and online education options may be worth considering.

Key words: Diet, eating habits, pregnancy, exploratory study, healthy eating, cultural eating preferences, body image, evidence-based midwifery

Introduction

Eating an unhealthy diet and not consuming sufficient nutrients during pregnancy is associated with increased risks for complications and poor outcomes (Marchi et al, 2015; Muktabhant et al, 2015). It is well recognised that being overweight or underweight during pregnancy increases risks of poor maternal and infant outcomes (Dennedy and Dunne, 2010). There is evidence that overweight and obese women who become pregnant are at increased risk of pre-eclampsia, hypertensive and thromboembolic disorders, and gestational diabetes, which can lead to having a miscarriage, a stillbirth, or a large or low birthweight baby (Ramachenderan et al, 2008). A study undertaken in the US demonstrated that excessive weight gain and a poor diet consumed by Hispanic women who were classified as obese during their pregnancy, was a risk factor for gestational diabetes

(Tovar et al, 2009). Gestational diabetes is also becoming an increasing problem for pregnant women and urgently needs to be addressed. Obesity and gestational diabetes present an increased burden on the health system, with longer hospital stays, increased risk of maternal haemorrhage, and surgical interventions. While gestational diabetes is beyond the scope of this paper, it is a pregnancy health-related topic that needs further research.

It is now recognised that intergenerational effects of poor diet on children's health are perpetuated directly by obesity and diabetes in pregnant women (Hillier and Olander, 2017). In addition, parental eating habits and preferences can contribute to the development of unhealthy diets and eating habits in children (Savage et al, 2007). However, there are no studies focusing on expectant parents and their families in United Arab Emirates (UAE).

Previous studies have targeted school children and the general population. Al-Haddad et al (2005) reported that the frequency of obesity among children residing in the UAE is two to three times greater when compared to the international average. UAE's obesity rates now rank among the highest in the world and an unhealthy diet and lack of exercise are primarily the reasons for this problem (Dobbs et al, 2014). In this region, the prevalence of being overweight and obesity is estimated to be between 3% and 9% in preschool children, 12% and 15% in school children, 15% and 45% in adolescents, 35% and 75% in women and 30% and 60% in men (Musaiger, 2004). Eating poor diets and a lack of essential nutrients being consumed by pregnant women has been acknowledged in other Arab Gulf countries (Almurshed et al, 2007).

Nevertheless, pregnant women are very willing to make important adjustments to their diet and eating habits as they want to provide the best start in life for their developing baby (Wilkinson and Tolcher, 2010; Szwajcer et al, 2005). However, health professionals, including midwives, do not seem to capitalise on targeting expectant mothers to promote healthy eating and modifying eating habits (Begley, 2002). Health professionals may lack the knowledge, confidence and skills to inform and support pregnant women and their family about healthy eating (Arrish et al, 2014). Research has shown that pregnant women only receive very basic information during pregnancy and an opportunity to support women to eat healthy and modify poor eating habits is lost (Arrish et al, 2014; Begley, 2002).

It is now well known that diet and adopting healthy eating habits are primarily modifiable lifestyle risk factors for cardiovascular diseases, stroke, and diabetes, which increase the risks of disability and mortality globally (WHO, 2009). These chronic conditions create challenges for health budgets, productivity and quality of life. Conversely, consumption of nutritious, minimally processed foods is associated with decreasing the risk of these chronic health conditions (Sofi et al, 2008) and also better psychological wellbeing (Oyebode et al, 2014; Parletta et al, 2013). Therefore, eating healthy and adopting good eating habits is vitally important, particularly during pregnancy when diet not only affects the expectant mother, but also her developing baby.

Background

Planning and during a pregnancy are both good times for women to reflect on their dietary intake, habits and lifestyle, for example, exercise, sleep, relaxation, smoking, alcohol consumption (if culturally accepted). It is also a good opportunity to engage with expectant fathers and families and get them to reflect upon their diets and eating habits. Opportunities to educate about eating a well-balanced diet and the importance of drinking plenty of water to keep hydrated should be emphasised. The chronic health problems associated with obesity necessitates the need to reverse the increasing rates of obesity in the local population. This, therefore, justified the need to undertake exploratory research in Ras Al Khaimah (RAK), UAE to identify current habits and assess potential strategies for change.

