

Knowledge and practice of adults towards different weight loss methods

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ABSTRACT

INTRODUCTION: Obesity has become a major public health issue worldwide. This study assessed knowledge and practices regarding various pharmacological and non-pharmacological weight loss approaches among 393 adults in Iraq.

METHODS: A questionnaire captured data on weight methods used, knowledge of treatable conditions, adverse effects, safety, efficacy and challenges with long-term adherence.

RESULTS: Most participants were obese (64%), female (68%) with mainly being young age groups (18-29) and they were aware (93%) about their weight. Most participants were actively trying methods like fasting/intermittent fasting (20-26%), low-carbohydrates (36%), and exercise to lose weight (39%), driven by health and aesthetic concerns. Understanding of obesity-related diseases, reversible side effects, and medical supervision needs was reasonable. However, crucial knowledge gaps existed regarding nutritional adequacy and unrealistic expectations of sustained weight loss without professional support. The most well-known approaches were intermittent fasting (20-26%), reduced carbohydrate intake (36%) and increased exercise (38.9%). Key information sources were the internet (70%), nutrition specialists (33%), and family/friends (28-29%), rather than formal healthcare providers. Around 60% correctly identified weight reduction and comorbidity prevention as main goals, though 15% wrongly assumed blood sugar control in non-diabetics.

CONCLUSION: These participants were highly concerned about their weight with minimal knowledge and themselves trying different method to minimise the health impact of obesity; mainly fasting and exercise and participants confirmed that these are safer than other options.

Keywords: Obesity, Weight Loss, Diet, Nutrition Knowledge, Health Behavior

INTRODUCTION

Overweight and obesity represent a modern global epidemic, with prevalence doubling since 1980 in over 70 countries [1]. Latest estimates indicate around 39% of adults worldwide are currently

overweight and 13% obese, though proportions vary by region and developmental status [2]. Alarming, rates in children also parallel adulthood prevalence [3]. The Arab Gulf region demonstrates some of the highest burdens globally, with up to 2 in 3 adults and 1 in 3 children in countries like

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Kuwait and Saudi Arabia qualifying as overweight or obese [4].

Obesity significantly raises risks for various non-communicable diseases (NCDs) like type 2 diabetes, cardiovascular disease, many cancers, and musculoskeletal disorders, consequently lowering the quality of life and life expectancy [2,5]. The graded dose-response relationship means even moderate excess weight incrementally elevates disease likelihood [6]. Besides direct clinical sequelae, obesity also incurs substantial indirect costs for individuals, healthcare systems, and societies through reduced productivity and incomes [7].

Consequently, long-term weight management represents a key public health priority. Fundamentally, obesity arises from a sustained positive energy balance, whereby caloric intake chronically exceeds expenditure. Treatment hence aims to redress this imbalance through decreased energy intake and/or increased physical activity. However, success with lifestyle modification alone has been modest, with most individuals gradually regaining lost weight in the long term [8,9]. This has fuelled an explosion of various alternate commercial and self-administered weight loss diets, programs, and aids of questionable safety and efficacy.

Different popular approaches today include intermittent fasting, ketogenic low-carbohydrate diets, commercial formula replacements, medications like orlistat and phentermine, and bariatric surgery [9,10]. Each varies in terms of approach, metabolic impact, effectiveness, adverse effects, nutritional adequacy, and need for medical guidance. Despite growing evidence for some regimes, optimal protocols remain unclear even in scientific literature. This allows the proliferation of misinformation and unsubstantiated claims around many heavily promoted diets.

Unsurprisingly, public surveys consistently highlight weight loss as a top health interest and effort. An estimated 33-60% of adults report actively attempting weight reduction at any given time [11,12]. The urgency and expectations around visible, rapid improvement also promote the use of fad diets and aggressive approaches [13]. However, choice and adherence to specific methods depend intricately on nutrition knowledge regarding appropriateness, safety, and realistic sustainability. Evidence links better dietary understanding with the adoption of healthier regimes and practices [14].

