



Study on House Officers' Knowledge of Intermittent Fasting and its Effects on Type 2 Diabetes Patients

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Abstract

Introduction: The global prevalence of type 2 diabetes is increasing, with 439 million adults expected to live with the condition by 2030. It increases healthcare utilization and costs. Weight loss and exercise are crucial for managing T2DM. Dietary interventions like intermittent fasting can improve metabolic control and reduce complications. This study assesses IF's impact on CRP levels and HOs' knowledge.

Methods: The study assessed house officers' knowledge of intermittent fasting (IF) and its effects on type 2 diabetes patients using a cross-sectional survey. A total coverage sample of HOs from a tertiary care hospital was recruited. The findings were analyzed to identify knowledge gaps, inform educational interventions, and disseminate information.

Results: The study found significant gender disparity and divergence in knowledge of intermittent fasting among different demographics. Females were more aware of the dietary approach, while younger participants had a better understanding of time-restricted feeding. Department affiliation was found to correlate with confidence in discussing the principles of intermittent fasting. However, younger participants had higher comfort levels when discussing risks. The study also revealed differences in opinions on the safety and effectiveness of intermittent fasting, highlighting the complex interplay between age, professional background, and attitudes towards the practice.

Conclusion: The study highlights healthcare professionals' varying knowledge of intermittent fasting and its effects on Type 2 diabetes patients, highlighting the need for targeted education and evidence-based guidance to improve their competency in managing chronic conditions.

Keywords: Confidence; House Officers; Intermittent Fasting; Physician Training and Type 2 Diabetes

Abbreviations

IF: Intermittent Fasting; T2DM: Type 2 Diabetes Mellitus; FPG: Fasting Plasma Glucose; SMBG: Self-Monitoring of Blood Glucose; HOMA-IR: Homeostasis Model Assessment; QUICK1: Quantitative Insulin Sensitivity Check Index; CRP: C - Reactive Protein.

Introduction

The global prevalence of type 2 diabetes mellitus (T2DM) is escalating, mirroring the rise in obesity and sedentary lifestyles. By 2030, an estimated 439 million adults will be living with diabetes [1], placing a significant strain on healthcare systems. T2DM is a major risk factor for

cardiovascular disease, retinopathy, neuropathy, and kidney disease, leading to increased healthcare utilization and costs [2]. Modest weight loss and regular exercise are crucial in both preventing and managing T2DM, improving metabolic control and reducing complications [3]. Dietary interventions are considered essential in both prevention and treatment [4]. One such intervention gaining interest is intermittent fasting (IF), which involves time-restricted feeding periods and extended fasting intervals [5]. The management of T2DM typically aims to achieve optimal glycemic control, with target HbA1c levels below 7.0%, fasting plasma glucose (FPG) between 4.0-7.0 mmol/L, and post-prandial glucose levels between 5.0-10.0 mmol/L [3,5,6]. Self-monitoring of blood glucose (SMBG) using glucometers is critical for patient feedback and recognizing variations in glucose control [6]. While individualized treatment plans combining lifestyle modifications (diet and exercise) and medication are employed, a significant proportion of individuals struggle to achieve and maintain these targets [6]. Consequently, numerous medication combinations and weight loss strategies, including bariatric surgery for morbidly obese individuals, are explored.

Given the importance of weight and dietary management, IF emerges as a potential strategy to improve SMBG levels and contribute to weight loss in suitable individuals. Beyond glucose control and body weight, other crucial aspects of T2DM include insulin resistance and chronic low-grade inflammation. Insulin resistance, a hallmark of T2DM, contributes to the difficulty of maintaining euglycemia [7]. Surrogate index measures derived from fasting glucose and insulin levels can assess insulin resistance in healthy patients. These indices include glucose/insulin ratio, log fasting insulin, Homeostasis Model Assessment (HOMA-IR), log HOMA-IR, and Quantitative Insulin Sensitivity Check Index (QUICK1) [7]. Decreasing insulin resistance through interventions such as exercise and weight loss can improve glucose control. In this study, we will measure HOMA-IR, which demonstrates high concordance with the gold standard clamp technique in assessing insulin resistance in T2DM patients [8]. Chronic low-grade inflammation is associated with T2DM, possibly contributing to its pathogenesis [9]. C-reactive protein (CRP), a biomarker for inflammation, is linked to insulin resistance, nephropathy progression, and elevated fasting glucose in diabetic patients [10,11]. Dietary interventions have been shown to decrease CRP levels [12]. This study will assess the impact of IF on CRP levels, investigating its potential to reduce inflammatory markers. Measuring dietary and exercise habits in clinical studies poses challenges. While daily monitoring devices, particularly accelerometers, are considered the gold standard for tracking physical activity [13], questionnaires provide a reliable alternative method for assessing physical activity in free-living adults [14]. This

