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Unlocking the Potential of Intermittent Fasting: Exploring Knowledge, Attitudes and Practices

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ABSTRACT

Background: Intermittent fasting has emerged as a healthy optional intervention for caloric-restricted diet with improvement in various metabolic disorders. Hence, it has been decided to analyze the knowledge, benefits, and focus on attitudes towards practicing intermittent fasting among health professionals.

Methods: This prospective, observational questionnaire-based investigation was conducted among healthcare professionals at Panimalar Medical College Hospital and Research Institute, Chennai after obtaining clearance from the Institutional Ethics Committee and informed consent. Convenience sampling of 227 participants was employed. A questionnaire including demographic data followed by questions about knowledge (3 questions), attitude (10 questions), and practice (9 questions) was employed.

Results: Among 227 participants, 156 were female, and the majority were in the 31-45 year age group. Most of the participants answered correctly, knowledge-based questions. Few were uncertain about the factors that influence intermittent fasting (mean: 0.849). In the attitude-based questions, 80% of the participants answered questions 1, 2, 3, 4, 8, and 9 correctly, indicating that they are familiar with the ways of intermittent fasting.

Conclusion: Though 82.8% of medical professionals are familiar with intermittent fasting, only 50% are practicing, and 30% have started but discontinued due to various negative concerns. If these concerns are being overlooked, the attitude towards practicing intermittent fasting can be achieved more effectively.

Key-words: Intermittent fasting, Health care professionals, Knowledge, Attitude & Practice

INTRODUCTION

Obesity holds a universal public health threat as it is interlinked with insulin resistance, hypertension, atherosclerosis, cardiac risk and dyslipidemia. Hence, caloric restriction (CR) or calorie deficit with balanced nutrition plays a prime role in the management of obesity and its disorders [1].

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But its hardship lies in its consistency and balance of nutrition. Therefore, intermittent fasting can play a key role as an easy and alternative sustainable dietary intervention for a calorie-restricted diet. Also, it is highly useful for weight management and shows improvement in glucose and lipid metabolism. It also has highly beneficial anti-inflammatory effects [2]. Intermittent fasting has emerged in recent times as a healthy optional intervention for a consistent caloric-restricted diet with improvement in various metabolic disorders [3].

The concept of intermittent fasting emerged after observing the Ramadan fasting by muslims during daytime for nearly fifteen hours between sunrise and sunset. This fasting showed enormous improvement in

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their health [4]. After the recent studies, intermittent fasting comprises various variants, which include alternate day fasting (ADF), 16 hours/18 hours of fasting, Eat-Stop-Eat, and one meal a day fasting (OMAD). Of these, the time-restricted feeding for approximately 12 to 16 hours each day with balanced nutrition intake has obtained great importance. Intermittent fasting, especially repetitive fasting, favours shifting our body to the metabolic phase, which improves and extends health expectancy [5].

Furthermore, intermittent fasting acts as an initiator for autophagy and acts as a defence mechanism against oxidative and metabolic stress and functions as an anti-inflammatory agent [6]. A good knowledge of Intermittent Fasting is needed to create awareness about the potential positive outcomes of Intermittent Fasting. Having in mind of all these benefits of intermittent fasting, this research tries to analyse the knowledge among medical professionals regarding the benefits of intermittent fasting and focus on their attitudes towards practicing intermittent fasting.

MATERIALS AND METHODS

Study Design and Setting- This prospective, observational, questionnaire-based study was conducted among healthcare professionals at Panimalar Medical College Hospital and Research Institute, Chennai, over a period of 10 months. The study was initiated after obtaining approval from the Institutional Human Ethics Committee.

Study Population and Eligibility Criteria- Healthcare professionals, including doctors and teaching faculty, aged 18–60 years and willing to participate were eligible for inclusion. Individuals below 18 years or above 60 years of age and those unwilling to provide informed consent were excluded.

Sample Size and Sampling Technique- A total of 227 participants were included in the study. Convenience sampling was used to recruit participants from the target population.

Questionnaire Development- A structured questionnaire was indigenously developed to assess knowledge, attitudes, and practices regarding intermittent fasting. The questionnaire included demographic information such as age, gender, and family history, followed by 3 knowledge-based, 10 attitude-based, and 9 practice-based questions.

Questionnaire Validation- The questionnaire underwent content validation by two subject experts, followed by pilot testing and reliability analysis. Pilot data from 10 participants were excluded from the final analysis. Knowledge-based responses were scored from 1 to 4, attitude-based responses from 1 to 5, and practice-based responses from 1 to 4. The questionnaire demonstrated satisfactory content validity, with a validity score greater than 0.8.