Aim

The aim of this study to explore the diet and eating habits of expectant parents and their families during pregnancy, and test the feasibility of introducing an EatWell Assist workshop and diary to increase awareness of healthy eating to improve family diet and nutritional status.

Method

Sample and setting

The study population was expectant mothers, and fathers or family members who met the inclusion criteria. A purposive sample was used to recruit 20 expectant mothers and 10 fathers in Phase 1 of the study, and 15 expectant mothers and five family members or close friends, in Phase 2.

The study was undertaken within a 12-month period between November 2015 and November 2016. Fieldwork in RAK, UAE was undertaken in February and May 2016. Local coordinators recruited participants from three study sites in RAK, UAE (RAK Hospital, Saqr Hospital, Sham Hospital) representing both urban and rural populations.

Inclusion criteria

Those included in the study were:

- Expectant mothers who were booked to receive maternity care at one of the three study sites
- >12 weeks pregnant
- Low risk of pregnancy complications
- Planning to give birth in one of the three RAK study sites
- In addition, either their husband or another family member were included to represent the target population.

Exclusion criteria

Those excluded were:

- Expectant mothers not booked for maternity care at one of the three study sites
- <12 weeks pregnant
- Had a medical disorder or gestational diabetes
- >BMI 40, or an eating disorder
- Receiving specialist dietary consultations and support.

Study design

An exploratory study that involved two phases:

- Phase 1: Face-to-face interviews with expectant mothers and fathers to explore their current diet and eating habits.
- Phase 2: Expectant mothers, fathers and family members were invited to attend an EatWell Assist workshop and then complete a food diary for four weeks.

Data collection

An interview schedule guided the interviews which took approximately 45 to 60 minutes. The interviews were undertaken in a quiet room or area in the antenatal clinic at one of the three study sites or in a designated room at the local RAK Medical and Sciences University (RAKMSU). The interviews were undertaken by members of the research team, in both English and Arabic, to capture and represent the responses of the local population of expectant parents residing in RAK. The interviews were not audio-taped as it

was culturally more acceptable to use an interview guide and write participants' responses and quotes in a notebook. Data were written in either English or Arabic; the Arabic was then transcribed into English when interpreting the findings by one of the researchers who is fluent in both languages.

The workshops were held at one of the study sites and the local university (RAKMSU). The content of the workshop was delivered in English and then Arabic, as the study was being undertaken in an Arabic-speaking country. A total of 90 minutes was allocated for the facilitation of the workshop, which included time for discussion, evaluation and guidance on how to complete the EatWell food diary.

Data analysis

Phase 1: A thematic analysis was undertaken to interpret interview data using the Braun and Clarke (2006) six-stage framework to gain insights into expectant mothers' and fathers' current diets and eating habits.

Phase 2: A semi-structured questionnaire was designed and reviewed for content validity and clarity by an English- and Arabic-speaking expectant mother, before the implementation of it being used as a data collection tool. Participants completed this questionnaire at the end of the EatWell workshop and also a food diary for four weeks following the workshop. The questionnaire consisted of 14 structured questions using 1-5 ordinal Likert scale, representing a range of 'strongly agree' to 'strongly disagree' responses, and an opportunity to feed back any other comments or suggestions.

Descriptive data analysis was undertaken to measure participants' responses. Frequencies and percentages were calculated. Open-question responses were recorded as either positive or negative, and this data assisted to triangulate interview data.

Ethical approval was obtained from the RAK research ethics committee and the University of South Australia human ethics committee. The Sheikh Saud Bin Saqr Al Qasimi Foundation for Policy Research funded this research and permission to undertake the study was granted from the Ministry of Health, RAK and the three local study sites.

Findings

The demographics details for participants in Phase 1:

Expectant mothers

Age range: 19 to 40 years. Educational level: four attended secondary education, seven college, seven higher education, and two university. Employment: two were employed, five were students, and 13 were not employed. Ethnicity: seven were Emirati Arabs, one Egyptian Arab, one Lebanese Arab, two Syrian Arab, five Indian South Asians, three Far East Asians (Malaysian, Singaporean, Philippine), one white (UK). Gestational age was between 12 and 39 weeks. Parity: 12 were having their first baby, three had one child, two had two, one had three, one had four, and one had five.

