How Individuals with No Prior Experience Evaluate Time-Restricted Eating (TRE) Through the Lens of the Health Belief Model

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Abstract

Background

Time-restricted Eating (TRE) is a dietary approach known for its positive health effects, such as reduced glucose levels and improved sleep through limiting the daily food intake to a specific time frame. While research often focused on the experiences of people who have practiced TRE, little is known about the perceptions and expectations of people without experience. This study aims to explore how individuals with no prior experience with TRE perceive its potential benefits, anticipated barriers, health risks, and their own ability to adopt it.

Methods

Employing a qualitative approach, semi-structured interviews with ten participants (6 females, 4 males; ages 20-45; M = 26.7) were conducted. The participants were recruited through purposive and snowball sampling ensuring they meet the inclusion criteria: (1) adults aged 18 or older, (2), no prior experience with TRE, specifically with an 8h restricted eating period during daytime, (3) fluent in English or German. The Health Belief Model (HBM) served as a conceptual framework to provide useful structure for the interview guide and the subsequent thematic analysis. Thematic analysis was used to identify recurring themes and sub-themes across participants interview responses.

Results

The results revealed that participants anticipate health and behaviour related benefits, including improved metabolism and a more structured day. Diverse barriers, such as hunger, low energy, and social influences like eating out were frequently mentioned. Furthermore, participants reported that self-efficacy beliefs often depend on conditional influences and above all social facilitation. Though identified health risks were less frequently mentioned, they ranged from energy deficiencies to nutritional concerns.

Conclusion

The findings emphasise that individuals with no prior experience of TRE still anticipate beliefs about TRE, based on personal, environmental and social factors. The understanding of pre-adoption beliefs of health behaviours is required to provide early tailored support for TRE. Health professionals should not only educate about both benefits

and barriers while addressing different lifestyles and goals. Future research should compare preadoption beliefs to actual experiences and include culturally diverse samples. This research demonstrates that acquiring knowledge about how individuals perceive change is equally important as studying their experiences with it.

Introduction

A central concern in present health discussions is maintaining a healthy diet that supports both physical and mental well-being. A dietary approach that has gained increasing attention in recent years is time-restricted eating (TRE), a form of intermittent fasting. In TRE, individuals limit their daily calorie intake to 6-10 hours during the active phase of the day, for example from 11 am to 7 pm. But there are variations of TRE including early TRE (e.g., from 8 am to 4 pm) or delayed eating (e.g. from 1 pm to 9 pm), depending on individual preferences. Importantly, it typically does not alter the existing eating behaviour, i.e., food choice and portions. Instead, the emphasis lies on maintaining the body's natural circadian rhythm (Regmi & Heilbronn, 2020). The circadian rhythm describes the body's natural 24-hour cycle that regulates biological processes, including the sleep-wake cycle and hormone production (Vitaterna et al., 2001).

Beyond its appeal for weight reduction, TRE may provide various metabolic and physiological advantages. Research shows that TRE can enhance blood pressure, insulin sensitivity, and glucose management, especially when the food intake is aligned with the circadian cycle (Regmi & Heilbronn, 2020; Wilkinson et al., 2020). These changes may decrease the risk of cardiovascular disease, type 2 diabetes and disorders associated with obesity. Furthermore, after implementing TRE individuals reported increased energy, better sleep and decreased inflammation (Rathomi et al., 2025; Liu et al., 2022). In contrast to traditional diets that often focus on calorie reduction, TRE is gaining popularity through low cognitive and behavioural demands and its holistic health benefits (Liu et al., 2022).

Although TRE has shown promising effects on overall health, it can also lead to challenges in daily implementation. According to O'Connor et al. (2022), people who practice TRE often struggle to integrate it into their daily routines. As a result, postponing breakfast until late morning, can lead to headaches, lack of energy or feelings of hunger, especially during the initial adaptation phase. In addition, social situations, such as eating out with others, may conflict with the fixed eating periods of the diet. As a result, these barriers often hinder the implementation and adherence of TRE and its rules (O'Connor et al., 2022).

