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Original Article

Dietary Pattern Among Infertile Women: A Cross-sectional Study

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ABSTRACT

Infertility is one of the leading disorders and effecting large number of populations. Imbalanced dietary pattern can disturb fertility in women. The diet we consumed has huge input in the occurrence of fertility or infertility in women. **Objective:** To determine the role of dietary pattern in the occurrence of infertility among married women. **Methods:** Cross-sectional study was conducted in public sector hospital of Lahore on 100 infertile females from reproductive age to premenopausal years of life in married women. **Results:** Age group ranges from 27-32 years female were infertile. 56/100 females consumed refined carbohydrate and 89 out of 100 consumed sugar daily in diet. Several dietary factors were found to be involved in infertility among women. **Conclusions:** It has been concluded that imbalanced dietary routine can directly cause infertility in women of various age. Women who consumed refined carbs, high fat and low dairy items, thus results in failure to conceive or have a successful pregnancy.

INTRODUCTION

The term infertility is referred to as incapability to become pregnant after specific time duration [1]. Many internal factors can lead to infertility in women but external factor such as high fat deposition at abdominal area can leads to high pressure at uterus and fallopian tube, this pressure disturb sperm implantation, irregular menstrual cycle thus result of infertility in women [2]. Prevalence of infertility is quite high in developing countries as greater than 186 million married females are facing infertility. About 60 million females are infertile in worldwide. 3.9% women of Pakistan are suffering from primary infertility and 18% are facing secondary infertility, while making a prevalence of 21.9% of total female population infertile [3]. Researchers concluded that high consumption of carbohydrate cause insulin sensitivity with disturbed glucose metabolism in females. Insulin resistance affects the ovarian function and lower fertility with polycystic ovary syndrome (PCOS) in majority of cases [4]. 10% of women are infertile due to PCOS with ovulatory function disorder [5]. Smoking and dietary pattern with physical inactivity cause infertility in women hence leads to make infertility disorder in future generation [6]. Higher rate of obesity in women affects their fertility. Irregular or absence of ovulation have been seen in increased body mass index (BMI). It was discovered that obese/ overweight females show less to no response to fertility treatments. Obese female might have low rate of fertilization with affected embryo quality due to fatty abdomen. Miscarriages have been noted in obese women as compare to other. Although weight loss strategies might open the way for conception and better menstruation cycle in obese women [7]. High lipid level in obese female cause

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adipocytes to produce high level of a hormone "leptin" which further lessen fertility rate in those women [8]. Unbalanced consumption of protein, carbohydrates and fat disturb the endocrine system badly and affect the fertility level of women [9]. According to studies, overweight women have less chances of spontaneous pregnancy while obese women (obesity class-III) have only 50% chances of live birth [10]. Recent study revealed that, consuming MUFA rather than trans-fat, Full fat dairy, vegan based protein sources, plant-based iron, low glycemic carbs can treat infertility in women [11]A study was conducted by Luke *B et al*, that higher the body mass index (BMI) reduce the chances of pregnancy in obese females. Donor oocytes were used to attain stable pregnancy in obese women. Results showed that all the participants failed to achieved live birth due to higher BMI ratio [12]. Research proposed by Chavarro JE *et al*, to compare the role of protein intake from plants source as well as animal source and its role in fertility among married women. Those women were not had any infertility history and were trying to conceive or got pregnant in previous eight years. The research carried out on 18,555 women and it was observed that dietary routine has some association with the occurrence of ovarian infertility. It was concluded that replacing animal source protein with plant source protein showed better results to cure ovarian infertility in women [13]. Research on obese and overweight women. It was observed that changing diet pattern and lifestyle modification ease to lose weight. Women were instructed to follow very low energy diet. It was concluded that pregnancy ratio as well as live birth among obese women were increased. Regular menstruation cycle was observed with lessen the rate of miscarriages in obese and overweight women [14].

METHODS

A cross-sectional study was conducted in public sector hospital of Lahore, Pakistan. 100 infertile women were included in study with the age ranges from 20 years to 45 years or from reproductive age to premenopausal years of life in married women. The study carried out using no-probability convenient sampling technique and survey was completed by using pre-tested questionnaire including relatable questions to access the dietary routine of married infertile women.