study will utilize questionnaires to assess physical activity levels. The aim of this study is to assess the knowledge of house officers (HOs) regarding intermittent fasting (IF) and its effects on type 2 diabetes (T2D) patients.

Methods

This study employed a cross-sectional, descriptive hospital based survey design to assess the knowledge of house officers (HOs) regarding intermittent fasting (IF) and its effects on type 2 diabetes (T2D) patients. A convenience sample of HOs from various specialties was recruited from a tertiary care hospital. Data was collected using a validated questionnaire assessing HOs' understanding of IF protocols. The questionnaire was administered electronically. Data analysis involved descriptive statistics using appropriate statistical tests. The study adhered to ethical guidelines, including obtaining informed consent and ensuring confidentiality. The sample size (156) was determined based on power calculations. Findings were analyzed to identify knowledge gaps, inform educational interventions, and were disseminated through peer-reviewed publications, presentations, and reports to healthcare institutions. The study's limitations included its focus on a single hospital and the potential for bias due to convenience sampling.

Results

By reviewing the demographic information of the participants, it was found that the majority of female (Figure 1) participants were also more than half of those in the 26-29 age groups. Specifically, out of the total number of participants in the 26-29 age range (Figure 2).

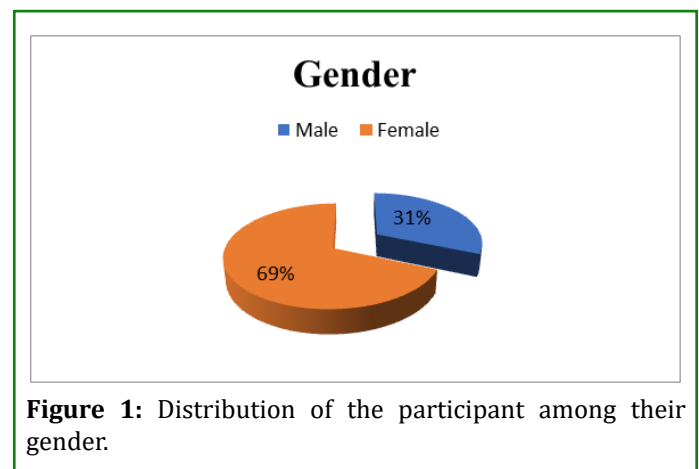


Figure 1: Distribution of the participant among their gender.

This indicates that women were not only well represented in the overall participant pool but also had a significant presence within this specific age bracket.

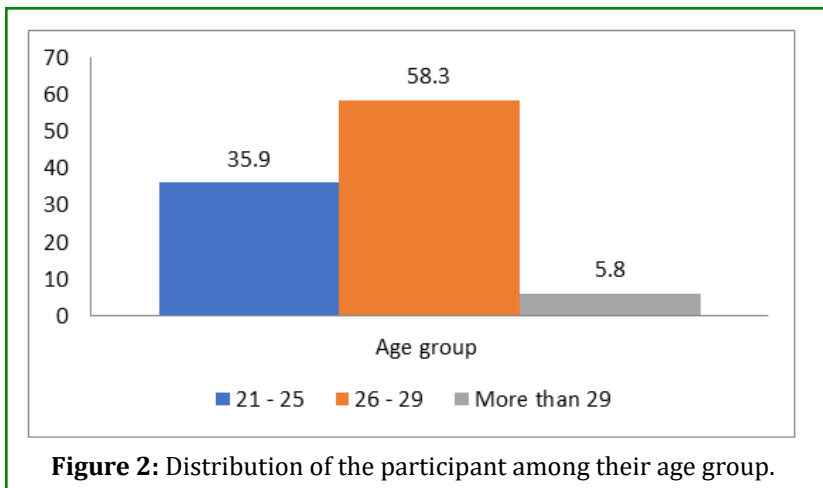


Figure 2: Distribution of the participant among their age group.