Expectant fathers

Age range: 21 to 53 years. Educational level: one attended primary education, three college, four higher education, two

university. Employment: one chef, three in construction, two in ICT, one in real estate, one teacher, two doctors. Ethnicity: four were Emirati Arabs, one Lebanese Arab, one Syrian Arab, one Egyptian Arab, two Indian South Asians, one Pakistani South Asian. Number of children: six were having their first child, four had other children.

Themes from transcripts

When exploring the expectant mothers' current diets and eating habits, seven main themes were identified from 21 sub-themes. The main themes were: Knowledge and understanding, eating patterns, fast foods, using supplements, likes and dislikes, body image, influences.

Five similar main themes emerged from the 22 sub-themes identified from the fathers' diets and eating habits: knowledge and understanding, eating patterns, fast foods, likes and dislikes, influences. However, the theme 'no supplements' contrasted to the expectant mothers' 'using supplements' theme, and 'body image' did not emerge. Breastfeeding and being a good role model was discussed and relates to some of the main themes discussed below.

Knowledge and understanding

The interview data demonstrated that expectant mothers and fathers generally had a good understanding of what a healthy diet is. But they lacked knowledge about portion sizes, and had a tendency to consume high amounts of carbohydrates, and not enough fruit and vegetables.

Expectant mothers were more likely to drink insufficient amounts of water, while in contrast, expectant fathers drank plenty of water. Expectant fathers' water consumption was linked to being in a hot climate and working hard, often outside, therefore increasing the need to replenish their fluids. The majority of participants, 27 (90%), discussed the importance of drinking sufficient amounts of water daily. However, it was concerning that the majority of the expectant mothers, 16 (80%) of the 20 interviewed, reported they did not drink enough fluids and were susceptible to urinary infections:

"I know I need to drink more water as I get infections, but when I do, I feel too full and bloated, so it is hard for me to do this" (M3).

"I must drink more, especially when I am hot and feel thirsty. I forget to do this and then I get an infection. This is not good for me, or my baby. It stings when I go to the toilet. I have had antibiotics but I need to drink more" (M11).

"I drink but then need to go to the toilet more, especially during the night, so it is a problem for me. Then I get an infection and the doctor treats me with antibiotics. I will be happy when I am not pregnant anymore because of this" (M17).

All expectant mothers and most of the expectant fathers recognised the importance of breastfeeding and benefits for their baby and discussed how they had been advised and given information about breastfeeding. All expectant mothers intended to breastfeed, but a few discussed how they would have to stop early to continue with their studies at university, or if they found it too hard with having other children, they

may stop and formula feed their baby. However, it emerged that there was a lack of knowledge about the benefits of breastfeeding for maternal health and many participants did not know about the benefits for the mother:

"I am not sure what the benefits of breastfeeding are for me. I think it will help me to bond with my baby, but I think it will also make me very tired, so basically, I'm not sure" (M2).

Eating patterns

Participants' eating patterns varied and while most attempted to eat breakfast, lunch, and an evening meal most days, this pattern was often disrupted by work and other social and family commitments:

"My husband works long hours and I am alone often and so do not eat an evening meal... I will have a bowl of soup, some nuts, biscuits to keep me going" (M3).

"I try to eat breakfast, but I start work very early and sometimes I am in a rush and do not have time to eat, so I will take some fruit with me as I dash out." (F3).

Interestingly, it emerged from the data how the importance of being a good role model would have an influence on both expectant mothers' and fathers' current diet and eating habits. This goal would be a motivator to adopt better eating habits, have regular meals and eat more home cooking:

"I want to be a good role model for my baby... I will teach him good eating habits... I will breastfeed, but this might have to be restricted when I go back to work, but I will express and freeze my milk. I will then introduce diet around six months. I will give baby rice, then, blend our food, until my baby can eat solids" (M14).