Data Collection- Data were collected using the validated questionnaire after obtaining informed consent. The questionnaire assessed participants' demographic characteristics, knowledge of intermittent fasting, attitudes towards its practice, and existing practices related to intermittent fasting.

Statistical Analysis- Data were entered and analysed using SPSS version 25.0. Descriptive statistics were used to summarize the study variables. Logistic regression was performed for knowledge-based responses, while Z-tests and chi-square tests were used for appropriate attitude- and practice-related analyses. A p-value <0.05 was considered statistically significant, and $p<0.001$ was considered highly significant.

Ethical Considerations- Ethical approval was obtained from the Institutional Human Ethics Committee (IHEC), Panimalar Medical College Hospital and Research Institute (Approval No. PMCH&RI/IHEC/2024/136). Written informed consent was obtained from all participants. Participant identities were kept anonymous and confidentiality was maintained.

RESULTS

The results of the study were based on analysis of data from 227 participants. Among total study participants enrolled, 156 were female, and 71 were male. Considering age distribution, 148 participants were in the age group of 31-45 years, 40 participants in the age group of 18-30 years, 23 participants over 60 years, and 16 participants in the age group of 45-60 years (Fig 1).

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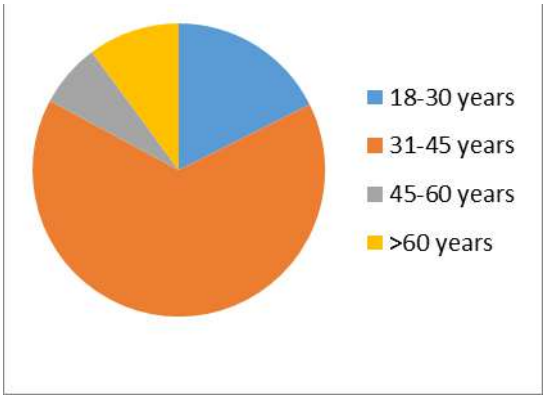

Fig 1: Age group of participants

The mean score of the knowledge-based questions regarding intermittent fasting was 0.849 (Table 1), which means on average, 84.9% of the participants have answered the knowledge-based questions correctly. A logistic regression test was done among the three questions of knowledge part.

Table 1: Knowledge about intermittent fasting

Question	Correct, n(%)	Not correct n (%)	Mean	SD
Which of the following are true regarding Intermittent fasting?	222(97.7)	5(2.2)	0.977	0.009
Which among the following do you think are the potential health benefits associated with IF	204(89.8)	23(10.13)	0.89	0.02
What are the factors that should be considered while choosing IF method?	155(68.28)	72(31.71)	0.68	0.03

The logistic regression test for knowledge (Table 2) showed that the odds of answering correctly for question 1 was 44.4% when compared to question 2 with an odds ratio of 20% and question 3 with an odds ratio of only 5%.

Table 2: Logistic Regression test about knowledge

	Coefficient (β)	Odd's Ratio	p-value
Intercept (Quest 1)	3.79	44.4	<0.0001
Quest 2 vs Quest 1	-1.61	0.20	0.00136
Quest 3 vs Quest 1	-3.03	0.05	<0.0001

Table 3 represents the attitude-based questions. In these questions 1,2,3,4,8 and 9, the p-value is <0.0001, which indicates they are highly significant. In contrast, the p-values for questions 5, 6, 7, and 10 were not significant.

Table 3: Attitude towards intermittent fasting

Questions	CORRECT, n(%)	Not correct, n(%)	Mean	SD	Z-test	p-value
How familiar are you with intermittent fasting?	182(80.1)	45(19.82)	0.802	0.026	11.4	<0.0001
What do you think about IF as an effective way to manage weight?	151(66.5)	76(33.4)	0.665	0.031	5.27	<0.0001
What do you think about IF in improving overall health and	174(76..65)	53(23.34)	0.767	0.028	9.5	<0.0001