With compassion for the current functional title, it is worth noting that the participants primarily comprised individuals

pursuing a career in medicine, specifically physicians in training (Figure 3).

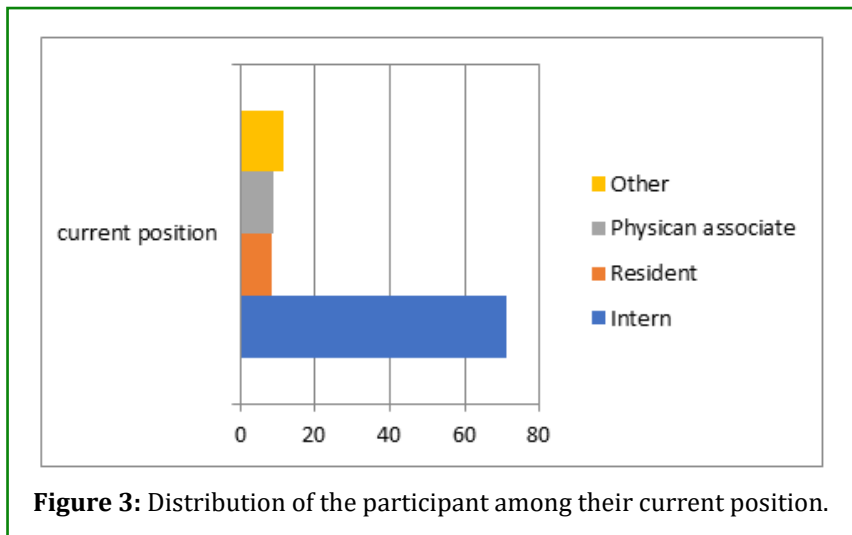


Figure 3: Distribution of the participant among their current position.

Among these participants, a significant portion belonged to the Department of Internal Medicine, highlighting the

specific focus and expertise of the gathering (Figure 4).

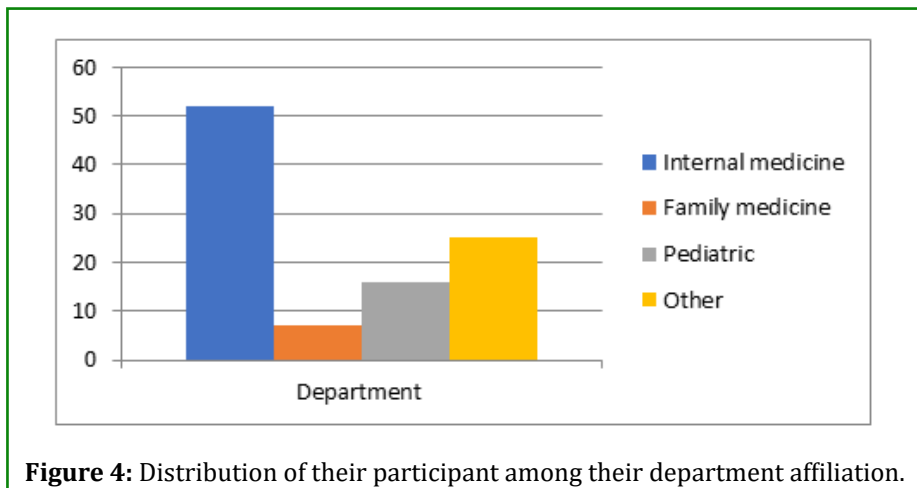


Figure 4: Distribution of their participant among their department affiliation.