"I want our baby to have the best start in life, so it is important to be good role models... we will eat as a family and adopt good eating habits. It will be challenging during the week with working, but will have our evening meal together..." (F2).

Fast foods

Eating 'fast foods' for convenience was associated with expectant fathers' work shifts and poor eating habits. Expectant mothers also consumed convenient fast food, such as burgers, fried chicken and fries, as they liked to do so and their children had a preference for this type of food as well. It was highlighted that expectant mothers with other children had to make compromises and allow their young children to eat fast food so they would eat home-made food:

"Honestly, I know fast food is not good but I cannot stop eating because I like it. And my other children like fast food too. They do not like home-made food, they prefer to have fast food. Otherwise they will not eat if I do not provide fast food. I am trying to change our children's eating habits but it is a compromise" (M1).

Use of supplements

Overall, expectant mothers were more likely to report that they took daily vitamins, minerals and probiotic supplements, while expectant fathers were more likely to discuss how they viewed the human body to be like a machine that needed fuel. For example, one participant stated:

"You do not need supplements, perhaps iron, my wife takes them and also those probiotics, but your body knows what it needs, it is like a machine, even in pregnancy... my body lets me know when I need food and fluid, it is like needing fuel to keep a machine running" (F3).

An expectant mother discussing her use of supplements noted how:

"I take a multi-vitamin every day. I did before I was pregnant and will do so after this pregnancy. I take iron tablets and calcium, as my doctor has prescribed these for me. I drink one of those probiotic drinks every morning and it is very helpful with my digestion and I do not feel as sick afterwards" (M6).

Body image

The data clearly showed that expectant mothers were very concerned about their body image and gaining too much weight during pregnancy:

"I am concerned about putting weight on. I do not want to get too big and have trouble getting back to my previous weight. My sister is still trying to lose her baby weight, so I am being careful as to what I eat" (M4).

"I'm very concerned about putting on too much weight. I have put on 10kg since being pregnant. I am now 33 weeks pregnant. I am very concerned about my body weight and how I look. I lost 4kg at the beginning of pregnancy due to sickness. I monitor my weight very closely and I do not want my baby to be large" (M10).

Body image did not emerge as an issue for expectant fathers but a few recognised health problems linked to excessive weight and requested help to lose some weight:

"I am overweight and I have a knee injury and struggle to walk, so I need advice and help as to how I can lose weight. It is difficult for me as I am a chef and I am tempted to eat many times, too many times" (F1).

Likes and dislikes

Interestingly, expectant fathers were more likely to express how they enjoyed food and eating together as a family. Some fathers discussed how they liked cooking when they had time but work commitments limited opportunities and influenced what they consumed. Most expectant mothers consumed Western style food as they liked convenient fast foods, but there was a difference between those residing in the urban city and those in a rural area. Expectant mothers who lived in the mountains were more likely to discuss how they ate locally caught fish and grown vegetables and home cooking, only very occasionally eating out in the city as this was viewed as a special treat:

"I like my food and I enjoy cooking when I am not working. My wife likes my cooking and I encourage her to eat well. I think dinner together as a family is very important, we all catch up with our day. I know I should eat better when at work but it is hard. I sometimes take my own lunch but fast food is too tempting and easy, so I am often weak and buy this type of food but drink lots of water and limit sweet drinks" (F3).

"I like and eat locally caught fish and locally grown foods."

My mother and sister do most of the cooking and we eat as a family... very occasionally I will go into the city with my husband and eat out in one of the shopping malls” (M14).

Influences

Interestingly, during the interviews with expectant mothers there were several myths discussed concerning consuming some types of foods that could have an influence on their pregnancy. For example, myths relating to consuming hot and cold food types are strong beliefs in some cultures:

“Cinnamon is hot and can bring on contractions, so you should avoid consuming cinnamon tea in pregnancy. Also, dates, pineapples, and papaya are encouraged near when your baby is due as it is believed to help bring on contractions. You should restrict these foods in the first three months of pregnancy, as it is believed that this may lead to a miscarriage. Walnuts are good to eat but hot so restrict intake generally, but once again, especially in the first three months of pregnancy” (M9).