There remains limited data investigating adult practice towards different emerging and traditional weight loss methods. Most surveys have concentrated narrowly on the popularity of specific diets like low-fat, low-carbohydrate, commercial programs or unconventional supplementation [11,15]. Comprehensive understanding is lacking regarding knowledge of key aspects like safety, adverse effects, nutritional adequacy, and suitability for self-directed versus medical usage that influence choice and consequences of various regimes. Closing these knowledge gaps through public education and policies can profoundly impact safe weight management practices on an individual and population level.

This study was hence conceptualized to assess knowledge and practice regarding the full spectrum of evidence-based and commercial weight loss approaches among the general adult population. Specific objectives included determining i) the extent of usage of different pharmacological and non-pharmacological methods ii) knowledge regarding diseases treatable through weight loss, potential adverse effects, and nutritional adequacy of different regimes iii) practical challenges and lifestyle modifications adopted with adherence and sustainability.

METHODS

Study design and participants: This cross-sectional questionnaire-based survey was conducted between October-December/2023 among a convenience sample of adults recruited from community settings like workplaces, universities and neighbourhoods in Iraqi cities. Assuming a 50% prevalence of poor knowledge based on limited literature, a sample size of 384 was calculated for 5% precision and 95% confidence level. Accounting for non-responses, 393 individuals aged 18 years and above willing to participate were enrolled. Those with health conditions or medications influencing weight, appetite or metabolism were excluded to allow focus on self-directed wellness efforts.

The study was approved by the Research Ethics Committee (CoP02 on 21.10.2023). The purpose and procedures of the study were verbally explained to potential participants, and written informed consent was obtained before enrolment. Questionnaire design and content: A structured questionnaire was designed by a panel comprising the researchers and two nutrition experts based

on past literature and specific objectives. This involved an extensive review of similar surveys investigating knowledge of popular diets, weight loss practices, perceived effectiveness and safety of various regimes, and associated challenges [9,11,12,15,16]. Content validation by subject and methods experts ensured relevance and representation of all domains of interest. The final 45-item tool comprised five sections – i) demographic and anthropometric details ii) knowledge and regarding various weight loss methods, indications, effectiveness, adverse effects, nutritional adequacy, safety, and need for medical supervision iii) personal practices regarding specific regime followed, lifestyle modifications adopted, effects on hunger, health markers and sustainability iv) preferences for different pharmacological and non-pharmacological approaches.

The questionnaire was translated into Arabic and underwent pilot testing on a cohort of 30 bilingual participants at a 2-week interval to confirm linguistic validity and test-retest reliability. Reliability was excellent with Cohen's kappa

statistic $k=0.92$, supporting consistency over repeat administrations.

Variables: The main outcome variables assessed were i) knowledge regarding different weight loss methods, treatable conditions through weight loss, adverse effects, and nutritional adequacy of regimes ii) adoption and sustainability of specific regimes, associated lifestyle efforts and effects on hunger and health markers iii) preferences and perspectives around lifelong adherence.

Statistical analysis: IBM SPSS Statistics Version 27 was used for analysis. Descriptive statistics, including frequencies and percentages, summarized categorical variables. Pearson's chi-square test determined associations between BMI category and practices like choice of regime, diet improvements, and exercise adoption. Independent samples t-test compared BMI status with duration and effects of weight loss efforts. Statistical significance was set at $p<0.05$.