It is important to emphasize that the participants reflected a diverse range of experiences, with some individuals being

relatively new to their medical journey, having accumulated less than one year of practical experience (Figure 5).

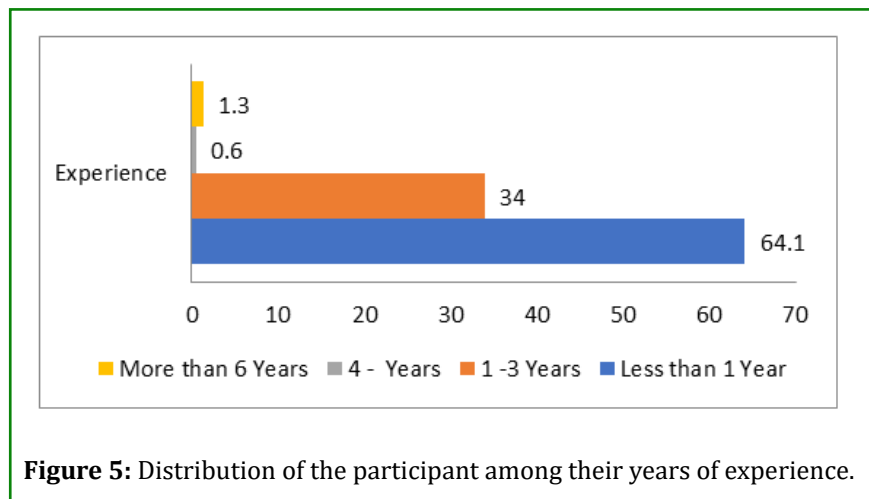


Figure 5: Distribution of the participant among their years of experience.

This mix of seasoned professionals and newcomers added a richness to the discussions and exchanges that took place during the event. Overall, the composition of the participants brought a unique blend of perspectives and insights to the table, enhancing the overall learning and collaborative atmosphere of the gathering.

Analysing the results of the study revealed noteworthy insights about the awareness and familiarity with intermittent fasting across different demographics. Firstly, a statistically significant dissimilarity in awareness levels of intermittent fasting emerged between genders, with females showing a notably higher likelihood of being aware of this dietary approach compared to males (p = 0.009).

		Age Group			Total	P Value
		21 - 25 Year	26 - 29 Year	More than 29		
1. Before this questionnaire, were you aware of intermittent fasting as a dietary intervention?	Yes	46	74	7	127	0.95
	No	10	17	2	29	
Total		56	91	9	156	

Table 1: Before this questionnaire, were you aware of intermittent fasting as a dietary intervention?

This gender disparity sheds light on the varying degrees of exposure and understanding of intermittent fasting within the population sampled. Additionally, while there appeared to be a trend indicating a more pronounced awareness

of intermittent fasting among younger age groups, this difference did not meet the threshold for statistical significance (p = 0.95).

		Gender		Total	P value
		Male	Female		
1. Before this questionnaire, were you aware of intermittent fasting as a dietary intervention?	Yes	34	93	127	0.009
	No	15	14	29	
Total		49	107	156	

Table 2: Before this questionnaire, were you aware of intermittent fasting as a dietary intervention?

This suggests that although there may be a suggestive pattern of higher awareness among the younger demographic, further investigation is warranted to ascertain the significance of

this potential trend. Furthermore, the study highlighted a significant divergence in knowledge of the different types of intermittent fasting across various age groups (p = 0.01).

		What is your current position?				Total	P value
		Intern	Resident	Other	Physician associate		
1. Before this questionnaire, were you aware of intermittent fasting as a dietary intervention? "	Yes	93	10	14	10	127	0.64
	No	18	3	4	4	29	
Total		111	13	18	14	156	

Table 3: Before this questionnaire, were you aware of intermittent fasting as a dietary intervention?

Younger participants displayed a superior comprehension of time-restricted feeding compared to their older counterparts,

emphasizing the role of age in influencing familiarity with distinct intermittent fasting methodologies.