“Do not eat camel meat during pregnancy, as it is believed that as a camel’s pregnancy is 10 months, you will be late and go over your expected date, I am not sure about this so I will not eat this meat to be safe” (M5).

In addition, several participants mentioned how the teachings in Islam influenced mothers to breastfeed; it is highly recommended to breastfeed for two years if able. In addition, breastfeeding was viewed as natural and best for

babies and it was questioned why you would not breastfeed as mothers have been breastfeeding for generations:

“I am going to breastfeed for as long as possible. My husband and family will help and support me. My sister breastfed for just over two years as it is recommend in Islam, so I will do the same as I know it is good and natural for my baby” (M15).

“My mother and her mother breastfed, why would my wife not breastfeed our baby? It is natural and best for our baby, I will support my wife, I will cook her good food and remind her to drink plenty. It is recommended in Islam to do this for two years if possible, so this is what we will do” (F3).

Family influences were identified as a possible issue, and several participants discussed how they would have to deal with this sensitively as family members’ intentions are good but the advice may not be the best for eating healthy:

“In India giving honey is a very common practice as it is believed it will settle a baby, so I have to teach my mother and sister this is not good for my baby in the first six months. This will be difficult to do especially if my baby is unsettled or if I am unwell and my mother will be caring for me during the first 40 days” (M20).

Phase 2:

EatWell Assist workshop and evaluation

Following phase 1, the content of the EatWell Assist workshop was modified to include issues that had been highlighted by participants who were interviewed (see Table 1).

Workshop attendance and evaluation

Three EatWell Assist workshops were facilitated, two during February 2016 and a further workshop in May 2016. The total number of participants was 15 expectant mothers and five female family members or close friends. No fathers attended the workshops. Expectant mothers were between 16 and 34 weeks pregnant. A total of 17 of the participants rated their overall satisfaction with the workshop to be very good or excellent, two rated the workshop good, and one did not provide an answer. For further evaluation information, see Table 2. All the comments were positive and demonstrated that learning had taken place and that it was important to provide the workshop in English and Arabic:

“A great opportunity to learn about pregnancy nutrition and the teacher was fantastic and engaging” (WM4).

“The information provided by the speaker helps me to understand better what I should be eating during pregnancy” (WM6).

“I am very pleased the information was delivered in Arabic as well as English, I understand both but my Arabic is obviously better” (WM14).

Expectant mothers’ and fathers’ willingness to undertake an EatWell Assist programme that would also include a practical cooking session and a follow-up session, if this were made available, was explored. All participants liked this suggestion and felt that it should be offered in a community setting in a health clinic and not at a hospital. The use of digital technology to provide healthy eating education, such as an EatWell Assist workshop was a common suggestion.

Table 1. EatWell Assist workshop

Content of workshop (facilitated in English and Arabic)
Over-reliance on convenience foods
Time to reflect on your dietary intake and lifestyle
Eating healthy – a well-balanced diet
Enough protein, carbohydrate, fats and fibre
Rich in fruit and vegetables
Vegetarian and vegan diets
Importance of minerals and vitamins
To drink plenty of water to keep you hydrated
Adjust and correct portion sizes
Myths need to be dispelled!
Caffeine intake – monitor and cut down
Foods to avoid – increase awareness
Top tips for food hygiene
Read labels
Eat well for life
Complete an EatWell food diary (in English or Arabic).

EatWell food diary feedback

A total of 12 completed diaries from expectant mothers who attended one of the EatWell Assist workshops were returned to a local coordinator; eight diaries were not returned. From the recordings in the diaries, the researchers were provided with valuable insights into the benefits this resource had on modifying diets and eating habits, and how this visual aid may benefit other pregnant women in UAE in the future. Expectant mothers who returned the diaries evaluated using them very positively; they found it simple and easy to use on a daily basis and to record the different food groups, and reported that the clear and concise instructions and examples given – use of hands and fingers to assist them to consume recommended portion sizes – were very helpful.

Discussion

NICE has published guidelines for health professionals (including midwives) to provide nutritional support and advice to women planning a pregnancy or already pregnant (NICE, 2008). However, it seems that there is limited education, resources and time spent on informing such women what exactly comprises a healthy diet and the importance of adopting healthy eating habits.