RESULTS

There were 22% women were from age group of initial twenties (20-26 years), 54% infertile participants were from age group of 27-32 years, 20% women were in thirties (33-38 years) and 3% of them belonged to forty years (39-44 years) of age. Only 1% of female with the age of 45 years participated in study.

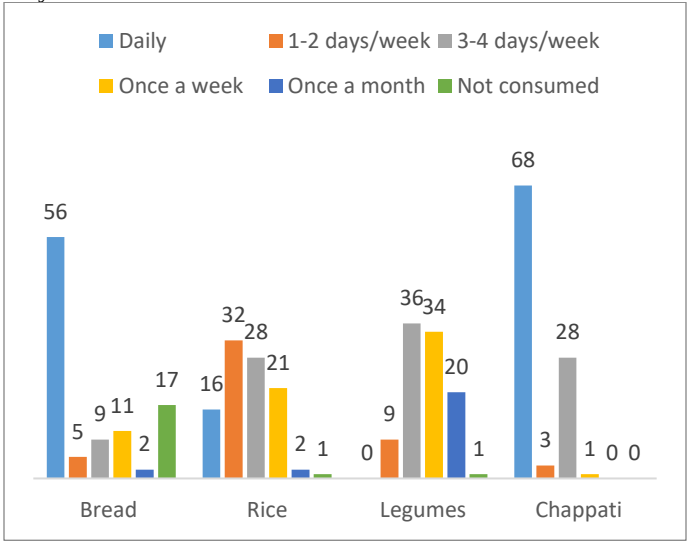

Figure 1: Carbohydrate consumption among infertile women

Figure 1 shows that out of 100 participants 56% of female consumed white bread daily but 17% infertile women does not consumed bread. 16% take rice daily in their meal while 32% eat rice within 1 to 2 days per week and 28% of them eat rice in half a week. No women showed to eat legumes daily, 34% have legumes in once a week and 20% of infertile women only have legumes once in a month. Comparably 68% women suffering from infertility consumed chapatti daily.

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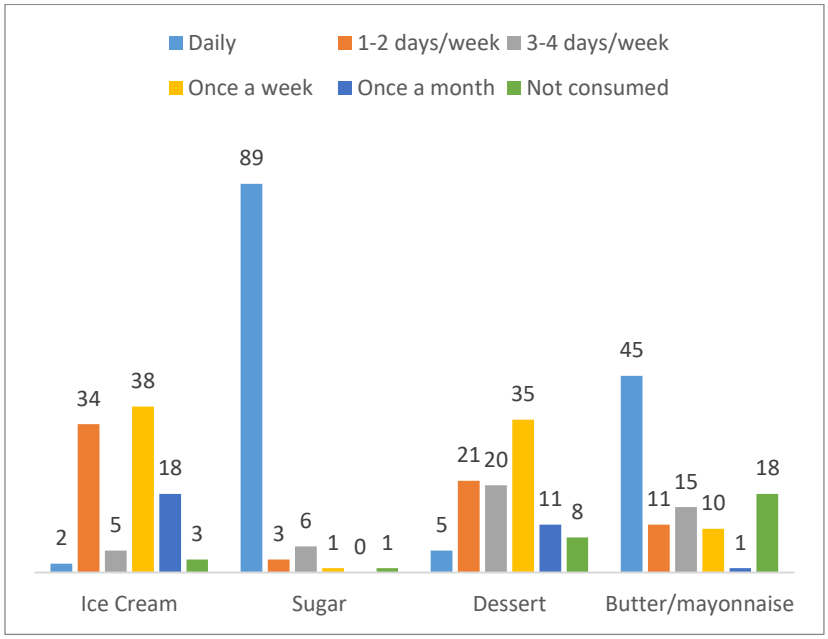

Figure 2: Sweet/ Fat consumption among infertile women

It was observed that only 2% infertile women have ice-cream daily, 34% of like to have 1-2 days/week and 38% of them enjoy ice cream once a week. Sugar consumption was recorded in 89% of infertile women daily. 5% of infertile participants have dessert daily meanwhile 21% have 1-2 days per week and 35% once a week. Consumption of fat in the type of butter, cream, mayonnaise were observed in 45% infertile women daily but 18% of them never consume it (Figure 2).