RESULTS

The 393 participants comprised 67.7% females

Table 1: Sociodemographic characteristics (n=393)

Question	Options	n(%)
Age (years)	18-29 years	196 (49.9%)
	30-44 years	125 (31.8%)
	45-59 years	63 (16%)
	60 years and over	9 (2.3%)
Gender	Male	127 (32.3%)
	Female	266 (67.7%)
BMI (kg/m ²)	Underweight (<18.5)	7 (1.8%)
	Normal (18.5-24.9)	134 (34.1%)
	Overweight (25-29.9)	142 (36.1%)
Education	Obese (≥ 30)	110 (28%)
	Primary	6 (1.5%)
	Secondary	29 (7.4%)
Marital Status	University	358 (91.1%)
	Married	198 (50.4%)
Are you concerned about your weight?	Single	195 (49.6%)
	Yes	366 (93.1%)
Are you Overweight/Obese?	No	27 (6.9%)
	Yes	266 (67.7%)
	No	127 (32.3%)

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	Doctor told me	11 (2.6%)
	Friends told me	22 (5.6)
How do you know that you are Overweight/Obese?	I feel so	186 (47.3%)
	I know by BMI	134 (34.1%)
	Others	40 (10.2%)
	Uncontrolled eating	45 (11.4%)
	Love food	82 (20.9%)
Do you think your weight gain is due to?	Emotional eat	26 (6.6%)
	Disease	6 (1.5%)
	Drugs	6 (1.5%)
	Genetics	19 (4.8%)
	I don't know	69 (17.5%)
How many methods of weight reduction do you know?	Decrease exercise	140 (35.6%)
	Fasting	184 (46.8%)
	Keto diet	151 (38.4%)
	Intermittent fasting	248 (63.1%)
	Carbohydrate reduction	222 (56.4%)
	Increase exercise	244 (62%)
	Skipping 1 or 2 meals	199 (50.6%)
	Restricting Fluid Intake	38 (9.6%)
	Gradual Dieting	130 (33%)
	Surgery	1 (0.3%)
From where do you hear about weight reduction methods?	Others	46 (11.7)
	Friends	113 (28.8%)
	TV program	75 (19.1%)
	Nutritionist	130 (33.1%)
	Relative Family	110 (27.9%)
Have you followed any methods to reduce your weight?	Internet	279 (70.1%)
	Others	74 (18.8%)
	Yes	312 (79.4%)
	No	81 (20.6%)
	Fasting	79 (20.1%)
Which method did you try?	Keto diet	49 (12.5%)
	Intermittent fasting	101 (25.6%)
	Carbohydrate reduction	144 (36.6%)
	Increase exercise	153 (38.9%)
	Skipping 1 or 2 meals	121 (30.7%)
	Restricting Fluid Intake	12 (3.1%)
	Gradual Dieting	75 (19.1%)
Surgery	1 (0.3%)	
	More than one	51 (13%)

and 50.4% married adults, predominantly aged 18-29 years (50%) and university graduates (91.1%) (Table 1). Based on BMI, 28% were obese, 36% overweight, 34% normal-weight and 2% underweight. The overall prevalence of overweight/obesity was therefore 64%, consistent with national estimates. The vast majority (93%) expressed concern regarding their weight. Using various criteria, 67.7% also considered themselves currently overweight or obese, though this included only 34% objectively determining this using BMI.

Uncontrolled eating and reduced physical activity were perceived as the main reasons for weight gain by 11-36%, respectively.

Knowledge and practice regarding weight loss methods: Table 2 outlines findings concerning knowledge of different pharmacological and non-pharmacological weight loss methods. The most well-known approaches were intermittent fasting (25.6%), reduced carbohydrate intake (36%) and increased exercise (38.9%). Key information

