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Beliefs of Nutrition and Healthy Lifestyle among Women in a Hospital Setting

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Abstract

Objective: Evaluate beliefs of nutrition and healthy lifestyle among a cohort of women.

Methods: Between May and October 2012, women approached at a tertiary care center, completed a voluntary questionnaire regarding eating habits, nutritional intake and physical activity.

Results: One thousand women completed questionnaire, majority were pregnant (73%). Only 45% consumed three meals per day, 70% did not eat breakfast, 48% ate dessert every day, 74% did not partake in any exercise and 62% took vitamins. Only 54% of the participants read the ingredients on food labeling. The majority (78%) of participants believed that pregnant women were required to double their food intake, and 59% did not know they need specific dietary requirements. Fifty-nine percent of the participants also believed that a healthy diet consisted of regular meals of fruit, vegetables, proteins and grains, and 60% believed that the five food groups were fat, protein, grains, dairy products, and fruit and vegetables. The vast majority (98%) of participants wanted to learn more about healthy eating and lifestyle habits.

Conclusions: A significant proportion of women exhibits an unhealthy lifestyle habits, and had misconceptions regarding the constituents of a healthy lifestyle, and the additional dietary requirements that are recommend during pregnancy.

Keywords: Healthy eating, Nutrition; Physical activity; Preconception; Women

Introduction

Over the last few decades, food choices and eating habits have changed amongst Saudi Arabian families, as western food choices and food chains have become increasingly prevalent throughout the country and particularly in urban areas. While the Bedouin nomads consume a much simpler diet than that of the urban Saudi Arabians, typically fava beans, wheat, rice, yogurt, dates and chicken [1], several studies have identified an increase in the consumption of fast food in Saudi Arabia, particularly within the adolescent population [2,3]. This, along with an increasingly sedentary lifestyle, has led to an increase in the incidence of obesity among the Saudi Arabian population [4-16] with prevalence ranging from 14% in children to 83% in adults [6,7,17]. Studies have also shown an increase in the prevalence of diabetes and hypertension in the Saudi Arabian population; particularly in women of reproductive age [4-16]. It is also well established that a high number of Saudi Arabian women have low vitamin D levels and often suffer from anaemia [18,19].

It is well recognized that healthy eating and nutrition is of particular importance during pregnancy to meet the needs of both the developing foetus and the mother's wellbeing. Women of reproductive age need to consume a wider variety of nutrients when pregnant, and nutritional screening and education has been shown to maximize good maternal and fatal outcomes [20-27]. Research has shown that a woman's diet during pregnancy can also influence the child's health and nutritional status later in life [28]. However, despite the belief that women are required to double their food intake during pregnancy, it is the quality of the diet that is of far greater importance than the quantity of food consumed. Although pregnancy increases the requirements of many nutrients, these requirements can often be met if regular meals containing a variety of food from the main food groups are eaten [5,14,16,23,29].

Young or pregnant Saudi Arabian women often have unhealthy eating and lifestyle habits [29-31]. In addition, a recent study conducted in pregnant or sub-fertile women in Saudi Arabia established an average body mass index (BMI) of 32 kg/m^2 [32]; according to the World Health Organization, an individual with a BMI of ≥30 kg/m^2 is considered to be obese [33].

Other studies have identified the need to educate Saudi Arabian women on the nutritional and physical activity requirements needed to maintain a healthy lifestyle, and have suggested that women should undergo prenatal assessments to determine their nutritional status and food consumption patterns [34].

Nutritional education remains an important public health issue across the world. As perceptions of healthy eating and lifestyle are considered to be one of the many factors that influence an individual's eating habits, it is important to effectively promote and support healthy eating habits among Saudi Arabian women [14,30,35].