		What departments are you affiliated with?				Total	P value
		Internal medicine	Family medicine	Pediatric	Other		
1. Before this questionnaire, were you aware of intermittent fasting as a dietary intervention?	Yes	65	11	19	32	127	.38
	No	16	0	6	7	29	
Total		81	11	25	39	156	

Table 4: Department affiliation * Before this questionnaire, were you aware of intermittent fasting as a dietary intervention.

These findings underscore the importance of considering demographic factors such as gender and age when evaluating awareness and understanding of intermittent fasting,

providing valuable insights for future research and public health initiatives (Tables 1-5).

		Age group"			Total	P value
		21 - 25 Year	26 - 29 Year	More than 29		
Please select ALL the types of intermittent fasting you are familiar with:	Time-restricted feeding (e.g., 16/8 method)	45	56	6	107	0.01
	Alternate-day fasting	6	5	0	11	
	I am not familiar with any type of intermittent fasting	5	30	3	38	
Total		56	91	9	156	

Table 5: Familiarity of intermittent fasting types.

Despite there being no significant variation in familiarity with different types of intermittent fasting based on gender

($p = .11$), a subtle pattern emerges indicating that females may exhibit slightly greater awareness.

		Gender		Total	P value
		Male	Female		
Please select ALL the types of intermittent fasting you are familiar with:	Time-restricted feeding (e.g., 16/8 method)	28	79	107	0.11
	Alternate-day fasting	5	6	11	
	I am not familiar with any type of intermittent fasting	16	22	38	
Total		49	107	156	

Table 6: Familiarity of intermittent fasting types.

Moreover, when it comes to confidently articulating the concepts of intermittent fasting to patients, studies reveal

that neither gender ($p = .8$) nor age group ($p = .14$) play a significant role.

		Age group"			Total	P value
		21 - 25 Year	26 - 29 Year	More than 29		
Do you feel confident explaining the basic principles of intermittent fasting to a patient?	Yes	42	55	7	104	0.14
	No	14	36	2	52	
Total		56	91	9	156	

Table 7: Feel confident explaining the basic principles of intermittent fasting to a patient.

However, there is a remarkable correlation between department affiliation and the level of confidence in elucidating the principles of intermittent fasting ($p = .00$),

with internal medicine physicians notably surpassing their counterparts in other departments in terms of confidence levels.

		Gender		Total	P value
		Male	Female		
Do you feel confident explaining the basic principles of intermittent fasting to a patient?	Yes	32	72	104	0.8
	No	17	35	52	
Total		49	107	156	

Table 8: Feel confident explaining the basic principles of intermittent fasting to a patient.

Interestingly, the comfort level in discussing the benefits of intermittent fasting specific to Type 2 diabetes patients displays a noticeable variance across different age groups (p

$= .005$), indicating that younger individuals tend to exhibit a higher level of confidence during such discussions (Tables 6-10).

		What departments are you affiliated with?				Total	P value
		Internal medicine	Family medicine	Pediatric	Other		
Do you feel confident explaining the basic principles of intermittent fasting to a patient?	Yes	55	11	8	30	104	0
	No	26	0	17	9	52	
Total		81	11	25	39	156	

Table 9: Feel confident explaining the basic principles of intermittent fasting to a patient* department affiliation.

		Age group"			Total	P value
		21 - 25 Year	26 - 29 Year	More than 29		
Do you feel comfortable discussing the potential benefits of intermittent fasting for patients with type 2 diabetes?	Yes	41	38	6	85	0.005
	No	2	7	0	9	
	I don't know enough about the potential benefits	13	46	3	62	
Total		56	91	9	156	

Table 10: Feel comfortable discussing the potential benefits of intermittent fasting for patients with type 2 diabetes.

The study on discussing the potential benefits of intermittent fasting for type 2 diabetes revealed a fascinating insight -

there was no significant difference in comfort levels between genders, as indicated by a p-value of .66.

		Gender		Total	P value
		Male	Female		
Do you feel comfortable discussing the potential benefits of intermittent fasting for patients with type 2 diabetes?	Yes	29	56	85	0.66
	No	2	7	9	
	I don't know enough about the potential benefits	18	44	62	
Total		49	107	156	

Table 11: feel comfortable discussing the potential benefits of intermittent fasting for patients with type 2 diabetes.