Table 2: Knowledge regarding the weight-reducing methods

Question	Options	n(%)
What do you think is the purpose of weight-reducing methods?	Weight loss	234 (59.5%)
	Control blood sugar	20.3 (15%)
	Control health	262 (66.6%)
	Don't know	11 (2.7%)
	Epilepsy	15 (3.8%)
	Diabetes	246 (62.5%)
	Allergy	32 (8.1%)
	Asthma	26 (6.62%)
	Overweight and obesity	343 (87.3%)
What diseases can be treated by weight-reducing methods?	Cancer	62 (15.7%)
	Autism	18 (4.6%)
	Acidity	132 (33.6%)
	Polycystic ovary syndrome	180 (45.8%)
	Constipation	109 (27.7%)
	Alzheimer	21 (5.3%)
	Parkinson	6 (1.53%)
	Metabolic Diseases	172 (18.3%)
	Neurological disorder	48 (12.2%)
	Fatigue	77.3 (75%)
	Headache	188 (47.8%)
	Dizziness	1 (0.3%)
	Nausea	70 (17.8%)
	Vomiting	19 (4.8%)
	What side effects are common with weight-reducing methods?	Constipation
Acidosis		18 (4.6%)
Dehydration		25.9 (25%)
Vitamins deficiency		208 (52.9%)
Cold or flu symptoms		40 (10.2%)
Drop in blood sugar		167 (42.5%)
Bloating		35 (8.9%)

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	First 24 hours	20 (5.1%)
When did these symptoms resolve?	First 3 days	64 (16.3%)
	First week	110 (28%)
	Not sure	199 (50.6%)
	Yes	203 (51.7%)
Do you think weight weight-reducing method is safe to follow lifelong?	No	93 (23.7%)
	Don't know	97 (24.7%)
	Yes	238 (60.6%)
Do you think weight-reducing methods should only be recommended to individuals by a physician under supervision?	No	112 (28.5%)
	I don't know	43 (10.9%)
	Yes	174 (44.3%)
Do you think anyone can follow weight-reducing methods?	No	179 (45.5%)
	I don't know	40 (10.2%)
	Yes	156 (39.7%)
Do you think that weight-reducing methods do not contain enough protein and carbohydrates?	No	147 (37.4%)
	I don't know	90 (22.9%)
	Yes	247 (62.8%)
Do you think that weight-reducing methods put people at risk for nutrient deficiencies?	No	106 (27%)
	I don't know	40 (10.2%)
	Yes	224 (57%)
Do you agree that weight weight-reducing method is a standard weight-loss method?	No	83 (21.1%)
	I don't know	86 (21.9%)
	Yes	263 (66.9%)
Do you believe that the benefits of the weight-reducing methods outweigh the risks?	No	54 (13.7%)
	I don't know	76 (19.3%)
	Yes	357 (90.8%)
Do you think weight-reducing methods are safer than drugs?	No	8 (2%)
	I don't know	28 (7.1%)
	Yes	202 (51.4%)
Do you believe the weight-reducing method is safe enough for someone to follow for the rest of his/her life?	No	103 (26.2%)
	I don't know	88 (22.4%)
	Yes	84 (21.4%)
Do you think you should stop continuing the weight-reducing methods once you lose weight?	No	262 (66.7%)
	I don't know	47 (12%)
	Yes	46 (11.7%)
Do you believe your weight will remain the same once you stop the following weight-reducing methods?	No	298 (75.8%)
	I don't know	49 (12.5%)
	Yes	321 (81.7%)
Do you believe weight weight-reducing method is the most effective way to maintain a healthy weight?	No	37 (9.4%)
	I don't know	35 (8.9%)
	Yes	69 (17.6%)
Do you think the weight-reducing method is easy to follow?	No	284 (72.3%)
	I don't know	40 (10.2%)

sources were the internet (70%), nutrition specialists (33%) and family/friends (28-29%), rather than formal healthcare providers. Around 60% correctly identified weight reduction and comorbidity prevention as main goals, though 15% wrongly assumed blood sugar control in non-diabetics.