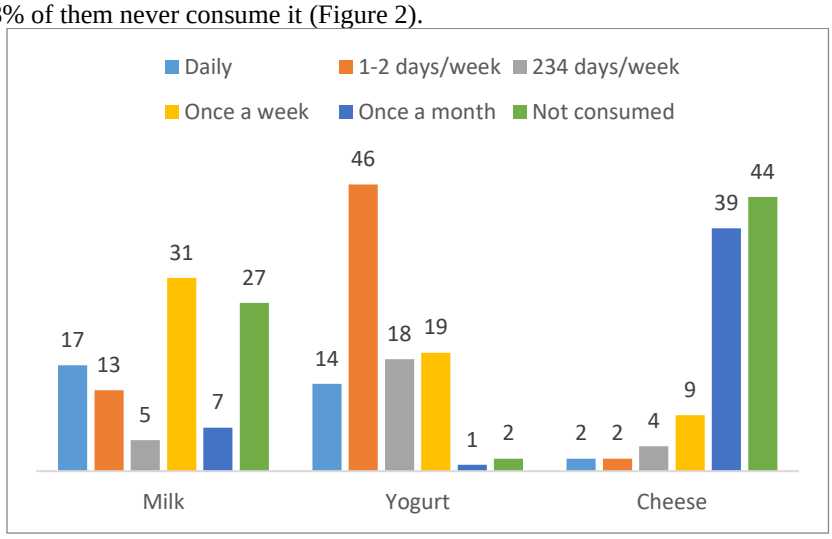

Figure 3: Consumption of dairy products among infertile women

Out of 100 only 17% infertile female consumed milk daily, 31% consumed once a week and 27% women never take milk. Among infertile women 14% include yogurt daily in their meal while 46% include 1-2 days in a week. 2% of infertile females have cheese with their meal daily and within 1-2 days per week respectively, meanwhile 39% only consumed cheese once a month and 44% of infertile women does not take cheese in any form (Figure 3).

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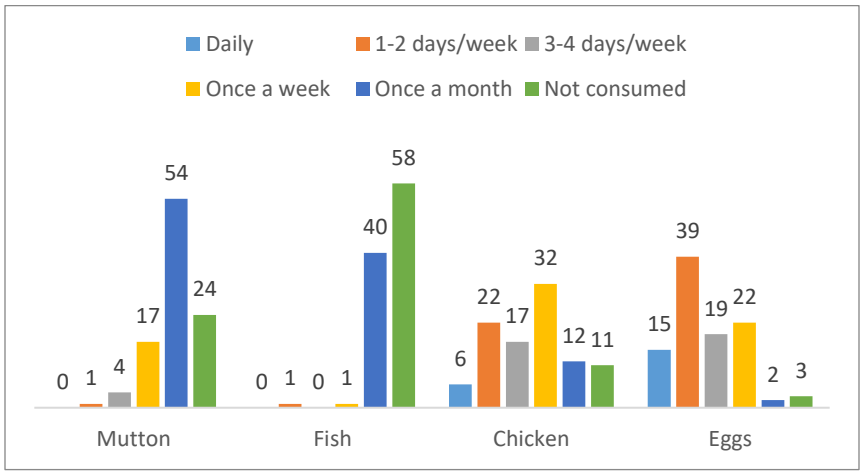

Figure 4: Consumption of Animal-based products among infertile women

Consumption of animal-based products has been shown in figure 4. It was observed that no women take mutton daily, 54% consumed mutton once in a month and 24% never include it. No participant eats fish on daily basis, 40% have fish once in a week but 58% does not include fish in their diet. 6% infertile females have intake of chicken daily, 22% of them consume within 1-2 days a week, 32% once a week, 12% once a month and 11% infertile women does not eat chicken. Among infertile women 15% of them eat eggs daily, 39% 1 to 2 days per week and 22% have eggs once in a week.