Pregnant women receive very general and sometimes vague information about healthy diets, supported by written literature, such as leaflets to read about diet; this seems to be the current approach used to inform and educate pregnant women (Garnweidner et al, 2013). Interestingly, there is a lack of information for vegetarian and vegan pregnant women (Arrish et al, 2014).

Expectant mothers in this study reported that they had been given leaflets on healthy eating and briefly told what foods to avoid, such as spicy foods, and the importance of food safety to reduce risk of gastro-intestinal infections such as listeria. But that no-one had explained in great detail what a healthy diet was or asked about their current diets. It has been reported that pregnant women have a tendency to not read leaflets given to them and there is research evidence that having a friendly discussion about healthy eating in pregnancy with a health professional, supported by written material, is preferred (Edvardsson et al, 2011). However, health professionals have requested more education to help them gain in-depth knowledge and understanding about healthy eating during the childbirth continuum (Arrish et al, 2014). Arrish et al (2014) published a literature review that identified a lack of knowledge and confidence

in midwives who have to advise and support expectant mothers who are vegetarian or from different religious and ethnic backgrounds. During the undertaking of this exploratory study, the researchers found some guidance concerning vegetarian and vegan diets, provided by NHS Choices (2015) *Vegetarian and vegan mums-to-be*, but there appears to be a need to raise awareness of this useful resource.

The findings from this exploratory study shows there is a need to target expectant mothers, fathers and their families with more in-depth healthy eating education; this can be informed by the NICE guidelines (2008) and adapted for an UAE culture. The Al Qasmi Foundation, who funded this research, produces policy guidelines for public and community health in RAK, and therefore an opportunity exists for a specific policy to be written for the promotion of eating healthy during pregnancy and after giving birth. Implementing EatWell Assist workshops and food diaries may be a helpful method to provide healthy eating education to expectant mothers, as this exploratory study found positive benefits and assisted in changing eating behaviours. Expectant mothers reported that they liked the simple ways to explain what portion sizes they should be consuming. Using hands and fingers

Table 2. Summary of evaluation scores for EatWell Assist workshops

	Neutral	Agree	Strongly agree	No answer
Information was presented clearly and easy to understand		14	6	
My knowledge of nutrition and healthy eating has improved		12	8	
I am inspired to eat and cook food from the food hampers	5	9	6	
I am inspired to improve my health through better diet		15	5	
I will increase the amount of vegetables I eat each day	5	9	6	
I will consume less sugary food and drinks	3	12	5	
I plan to breastfeed my baby exclusively for six months		8	12	
I plan to continue breastfeeding for 12 months or more	4	6	8	2
I plan to introduce healthy solids to my baby around six months	2	9	7	2
I will follow the 'parent provide, child decide' model of feeding	6	9	4	1
It was helpful to have my baby's father here (if applicable)				20
It was helpful to have my family member there (if applicable)	2	6	2	10
The workshop was fun and engaging		10	10	
I would take part in a three session programme if it was offered	2	9	7	2

to help guide them on portion sizes was evaluated highly. Unfortunately, expectant fathers were unable to attend the EatWell Assist workshops or complete a daily food diary in this study due to work commitments, which limited their availability; also, expectant mothers preferred to attend women-only workshops. Expectant mothers' preferences were taken into consideration and only women attended the EatWell Assist workshops and completed a food diary during the second phase of this study. Interestingly, a few other females accompanied some expectant mothers and consented to participate in this phase. This highlights that further exploratory research and healthy eating education could be undertaken on a larger scale, directed at families and communities in the UAE. However, providing information and education in Arabic and English needs to be taken into consideration when targeting the community at large.

Ways of accessing expectant fathers also needs to be specifically considered in the UAE. Alternative approaches to access, engage and educate expectant fathers, such as providing online options, may be a way to provide healthy-eating education. This is particularly important given the well-recognised health and wellbeing benefits, and the national concerns in UAE about obesity and its long-term consequences.

Overall, the workshop evaluations were very positive; all participants gained some knowledge about healthy eating and reported that they valued the opportunity to attend.