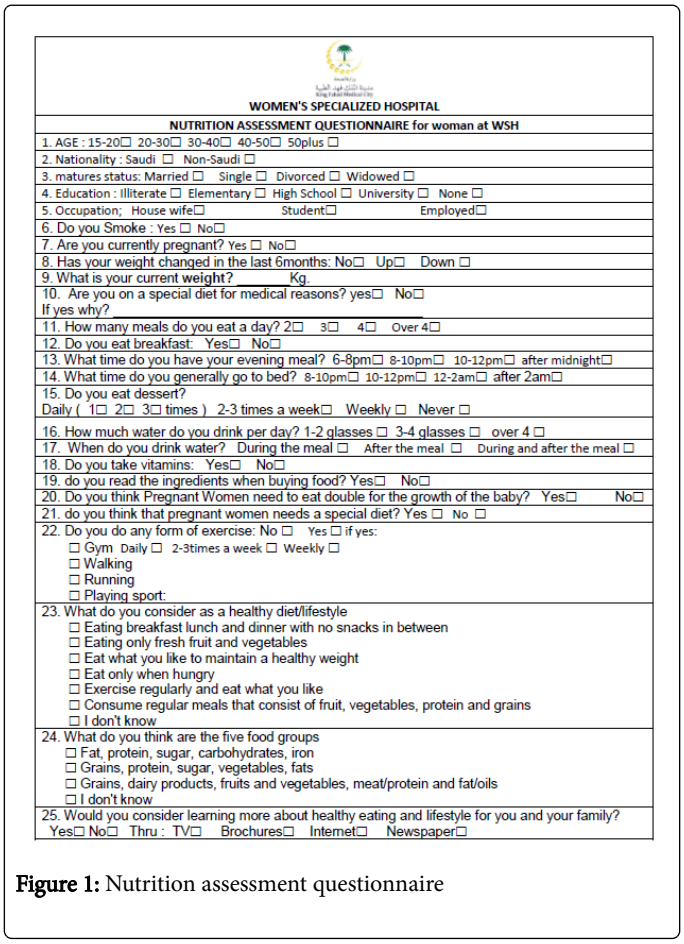
In order to change lifestyle practices, nutritional beliefs and practices amongst women need to be understood, and a better understanding of the factors that influence eating behaviours is required. However, to date, studies regarding the perceptions of nutrition among Saudi Arabian women have been limited [1,17,35-38].

The objective of the present study was to assess perceptions of nutrition and healthy lifestyle in Saudi Arabian women attending antenatal or preconception clinics at King Fahad Medical City, Riyadh, Saudi Arabia.

Methods

The study population comprised consecutive women who attended the antenatal or preconception clinics, and agreed to participate, at the out-patient department, King Fahad Medical City, Riyadh, Saudi Arabia between May and October 2012. A total of 1005 women were approached by one administrative assistant, and 1000 women accepted and completed questionnaire, response rate of 99.5%.A questionnaire containing 25 questions was administered to all study participants (Figure 1). The questionnaire was written in English, then translated into Arabic and filled out by a Saudi Arabian administrative assistant,

who was trained to answer and clarify any questions. All women who attended the pre-conception and antenatal clinics were approached to enrol. Each participant could complete the questionnaire only once. Initially, the questionnaire was tested on 15 patients from our hospital to determine whether the questions were clear, understandable, and logical (face validity) and 3 research professionals were asked to criticize the content of the questionnaire (content validity). A validated questionnaire focused on key indicators evaluating nutrition related factors. The indicators were adopted from pre-tested patient questionnaires used in accredited hospitals and were further validated by benchmarking against similar ones in the literature.