This neutrality was intriguing, hinting at a potential universality in how individuals perceive and engage with this topic. However, when exploring the comfort levels related to

discussing the potential risks of intermittent fasting in the context of type 2 diabetes, an interesting trend emerged.

		Age group"			Total	P value
		21 - 25 Year	26 - 29 Year	More than 29		
Do you feel comfortable discussing the potential risks of intermittent fasting for patients with type 2 diabetes?	Yes	36	32	7	75	0.004
	No	3	6	0	9	
	I don't know enough about the potential risks	17	53	2	72	
Total		56	91	9	156	

Table 12: Feel comfortable discussing the potential risks of intermittent fasting for patients with type 2 diabetes.

Among different age groups, a significant difference was observed ($p = .004$), with younger participants displaying a higher level of comfort. This disparity sheds light on how age

might influence one's perception and readiness to engage in conversations regarding risks.

		Gender		Total	P value
		Male	Female		
Do you feel comfortable discussing the potential risks of intermittent fasting for patients with type 2 diabetes?	Yes	25	50	75	0.85
	No	3	6	9	
	I don't know enough about the potential risks	21	51	72	
Total		49	107	156	

Table 13: Feel comfortable discussing the potential risks of intermittent fasting for patients with type 2 diabetes.

Moreover, the analysis delved into the association between department affiliation and comfort levels in discussing the

risks of intermittent fasting.

		What departments are you affiliated with?				Total	P value
		Internal medicine	Family medicine	Pediatric	Other		
Do you feel comfortable discussing the potential risks of intermittent fasting for patients with type 2 diabetes?	Yes	36	3	10	26	75	0.06
	No	7	0	2	0	9	
	I don't know enough about the potential risks	38	8	13	13	72	
Total		81	11	25	39	156	

Table 14: Feel comfortable discussing the potential risks of intermittent fasting for patients with type 2 diabetes * department affiliation.

The findings suggested a weak association with a p-value of .06, with internal medicine physicians displaying higher comfort levels.

		Age group"			Total	P value
		21 - 25 Year	26 - 29 Year	More than 29		
1. In your opinion, can intermittent fasting be a safe and effective dietary approach for managing type 2 diabetes?"	yes ,always	5	8	2	15	0.04
	Yes ,in some case	31	49	5	85	
	No	7	1	0	8	
	I don't know	13	33	2	48	
Total		56	91	9	156	

Table 15: Your opinion, can intermittent fasting be a safe and effective dietary approach for managing type 2 diabetes.

This finding may imply that professionals from certain specialties, such as internal medicine, might have more familiarity or confidence in navigating discussions about the risks associated with intermittent fasting.

		Gender		Total	P value
		Male	Female		
1. In your opinion, can intermittent fasting be a safe and effective dietary approach for managing type 2 diabetes?"	yes ,always	7	8	15	.58
	Yes ,in some case	25	60	85	
	No	2	6	8	
	I dont know	15	33	48	
Total		49	107	156	

Table 16: Your opinion, can intermittent fasting be a safe and effective dietary approach for managing type 2 diabetes.

Finally, the study uncovered notable variations in opinions regarding the safety and effectiveness of intermittent fasting for type 2 diabetes across age groups and departments.

		What is your current position?				Total	P value
		Intern	Resident	Other	Physician associate		
1. In your opinion, can intermittent fasting be a safe and effective dietary approach for managing type 2 diabetes?"	yes ,always	13	2	0	0	15	0.003
	Yes ,in some case	58	7	9	11	85	
	No	2	3	3	0	8	
	I don't know	38	1	6	3	48	
Total		111	13	18	14	156	

Table 17: Your opinion, can intermittent fasting be a safe and effective dietary approach for managing type 2 diabetes * department affiliation.

The statistical significance of the differences, with p-values of .04 and .003 respectively, underscored the impact of age and departmental affiliation on perceptions. Younger participants and individuals from internal medicine were more inclined to view intermittent fasting as both safe and effective. These diverging perspectives hint at the nuanced interplay between age, professional background, and attitudes towards the efficacy and safety of intermittent fasting in managing type 2 diabetes (Tables 11-17).