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wellbeing?						
What do you think about IF as a sustainable dietary approach?	160(70.48)	67(29.51)	0.705	0.030	6.77	<0.0001
Do you think intermittent fasting is too restrictive to follow?	106(46.69)	121(53.3)	0.467	0.033	-0.99	0.32
Do you think IF may have negative effects on energy levels?	106(46.69)	121(53.3)	0.467	0.033	-0.99	0.32
What do you think about practising Intermittent fasting?	102(44.9)	125(55.06)	0.449	0.033	-1.5	0.12
What do you think are the concerns about intermittent fasting?	191(84.1)	36(15.85)	0.841	0.024	14.22	<0.0001
What do you think about the frequency of experiencing negative impacts while practising IF	62(27.3)	165(72.68)	0.273	0.029	-7.81	<0.0001
What do you think about planning to continue IF in the future?	120(52.8)	107(47.13)	0.529	0.033	0.88	0.38

A chi-square test was done to examine the interpretation of the practice of intermittent fasting (Table 4), where there was a significant association regarding duration and motivation to start Intermittent fasting (p-value =0.001 & <0.001, respectively). However, there was no clarity about the fasting schedule (p-value=0.39). Regarding tracking of food intake and health changes, there were mixed responses, and there was no statistical significance. Regarding the type of Intermittent fasting practiced, there is a highly significant association observed with the 16/8 method (p<0.001), the Eat-Stop-Eat method (p<0.001), and the alternate-day eating method (p<0.001). Regarding the specific resources or tools helpful for practicing Intermittent fasting, there is a significant association with books, apps, and experts (p <0.001).

Table 4: Practices towards intermittent fasting

Questions	**Correct, n(%)**	**Not correct n(%)**	**Chi-square value**	**p-value**
How long have you been practising IF ?	138(60.7)	89(39.3)	10.58	0.001
What motivated you to start IF?	86(37.8)	141(62.2)	13.33	<0.001
What is your typical fasting schedule?	120(52.8)	107(47.2)	0.74	0.39
What are your eating habits?	187(82.3)	40(17.7)	95.19	<0.001
Did you track your food intake during the eating window?	89(39.2)	138(60.8)	10.58	0.001
Have you noticed any negative changes in your physical/mental health since starting IF?	111(48.8)	116(51.2)	0.22	0.64
Overall, how satisfied about intermittent fasting?	102(44.9)	125(55.1)	2.44	0.12
What type of IF do you follow?				
16/8 method	27(11.8)	200(88.2)	95.19	<0.001
Eat -Stop Eat method	9(3.9_	218(96.1)	181.57	<0.001
Alternate day fasting	13(5.9)	214(94.1)	164.77	<0.001
Were there any specific resources /tools that u found helpful in Ur IF journey >				
Books	40(17.6)	187(82.4)	95.19	<0.001
Online community	98(43.1)	129(56.9)	5.38	0.02
Apps	62(27.5)	165(72.5)	35.42	<0.001
Expert	27(9.8)	200(90.2)	95.19	<0.001

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Fig. 2 shows the distribution of participants' intention to continue practicing intermittent fasting soon. While a majority (160 participants) reported they would continue intermittent fasting, a smaller notable group (55 participants) expressed “a strong feeling to start “. Fewer participants may take up but not follow, showing their uncertainty. A smaller group (n=12) were “not planning to practice” intermittent fasting.

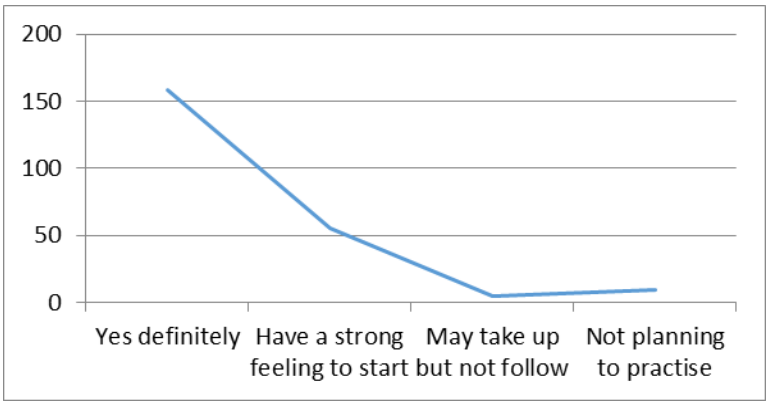

Fig. 2: Do you plan to continue practicing intermittent fasting in the future?

DISCUSSION

This study was carried out among the medical faculty of medical colleges. The study aimed to assess knowledge, attitudes, and practices regarding intermittent fasting. The participants of this study answered most of the intermittent fasting knowledge questions correctly, while a few were uncertain about the factors that influence intermittent fasting and logistic regression test showed that participants were more likely to answer Question 1 correctly than Question 2 and 3. A similar study was conducted among T2DM patients in Eastern Saudi Arabia regarding Ramadan fasting where most of the participants answered Ramadan-specific knowledge questions correctly [7].