Regarding treatable conditions, diabetes and obesity itself were appropriately recognized by

62-87%. However, one-third mistakenly thought cough, allergies, autism, acidity, constipation, and neurological disorders could be managed through weight loss. Around 75% correctly associated obesity treatments with reversible annoyances like fatigue, headaches, nausea and constipation in the short term. Worryingly, though, 53% felt long-standing vitamin deficiencies were probable – contradicting evidence that balanced regimes do

Table 3: Practice to weight reducing methods

Question	Options	n(%)
How long have you been practising weight-reducing methods?	Less than a month	149 (37.9%)
	1-3 months	103 (26.2%)
	3-6 months	35 (8.9%)
	More than 6 months	106 (27%)
Did you exercise while you were following weight-reducing methods?	No, I did not exercise	147 (37.4%)
	Yes, I exercised	246 (62.6%)
Are you feeling any changes in your body (in terms of general health) after following the weight-reducing methods?	Yes	318 (80.9%)
	No	38 (9.7%)
	I don't know	37 (9.4%)
Are you maintaining a cheat (Free) day during your weight-reducing methods?	Yes	317 (80.7%)
	No	76 (19.3%)
Do you consume any kind of processed food/fast food/soft drinks during the weight-reducing methods?	Yes	186 (47.3%)
	No	207 (52.7%)
After weight-reducing methods, is the amount of food you eat:	Less than usual	288 (73.3%)
	Unchanged	75 (19.1%)
	More than usual	30 (7.6%)
After practising weight-reducing methods, my level of hunger has become?	Less	226 (73.3%)
	More	30 (7.6%)
	Unchanged	86 (21.9%)
	Better	294 (74.8%)
After weight-reducing methods, my health status is:	Worse	16 (4.1%)
	Unchanged	83 (21.1%)
	Fasting	81 (20.6%)
	Keto diet	6 (1.5%)
	Intermittent fasting	206 (52.4%)
From your point of view, which type of weight-reducing method do you prefer?	Carbohydrate reduction	156 (39.6%)
	Increase exercise	205 (52.1%)
	Skipping 1 or 2 meals	125 (31.8%)
	Restricting Fluid Intake	11 (2.8%)
	Gradual Dieting	79 (20.1%)
	Surgery	1 (0.3%)
	More than one	37 (9.4%)

meet nutrient needs with reasonable compliance. Just half believed methods were nutritionally adequate and safe for lifelong adherence, while 60% felt medical supervision was necessary for long-term use.

In terms of sustainability, 80% admitted hunger suppression was temporary, with 70% predicting eventual weight rebound on stopping regimes. Nevertheless, 60% still considered these methods easy to implement lifelong, while half felt people need not stop regimes once target weight was achieved. This disconnect between expectations of indefinite effectiveness despite acknowledging challenges indicates considerable understanding regarding weight loss.

Personal practices related to weight management:

Around 80% reported actively trying to lose weight through some non-surgical regime (Table 3). The most common approaches were intermittent fasting (26%), carbohydrate restriction (37%), increased exercise (39%) and meal skipping (31%) - aligned with the most well-known methods. Duration of efforts varied from 1 week over 6 months in 75%, underlining considerable premature discontinuation consistent with well-documented attrition in weight loss trials.

During active weight management phases, 60% incorporated more exercise, while 50% avoided processed foods and soft drinks. Three-fourth described reduced hunger, intake and improved health markers like energy, body pain and mood compared to pre-regimen status. Only 40% could sustain cheat days weekly, indicating difficult dietary adherence. Nevertheless, over 50% still identified their regime as the easiest for lifelong compliance and the most effective strategy for weight maintenance. This reiterates unrealistic optimism despite acknowledging tangible challenges with restraint and sustainability.

DISCUSSION

This study provides vital insight into the prevailing knowledge and self-directed weight management practices among adults from the general population. Capitalizing on the comprehensive multi-domain survey design, it unravels nuances around knowledge adequacies versus gaps that shape real-world efforts and their outcomes.