Discussion

The results of the study provide valuable insights into how demographic factors such as gender, age, and department affiliation can influence awareness, understanding, and comfort levels related to discussing intermittent fasting, particularly in the context of managing type 2 diabetes. The data revealed a gender disparity in awareness levels of intermittent fasting, with females showing a higher likelihood of being aware of this dietary approach compared to males. This finding aligns with previous research suggesting variations in health behaviors and knowledge between genders [15]. Understanding these differences can aid in designing targeted interventions to improve awareness and education on intermittent fasting among both men and women. The study also highlighted the influence of age on familiarity with different types of intermittent fasting, with younger participants demonstrating a better comprehension of time-restricted feeding. This finding is consistent with the notion that younger individuals are often more receptive to and engaged with emerging health trends and practices [16]. It underscores the importance of tailoring educational efforts on intermittent fasting to different age groups to enhance understanding and adoption. Department affiliation emerged as a significant factor impacting the comfort levels in discussing intermittent fasting, particularly in the context of risks and benefits for type 2 diabetes management. Internal medicine physicians exhibited higher confidence levels in these discussions, reflecting their specialized

knowledge and training in managing chronic conditions like diabetes [17]. This highlights the importance of professional background in shaping attitudes and comfort levels when addressing complex topics such as intermittent fasting and its implications for specific health conditions. The study's findings on perceptions of safety and effectiveness of intermittent fasting for type 2 diabetes further underscored the nuanced interplay between age and departmental affiliation. Younger participants and those from internal medicine were more likely to perceive intermittent fasting as safe and effective in managing diabetes. These diverging perspectives suggest a need for targeted education and evidence-based guidance to ensure a comprehensive understanding of the benefits and risks associated with intermittent fasting, especially in the context of chronic disease management [18]. In conclusion, the results of the study emphasize the importance of considering demographic factors when assessing awareness, understanding, and comfort levels related to intermittent fasting and its implications for managing type 2 diabetes. By recognizing and addressing these factors, healthcare professionals and public health initiatives can better tailor interventions and educational strategies to promote informed decision-making and optimize health outcomes.

Conclusion

In conclusion, the study on House Officers' Knowledge of Intermittent Fasting and its Effects on Type 2 Diabetes Patients provides valuable insights into the awareness, understanding, and perceptions of intermittent fasting among healthcare professionals in training. The findings shed light on the varying levels of familiarity with intermittent fasting methodologies, the comfort in discussing its implications for managing type 2 diabetes, and the differing perspectives on its safety and effectiveness based on demographic factors such as age and departmental affiliation. The results underscore the importance of targeted education and evidence-based guidance to enhance House Officers'

knowledge and competency in addressing the complexities of intermittent fasting in the context of type 2 diabetes management. By recognizing the nuanced interplay between age, professional background, and perceptions of intermittent fasting, healthcare institutions can develop tailored training programs to equip future healthcare professionals with the necessary skills to provide informed and comprehensive care for patients with type 2 diabetes.

Moving forward, further research and continuous education initiatives are essential to bridge knowledge gaps, promote evidence-based practices, and ensure that House Officers are well-prepared to navigate discussions on intermittent fasting and its implications for patients with type 2 diabetes. By fostering a deeper understanding of this dietary approach and its potential benefits and risks, healthcare providers can play a crucial role in supporting patients in their journey towards improved health outcomes and effective management of chronic conditions like type 2 diabetes.

Study Limitations on Intermittent Fasting Knowledge

- **Limited sample size:** Findings may not represent broader healthcare professionals.
- **Self-reported data:** Relies on self-reported knowledge, potentially biased.
- **Focus on knowledge:** Neglects attitudes, practices, and confidence.
- **Lack of intervention:** No educational intervention implemented, limits effectiveness assessment.
- **Focus on general knowledge:** Focuses on general knowledge, not specific protocols or complexities.
- Need for further research on intermittent fasting in managing type 2 diabetes.

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