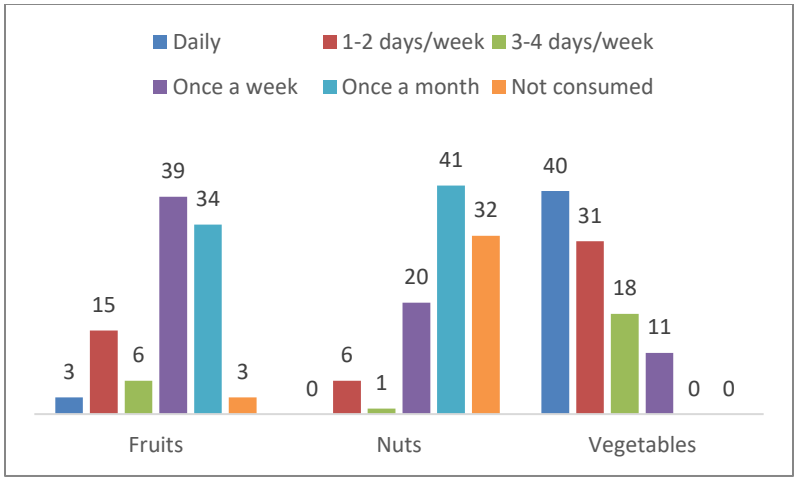

Figure 5: Consumption of Fruits/ Nuts/ Vegetables among infertile women

Consumption of fruits, vegetables and nuts was recorded in figure 5. As shown in the figure, only 3% of infertile females eat fruit daily, 39% once a week and 34% once in a month. No women observed to take nuts daily in their diet, 20% of them have nuts once a week while 41% once in a month, 32% infertile women does not seem to have nuts. 40% females consume vegetable daily, 31% have within 1 to 2 days in a week, 18% half a week but 11% of them consumed vegetables once in a week.

DISCUSSION

It has been revealed that higher number of women (54%) within the age of 27-32 years were suffering from infertility than other age groups. Results help us to determine that dietary routine have great influence on fertility/ infertility, ovarian function, live birth and chances of conceiving among women. We ask infertile women about their dietary pattern. 56 infertile females consumed white bread daily, 16 out of 100 infertile women include rice daily in their diet. 68 females like to have chapatti every day, meanwhile no women eat legumes. Chiu *et al*, find out that type and amount of carbohydrate disturb the balance of insulin in blood and homeostasis of glucose in the body. Glycemic load is considered as a risk factor in ovarian dysfunction and infertility. [15]. It has been observed that infertility is present more in overweight and obese women as compare to others. A very high number

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of infertile women (89/100) consumed sugar on routinely. Hatch *et al,* concluded that sugar have negative effect in releasing reproductive hormone, oocyte maturation and fertility in female [16]. Fontana *et al,* find out that increased intake of trans-fat and low intake of omega-3 fatty acid in diet leads to metabolic disorder such as insulin sensitivity, diabetes type-II, and inflammatory diseases, these disorders eventually affect fertility in women [17]. It has been founded that large number of Americans consumes such diets throughout their life [18]. As results shows that only 17/100 and 14 out of 100 infertile females take milk and yogurt everyday respectively, according to Aoun et al, female consuming a diet rich in full fat dairy product, folate, MUFA and plant-based protein have less likely to suffer from infertility and ovarian dysfunction as compare to others [19]. Only 15 out of 100 infertile women consume egg daily, 6/100 chicken daily but no women consumed mutton or fish in routine. Comparably, 54 women have mutton in diet only once a month and surprisingly 58 out of 100 infertile women never consumed fish. Nassan et al, concluded that intake of fish has positive impact on fertility, weight management and ovarian function. Omega-3 in fish plays significant role in fertility among infertile women [20]. Results shows that fruits and nut consumption is very low in infertile women. Only 3/100 women prefer fruit daily in diet. No women consumed nuts daily, on the other hand vegetable consumption among infertile women as 40/100 female consumed vegetables regularly. Gaskins *et al,* concluded that intake of high fiber, whole grains and high antioxidant diet elevated the chances of live birth among infertile women [21].

CONCLUSION

It has been concluded that dietary pattern among infertile women have great impact on ovarian function, live birth and chances of successful pregnancy. Women within the age of 27 to 32 are more likely to have infertility as compare to others. Taking high amount of refined carbohydrates, increased sugar consumption, low intake of fruits, nuts, milk and yogurt can leads to multiple complications in pregnancy till live birth. Changing lifestyle with diet high in fiber, antioxidant and omega-3 can help to attain fertility among infertile women.

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