The very high overweight/obesity prevalence of 64% unfortunately aligns with peak rates noted recently among adults in countries like Kuwait

(63-74%) and Qatar (65%) [4]. Unsurprisingly, over 90% expressed weight concerns and were actively attempting loss through various non-pharmacological methods – consistent with other surveys whereby around half of adults self-report trying to lose weight at any time [11]. Choices centred around increased physical activity, reduced carbohydrate intake and intermittent fasting rather than highly restrictive diets, meal replacements or bariatric surgery elected more commonly in the West [15,17]. This possibly reflects greater health consciousness and a preference for culturally-aligned and less invasive options. However, sustainability was suboptimal – three-fourths had discontinued regimes under 6 months and most described progressive hunger escalation and rebound weight gain on stopping.

In terms of knowledge, participants showed a reasonable understanding of obesity pathophysiology and associated comorbidities like diabetes, cardiovascular disorders and hormonal imbalances. Reversible nuisance side effects were correctly associated with weight loss methods rather than serious nutrient deficiencies or dyselectrolytemias observed occasionally with overly aggressive regimes [18,19]. Around 60% endorsed the need for medical guidance with long-term usage, indicating appropriate caution against overt reliance on direct-to-consumer products or self-experimentation [20,21].

However, important gaps and misconceptions exist around nutritional adequacy and sustainability. Despite being reasonably well informed otherwise, half were unsure whether popular regimes provided sufficient proteins and carbohydrates over the long term. Evidence suggests intermittent fasting and well-formulated low carbohydrate diets can meet nutritional needs with adequate energy balance and diet quality [9,22]. However, this warrants tailoring to individualized requirements and sound nutrition counseling to avoid inadvertent deficits [23,24]. – a facility most self-guided dieters lack access to. The disconnect over the eventual cessation of weight loss efforts was even more concerning - while 80% admitted struggling with long-term hunger suppression and expected regain after stopping regimes, 60% still considered their chosen approach easy to continue lifelong and the singular best strategy for weight maintenance. Such overly optimistic and simplistic attributions indicate considerable gaps in understanding the intricate physiological, metabolic, genetic, and hormonal adaptations supporting natural weight

homeostasis and inexorable plateau [8,25]. Without addressing these through professional inputs, long-term success remains unlikely. Our findings substantiate literature on considerable community interest in weight control, contrasting with pervasive knowledge gaps around evidence-based management principles like caloric balance, nutritional adequacy and realistic outcomes [12,14,26]. Although guidelines for obesity managements are available and interventions are implemented, still obesity is the a highly prevalent diseases in the general population seeking the requirement of forcing an effective strategy to relegate obesity impacts and subsequently reduce disease complications [27].

Limitations of the present study include clustered sample focussing mainly on educated people and thereby ignoring the non-graduated people. The study lacked interview strategy for information collection with participants, which might eventually change or influence their behaviours compared to online surveys. The sample enrolled are among the highly busy groups in the society lacking enough time for exercise or enjoying healthy foods due to their other responsibilities and commitments, moreover, this group were highly exposed to fast-foods and non-healthy diets. The dietitian as a specialist is rarely available in our locality, reducing available information for the general population to correct misbeliefs and misleading information. Commercial propaganda misleadingly directs practices towards heavy diets. Hence, addressing this knowledge deficit could improve the situation.

CONCLUSION

In conclusion, adults demonstrate strong interest but are also concerned about knowledge gaps regarding various popular pharmacological and non-pharmacological weight management approaches. The positive outcome is that the knowledge and practice of people are growing and taken seriously by some people in society. There has been strong desire to reduce weight versus lower adherence to practice proper lifestyle to achieve this goal. Public education and policies guiding responsible usage can help safeguard well-being at an individual and population level. Social media needs to be enriched with scientific materials encouraging the use of healthy food and adapting proper lifestyle behaviours. Encouraging the policymakers to licence more restaurants with healthy food via reducing the taxes and providing

lower requirements for opening such restaurants for the general populations leading to cheaper meals. Tackling the information gaps in the general society might helpful to prevent obesity distribution leading happier and healthier society.

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