WOMEN'S SPECIALIZED HOSPITAL

NUTRITION ASSESSMENT QUESTIONNAIRE for woman at WSH

1. AGE : 15-20☐ 20-30☐ 30-40☐ 40-50☐ 50plus ☐
2. Nationality : Saudi ☐ Non-Saudi ☐
3. matures status: Married ☐ Single ☐ Divorced ☐ Widowed ☐
4. Education : Illiterate ☐ Elementary ☐ High School ☐ University ☐ None ☐
5. Occupation; House wife☐ Student☐ Employed☐
6. Do you Smoke : Yes ☐ No☐
7. Are you currently pregnant? Yes ☐ No☐
8. Has your weight changed in the last 6months: No☐ Up☐ Down ☐
9. What is your current weight? _____ Kg.
10. Are you on a special diet for medical reasons? yes☐ No☐
If yes why? _____
11. How many meals do you eat a day? 2☐ 3☐ 4☐ Over 4☐
12. Do you eat breakfast: Yes☐ No☐
13. What time do you have your evening meal? 6-8pm☐ 8-10pm☐ 10-12pm☐ after midnight☐
14. What time do you generally go to bed? 8-10pm☐ 10-12pm☐ 12-2am☐ after 2am☐
15. Do you eat dessert?
Daily (1☐ 2☐ 3☐ times) 2-3 times a week☐ Weekly ☐ Never ☐
16. How much water do you drink per day? 1-2 glasses ☐ 3-4 glasses ☐ over 4 ☐
17. When do you drink water? During the meal ☐ After the meal ☐ During and after the meal ☐
18. Do you take vitamins: Yes☐ No☐
19. do you read the ingredients when buying food? Yes☐ No☐
20. Do you think Pregnant Women need to eat double for the growth of the baby? Yes☐ No☐
21. do you think that pregnant women needs a special diet? Yes ☐ No ☐
22. Do you do any form of exercise: No ☐ Yes ☐ if yes:
☐ Gym Daily ☐ 2-3times a week ☐ Weekly ☐
☐ Walking
☐ Running
☐ Playing sport:
23. What do you consider as a healthy diet/lifestyle
☐ Eating breakfast lunch and dinner with no snacks in between
☐ Eating only fresh fruit and vegetables
☐ Eat what you like to maintain a healthy weight
☐ Eat only when hungry
☐ Exercise regularly and eat what you like
☐ Consume regular meals that consist of fruit, vegetables, protein and grains
☐ I don't know
24. What do you think are the five food groups
☐ Fat, protein, sugar, carbohydrates, iron
☐ Grains, protein, sugar, vegetables, fats
☐ Grains, dairy products, fruits and vegetables, meat/protein and fat/oils
☐ I don't know
25. Would you consider learning more about healthy eating and lifestyle for you and your family?
Yes☐ No☐ Thru : TV☐ Brochures☐ Internet☐ Newspaper☐

Figure 1: Nutrition assessment questionnaire

Ethical approval was obtained from KFMC institutional review board prior to data collection with log no 12-094, May 13, 2012.

Statistical Analysis

Summary statistics were obtained as means, medians and standard deviations from continuous variables, and as frequency and percentages for categorical/qualitative variables. Univariate tests of association between qualitative variables were undertaken using Chi-square/Fisher Exact tests. Tests of significant differences in quantitative /continuous variables between or among groups were conducted based on the t-test/nonparametric methods and/or analysis of variance techniques. Multivariate analysis for categorical variables was pursued using logistic regression methods. An overall 5% significance was used for all analyses. Statistical Analysis System (SAS Institute Inc, Cary, NC, USA, version 9.3) was used for data analysis.

Results

A total of 1000 women were screened, and enrolled in the study. Participant demographic and characteristics are shown in Table 1. The majority of participants were aged 21–40 (90%), of Saudi Arabian nationality (95%), married (97%), housewives (63%), pregnant (73%) and had a university education (56%). The majority of participants (78%) had experienced weight gain within the last 6 months, and 12% had experienced a decrease in their weight.

Characteristic	Participants (n=1000)
Age, years, n (%)	
15–20	47 (4.7)
21–30	513 (51.3)
31–40	383 (38.3)
>41	57 (5.7)
Nationality, n (%)	
Saudi Arabian	948 (94.8)
Other	52 (5.2)
Marital status, n (%)	
Single	29 (2.9)
Married	965 (96.5)
Divorced	2 (0.2)
Widowed	4 (0.4)
Education level, n (%)	
University	562 (56.2)
High school	291 (29.1)
Elementary	81 (8.1)
Illiterate	66 (6.6)
Occupation, n (%)	
Employed	281 (28.1)
Housewife	625 (62.5)
Student	94 (9.4)
Smoking, n (%)	
Yes	1 (0.1)
Pregnant, n (%)	
Yes	726 (72.6)
Weight, kg, mean (SD)	74.9 (15.2)

Table 1: Participant demographic

The diet, exercise and sleeping habits of the participants are summarized in Table 2. A number of participants (15.3%) had specific dietary requirements, including a diabetic diet (2%) or a weight reduction diet (2%).