The attitude towards intermittent fasting is very important in practising intermittent fasting which plays a significant role in weight reduction, influencing various metabolic processes. According to various previous clinical trials and reviews, intermittent fasting for a period of 4 to 24 weeks induces body weight reduction from 4 to 10% in obese individuals [8]. This weight reduction depends on various contributing factors, such as dietary pattern, duration, sex, and genetic predisposition.

Several studies have shown that intermittent fasting leads to greater weight loss than calorie restriction [9]. Regarding the role of intermittent fasting on glucose and lipid metabolism, there are various views. A 12-month intermittent fasting trial in diabetic patients showed that body weight, glycated haemoglobin levels, fasting blood glucose levels, and insulin levels were reduced with intermittent fasting compared with calorie restriction [10,11].

According to a study by Klempel *et al*. alternate-day fasting showed decreased total cholesterol, low-density lipoprotein (LDL), and triglycerides [12]. In addition to various health benefits of IF, it also helps to alleviate anticancer activities and helps in the treatment of neurological conditions like memory loss [13]. It also improves metabolic functions and increases lifespan. IF also promotes metabolic activities; it increases autophagy, delays cell senescence, and stops the proliferation of cancer cells [14]. In the attitude-based questions, 80% of the participants answered correctly in questions 1, 2, 3, 4, 8, and 9, which indicates that they are familiar with the ways and facts about intermittent fasting. However, responses in questions 5, 6, 7, and 10 indicate uncertainty among participants.

With respect to the question on energy expenditure during intermittent fasting, there was no clarity in the result (p=0.32). Energy balance is a key issue during weight management using intermittent fasting. According to a study by Catenacci *et al.* there was no change in energy during complete alternate-day fasting [15], while a study by Soeters *et al.* reveals a decline in resting energy by 247 kJ/day [16]. Sutton *et al.* argued that energy expenditure is not affected by time-restricted feeding [17].

The most important aspect is the appropriate practice for consistent maintenance of intermittent fasting. If

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practice is not appropriate, then sound knowledge and a positive attitude get neutralized. Regarding the practice, the factors that motivated one towards starting intermittent fasting are significant. In the present study, mood changes and negative effects during practice were insignificant, but in a study by Carlson et al, self-reported hunger was found to be higher in the morning who were consuming 1 meal per day. But this fasting regimen was considered acceptable because there were no mean changes in tension, depression, anger, vigour, fatigue, or confusion [18,19]. In view of the sources and tools, apps, books, and expert opinions have played a major role. Plenty of books promote various fast dietary patterns, and the online web offers plenty of fasting-related sites [20]. The study reveals that 82.8% of medical professionals are somewhat familiar with intermittent fasting, but only 50% of them are practicing, while 30% of them have started but discontinued it due to concerns like feeling hungry, impact on physical performance, and exercise capacity. This kind of knowledge-practice gap exists in various recent studies conducted in Turkey and Singapore. The Turkish study revealed that despite good knowledge regarding fasting in Ramadan, 83.5% of type 2 diabetes mellitus subjects did not visit their physician, while 65.8% did not ask advice regarding fasting from health professionals [21] .

LIMITATIONS

Limited sample size could be improved and can be extended to other professionals and the public. Also, it is an online data collection through Google Forms, which might have excluded those without internet access or who are not actively involved in social media, which might contribute to bias. Also, participants may have over-reported or under-reported due to social pressure. Identifying more effective strategies for practicing intermittent fasting should be encouraged, and more awareness should be created about the advantages of intermittent fasting and lifestyle modifications. This can prevent obesity and associated metabolic disorders, which play a major role as a public health challenge in recent times.

CONCLUSIONS

The study revealed that 82.8% of medical professionals are familiar with intermittent fasting, but only 50% of them are practicing, and 30% of them have started but discontinued it due to some concerns like feeling hungry, impact on physical performance, and exercise capacity. If these concerns are being overlooked and the creation of knowledge about the advantages of intermittent fasting is promoted, we can increase their attitude towards practicing intermittent fasting more effectively. The study could be extended to the public population to increase awareness and knowledge of the advantages of Intermittent Fasting, which could be advantageous in preventing metabolic syndromes and cardiovascular diseases. Also, lifestyle modifications could be implicated.

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Literature search- Dr. M. Prakash
Writing article- Dr. M. Prakash
Critical review- Dr. Emi Goldy E
Article editing- Mahima Alicia M

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