An interesting suggestion by several of the participants in this study was to adapt the workshop content and food diary and develop these resources into an 'EatWell Assist' mobile application (app) which could be used as a follow-up measure for pregnant women and an alternative for expectant fathers who had limited time availability to attend a workshop. It was also highlighted that digital health education was evolving and this increasingly popular approach would meet a need for childbearing women and their families.

The findings from the EatWell food diary suggest a change in eating habits and behaviours during the one month of diary recordings. It is interesting to note that expectant mothers increased their fluid intake while completing the diary, an issue identified in Phase 1 of this study. In addition, expectant mothers adjusted the portion size of carbohydrates, for example, one rather than two hand-fulls of rice, and recorded a significant increase in vegetables and salads. It was highlighted in this study that many of the expectant mothers were eating far too much rice and not enough fruit and vegetables, but by using the visual hands as a measuring guide in the food diary to assess how much you should eat at each meal, portion sizes were adjusted.

The ever-increasing problem of obesity within the Emirates and globally, is a serious cause for concern; however, modifying diet and eating habits can halt and lessen this world health issue. Targeting expectant parents and their families to eat healthy is an opportunity not to be missed. This exploratory study has shown that exploring current

diets of expectant parents and their families, and providing healthy eating education, can have a positive impact upon food consumption and eating habits.

Targeting expectant parents to eat healthy would fit in with early-in-life recommended preventative work in the UAE Vision 2021, national objectives (UAE Vision 2021, 2012). An indicator identified in a national policy paper is to reduce the high prevalence of obesity among children in the Emirates (Mooresar, 2015). Introducing healthy lifestyle programmes in the UAE has been guided by the WHO (2009). The findings from this exploratory research can support this ongoing preventative work.

Limitations and strengths

This study was exploratory and therefore has limitations, and the findings may not be generalisable; nevertheless, it has provided valuable insights into expectant parents' current diets and eating habits in UAE which can inform further research. The workshops were piloted and only included small numbers; further workshops and evaluations would build upon this initial research.

An identified challenge when undertaking this research was the potential language barrier that might inhibit both expectant mothers and fathers from fully participating in an interview. It was, therefore, essential to involve local coordinators to recruit participants from the three study sites. Although the majority of participants had a good understanding of the English language, the researchers had support of an interpreter if there were any misunderstandings or some confusion with any questions that were being asked. In addition, one of the researchers spoke fluent English and Arabic. The EatWell Assist workshops were facilitated by a senior dietician in English and then Arabic. This facilitator is fluent in English and Arabic and has worked as an educator in both English-speaking and Arab-speaking countries.

Conclusion

Knowing more about current diets and eating habits and the benefits of providing healthy eating education, in the form of workshops and keeping a food diary, has given valuable insights into ways to address important healthy eating issues for expectant parents in the UAE.

This study highlights the need to provide healthy eating education for expectant mothers and to also consider expectant fathers, families and the community at large. Targeting expectant parents as an early preventative measure to reduce both short- and long-term effects of unhealthy diets would be beneficial.

Recommendations

When addressing the ongoing obesity problem, expectant parents are an ideal group to work with, although to date little attention has been given, there is an urgent need to address this deficit.

There is a need for implementing healthy eating education workshops for expectant mothers as a component of antenatal education. It is also worth considering using

a father- and family-inclusive approach, and targeting the whole family to receive healthy eating and behaviour education as a preventative strategy to tackle the increasing problem of obesity.

Raising awareness of the importance of drinking sufficient water and other fluids needs to be taken into consideration as this study highlighted this as a problem which then predisposed some expectant mothers to a urinary tract infection. Follow-up care is recommended and completing a food diary such as the EatWell Assist diary can help

expectant mothers and fathers to monitor and modify their daily consumption of food and fluids.

A further recommendation would be for research to be undertaken to explore children's diets and eating habits in schools, introducing EatWell Assist sessions with child-friendly diaries, and then undertake an impact evaluation.

As we now live in a digital world and much learning is taking place via the internet, a digital format of the EatWell Assist workshop and diaries in English and Arabic is recommended as a resource and a further area for research.

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