Characteristic, n (%)	Participants (n=1000)
Specific dietary requirements	
Yes	153 (15.3%)
No	847 (84.7%)
No. of meals consumed per day	
2	422 (42.6%)
3	450 (45.4%)
4	119 (12%)
>4	7 (0.7%)
Consume breakfast	
Yes	692 (69.2)
Timing of dinner	
18:00–20:00	22 (2.2)
20:00–22:00	439 (43.9)
22:00–0:00	485 (48.5)
After midnight	40 (4.0)
No dinner	14 (1.4)
Frequency of dessert consumption	
Daily once	407 (40.7)
Daily twice	33 (3.3)
Daily three times	41 (4.1)
Weekly	165 (16.5)
2–3 times/week	322 (32.2)
Never	32 (3.2)
Consumption of water, glasses/day	
1–2	189 (18.9)
3–4	434 (43.4)
>4	377 (37.7)
Timing of water	
After the meal	437 (43.7)
During and after the meal	452 (45.2)
During the meal	111 (11.1)
Vitamin consumption	
Yes	620 (62.0)
Exercise	
Yes	255 (25.5)
Form of exercise	
Running	4 (0.4)
Walking	203 (20.3)
Gym daily	4 (0.4)
Gym 2–3/week	11 (1.1)
Gym weekly	13 (1.3)
Playing sport	8 (0.8)
Time of sleep	
20:00–22:00	11 (1.1)
22:00–0:00	294 (29.4)
0:00–02:00	414 (41.4)
After 02:00	281 (28.1)

Table 2: Dietary and exercise habits

The majority of participants consumed two (42%) or three (45%) meals per day (Table 2) and 69% consumed breakfast. Dinner was typically eaten between 20:00 and 0:00 with only 2% of participants eating earlier, and 4% eating later; only a small number of participants did not consume an evening meal (1%). The frequency of dessert consumption varied from never (3%) to two to three times per week (32%) to daily (48%).

Most participants (81%) consumed >3 glasses of water per day, all during or after the evening meal and the majority (62%) took vitamins (type not specified).

While the majority of women did not participate in any form of exercise (74%), walking was the most common form that was undertaken by 20% of participants. Finally, the majority of participants (99%) went to sleep after 22:00; the most usual time of sleep was between 0:00 and 02:00.

Table 3 summarizes the participants' perception of nutrition and healthy lifestyle. Just over half of the participants (54%) read the ingredient labels while shopping. The large majority of participants (78%) believed that pregnant women were required to double their food intake to aid the development of the foetus, and over half of the participants (59%) did not think that a special diet was necessary during pregnancy. Assessment of the participants' perception on what they considered to be a 'healthy diet' revealed that 59% considered regular meals of fruits, vegetables, proteins and grains as a healthy diet, 12% believed that eating only when hungry was healthy, while 12% thought that eating three meals per day, without snacks, was considered to be a healthy diet and 4% did not know what constituted a healthy diet. Over half of the participants (60%) considered grains, dairy, protein, fat, and fruits and vegetables to be the five main food groups, while 13% did not know what the five main food groups were. The vast majority (98%) of the participants would consider learning more about healthy eating and lifestyle and would prefer to learn via the internet or television (46% and 41%, respectively).

Question	Response	Participants (n=1000), n (%)
Do you read food ingredients on labels while shopping?		
	Yes	542 (54.2)
	No	457 (45.7)

Do pregnant women need to double their food intake?		
	Yes	778 (77.8)
	No	222 (22.2)
Do pregnant women require a special diet?		
	Yes	412 (41.2)
	No	587 (58.7)
What constitutes a healthy diet?		
	Three meals per day	118 (11.8)
	Fresh fruits and vegetables only	32 (3.2)
	Regular meals of fruits, vegetables, protein and grains	587 (58.7)
	Any food with regular exercise	41 (4.1)
	Any food to maintain a healthy weight	62 (6.2)
	Eat only when hungry	117 (11.7)
	Don't know	43 (4.3)
What do the main food groups consist of?		
	Fat, protein, grains, dairy products, fruits & vegetables	596 (59.6)
	Don't know	132 (13.2)
	Fat, protein, sugar, grains, and vegetables	117 (11.7)
	Fat, protein, carbohydrates, sugar, and iron	115 (11.5)
Would you like to learn about healthy living?		
	No	17 (1.7)
	Yes	983 (98.3)
	Via internet	456 (45.6)
	Via television	409 (40.9)
	Via mobile	1 (0.1)
	Via brochures	88 (8.8)
	Via newspaper	38 (3.8)

Table 3: Nutritional knowledge pertaining to a healthy lifestyle

The association between level of education and the pursuit of a healthy diet and lifestyle was also assessed (Table 4). The perception of what constitutes a healthy diet was significantly associated with a higher level of education (P<0.0001), with those educated to a higher level more likely to believe that regular meals of fruits, vegetables, proteins and grains constitute a healthy diet, compared with 38% of illiterate participants. There was also a non-significant association between the consumption of breakfast and a higher level of education (P=0.0578), with 73% of participants educated to university level consuming breakfast compared with 62% of illiterate participants. However, there was no association between the level of education and the participation in exercise or the number of meals consumed per day (P=0.5694 and P=0.1211 respectively).

Level of Education	**Frequency of characteristic, n (%)**							
Perception of the constituents of a healthy diet								
	Regular meals of fruits, vegetables, proteins and grains	**Eat only when hungry**	**Any food to maintain a healthy weight**	**Three meals per day**	**Fresh fruit and vegetables only**	**Any food with regular exercise**	**Don't know**	**Total**
University	371 (66.0)	49 (8.7)	28 (5.0)	66 (11.7)	12 (2.1)	19 (3.4)	17 (3.0)	562
High school	150 (51.5)	40 (13.7)	26 (8.9)	34 (11.7)	10 (3.4)	19 (6.5)	12 (4.1)	291
Elementary	41 (50.6)	16 (19.8)	4 (4.9)	10 (12.3)	3 (3.7)	1 (1.2)	6 (7.4)	81
Illiterate	25 (37.9)	12 (18.2)	4 (6.1)	8 (12.1)	7 (10.6)	2 (3.0)	8 (12.1)	66
Time of Dinner								
	18:00–20:00	20:00–22:00	22:00–0:00	After 0:00	No dinner			Total
University	12 (2.1)	249 (44.3)	269 (47.9)	24 (4.3)	8 (1.4)			562
High school	9 (3.1)	120 (41.2)	147 (50.5)	12 (4.1)	3 (1.0)			291

Elementary	0 (0.0)	38 (46.9)	38 (46.9)	3 (3.7)	2 (2.5)			81
Illiterate	1 (1.5)	32 (48.5)	31 (47.0)	1 (1.5)	1 (1.5)			66
Number of meals per day								
	2	3	4	>4				Total
University	235 (41.8)	259 (46.1)	63 (11.2)	5 (0.8)				557
High school	128 (44.0)	126 (43.3)	35 (12.0)	2 (0.7)				289
Elementary	38 (46.9)	28 (34.6)	15 (18.5)	0				81
Illiterate	21 (31.8)	37 (56.1)	6 (9.1)	2 (3.0)				64
Consumption of breakfast								
	Yes	No						Total
University	408 (72.6)	154 (27.4)						562
High school	192 (66.0)	99 (34.0)						291
Elementary	51 (63.0)	30 (37.0)						81
Illiterate	41 (62.1)	25 (37.9)						66
Exercise participation								
	Yes	No						Total
University	156 (27.8)	405 (72.1)						562
High school	63 (21.6)	228 (78.4)						291
Elementary	19 (23.5)	62 (76.5)						81
Illiterate	17 (25.8)	49 (74.2)						66
Age, years								
	15–20	21–30	31–40	>41				Total
University	18 (3.2)	309 (55.0)	213 (38.0)	22 (3.9)				562
High school	12 (4.1)	154 (52.9)	109 (37.4)	16 (5.5)				291
Elementary	12 (14.8)	31 (38.3)	31 (38.3)	7 (8.6)				81
Illiterate	5 (7.6)	19 (28.8)	30 (45.5)	12 (18.2)				66

Table 4: Association between level of education and the pursuit of a healthy diet and lifestyle

A significant association between the time at which the evening meal was consumed and the age of the participant was observed (P=0.0447), with those aged >31 years more likely to eat dinner between 20:00–22:00, and those <31 more likely to eat dinner between 20:00–0:00. There was also a significant association between the time at which the evening meal was consumed and the time at which the participants went to sleep (P<0.0001), with those eating dinner at a later time more likely to also go to sleep at a later time. However, there was no association between the time at which the evening meal was consumed and occupation or level of education (P=0.3963 and P=0.8929, respectively). No significant association was observed between the number of meals consumed and the perception of what constitutes a healthy diet (P=0.1283). A positive correlation was observed between the number of glasses of water consumed per day and vitamin intake and exercise (P<0.0001 and P=0.0107, respectively) with those who exercised and took vitamins more likely to drink >4 glasses of water per day compared with those who didn't.

Discussion

Results of studies conducted on Saudi females of childbearing age, concluded that there was a significant increase in obesity and poor awareness of nutritional intake and activities to maintain a healthy weight and lifestyle [1, 4-8], and some highlighted the need to provide further education regarding nutrition and healthy lifestyle [5,7,17,20,30,36,37]. This is of particular importance during pregnancy, as a healthy lifestyle and optimal nutrition is required to maximise

good fatal and maternal outcomes [5,12,17,20,30,36,37]. It has been noted that there is a high prevalence of obesity in pregnant Saudi Arabian women, and several studies have indicated that unhealthy eating and lifestyle habits are often observed in this population [36-38].

In a study population of Saudi Arabian women attending pre-conception or antenatal clinics, the majority of which were pregnant or of childbearing age, we found a clinically significant lack of understanding around the nutritional and exercise needs of women. Contrary to scientific findings, the majority of women believed that during pregnancy, women are required to double their food intake. Additionally, over half of the study participants believed that no other specific dietary changes were required during pregnancy. This is of particular significance, as the quality of the diet is far more important than the quantity of food consumed and the increased nutritional requirements associated with pregnancy, can often be met by eating regular meals containing a variety of foods from the main food groups. However, our results demonstrated that a number of women did not know what the five main food groups consisted of, and were unclear of what constituted a healthy diet. Additionally, we found that a large number of participants (54%) did not read the ingredients on food labels while shopping and so consequently were probably not aware of the nutritional value of the foods they were consuming. Furthermore, the majority of women (74%) did not participate in any exercise, and for those that did, walking was considered to be their primary form of exercise. This indicates a lack of understanding of the role of exercise in maintaining a healthy lifestyle.

However, it was encouraging that the vast majority (98%) of women questioned indicated that they would like to learn more about healthy eating and lifestyle, preferably via the internet or television, and the results from our questionnaire clearly indicate that this is currently an unmet need, especially for those who were less well educated.

Two studies [24,26] examined the nutrient intake of pregnant women in Sheffield, UK and Seville, Spain, which found that pregnant women in these areas were short of necessary nutrients, in particular during pregnancy. Even though this study conducted did not look at specific nutrients by blood tests, it is important to note that the perception of nutrition during pregnancy is not just restricted to Saudi Arabian women.

This study also found that, there were still a large proportion of women who do not participate in any form of exercise and do not understand what constitutes a nutritional diet. Nevertheless, It is encouraging that the women surveyed were willing to learn more, not just for themselves, but for their families [28,30].

One study showed that overweight and obesity were not associated with age, residential area, income, gender, or education level, and that obesity was less in the rural areas with traditional lifestyles of Saudi Arabia than those in a more urbanized environment [16]. This study also concluded that age and gender associated with obesity were very similar to those of the western countries. The main reason was being the fast food chains and choices of foods with little nutritional value. This was also high amongst childbearing aged women and the lower socio-economic group.

In 1994, a study was conducted [38] to look at the factors that influenced Saudi mother's nutritional knowledge during pregnancy and lactation, and concluded that the knowledge of nutritional needs during pregnancy and lactation is poor and is influenced positively by the level of education and negatively by the obstetrical history [38].

Therefore, increasing awareness in women's knowledge and perception of nutrition during pregnancy in Saudi Arabia is essential. Additionally, nutrition education is probably warranted in our population especially in an environment that is obesogenic.

Limitation to the study is the non-randomized sample, and the hospital cohort might not represent the general population.

Conclusions

A significant proportion of women in Saudi Arabia attending preconception or antenatal clinics, exhibit a number of unhealthy lifestyle habits. Additionally, a large proportion of the study population, had misconceptions regarding the constituents of a healthy lifestyle, and the additional dietary requirements that are recommend during pregnancy. We therefore recommend that further nutritional education be warranted in this patient population. Providing women with pre-natal health and nutritional education could not only maximize good fetal and maternal outcomes, but could also improve children's future health and nutritional status.

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