To explore factors, such as perceived challenges, that affect individuals' adoption of health behaviours is a core focus of the Health Belief Model (HBM) (Rosenstock, 1974). The HBM, developed by Rosenstock, is a psychological framework to explain and predict health

behaviours based on six components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. These interconnected components explain how people view health risks and evaluate the effectiveness of a health action and their confidence in implementing these behaviours.

In the context of TRE, individuals' decision to begin may depend on their perception of the diet's potential physical and psychological improvements (benefits), what obstacles they expect (barriers), and whether they feel confident in adopting it (self-efficacy). According to the HBM, individuals are more likely to adopt a health behaviour when the perceived benefits outweigh the perceived barriers, and when their self-efficacy is high. These assumptions are supported by the research of Rathomi et al. (2015), who identified that once an individual achieves positive effects, such as improved sleep, weight loss, reduced inflammation, and improved glucose levels, they are often more motivated to follow TRE, making implementation seem easier over time.

The HBM is already widely applied in health research and also implemented in nutrition-related topics, such as dieting in general (Nejad et al., 2005; Tavakoli et al., 2016; Urbanovich & Bevan, 2020). But its application on TRE remains limited in current studies. Existing studies have primarily focused on individuals who already practice TRE, exploring both perceived benefits such as weight loss, improved energy and better metabolic health, and barriers including social challenges, hunger and lower energy during the adaptation phase (O'Connor et al., 2022; Rathomi et al., 2015; Regmi & Heilbronn, 2020). More precisely qualitative studies have examined factors that facilitate and hinder long-term adherence. Jefcoate et al. (2023) emphasised various influencing factors such as biological factors (e.g. hunger patterns and energy), psychosocial elements (e.g. social support), and environmental considerations (e.g. work schedules).

As existing research on *TRE* often focuses on individuals who adopted the dietary approach and therefore primarily reflects the adherence phase, little is known about how individuals with no prior experience perceive its benefits, health risks, and barriers. Exploring these factors, particularly in the pre-adoption phase, is central to the HBM and crucial for understanding the influences that promote or hinder a health-related behaviour change. There is a clear gap in understanding how individuals with no experience evaluate TRE. Previous studies showed that the decision to engage in health behaviours like TRE is often influenced by these early expectations, including potential misconceptions (Anderson et al., 2007). If

individuals perceive significant risks or barriers, such as potential negative health effects, social constraints or difficulties in maintaining adherence, it can outweigh perceived benefits. This results in them being less inclined to attempt TRE, regardless of the potential health benefits. Therefore, it is necessary to investigate what might encourage or discourage individuals from starting TRE, which requires an understanding of the pre-adoption stage.

To address this, the present study explores how individuals with no prior experience with time-restricted eating (TRE) perceive its potential benefits, barriers, and health risks. A qualitative approach is applied, using the HBM as conceptual guidance. The aim is to identify key psychological, social, and practical factors of TRE that may influence decision-making in the pre-adoption phase. By focusing on individuals with no prior experience of TRE, this research addresses a significant gap in the present literature and deepens the knowledge of early-stage perceptions.

To accomplish the research goal, the following research questions have been developed:
RQ 1: How do individuals with no prior experience of time-restricted eating (TRE) perceive its benefits, health risks, and barriers?
Sub-RQ 1.1: What benefits do individuals expect when practising TRE?
Sub-RQ 1.2: What health risks do individuals associate with TRE?
Sub-RQ 1.3: What barriers, including perceptions of self-efficacy, do individuals anticipate when considering TRE?

Methods

Research Design

This study employs a qualitative approach adhering to the Standards for Reporting Qualitative Research (SRQR) (O'Brien et al., 2014). To explore the attributes of the HBM (perceived health risks, self-efficacy, expected benefits, and barriers), semi-structured interviews were conducted. The qualitative design supports the research objective by enabling thematic analysis and applying a primarily inductive approach with deductive elements to determine participants' perceptions in relation to the present theoretical framework.

Participants

The study used purposive sampling to select participants, ensuring they meet the inclusion criteria: (1) adults aged 18 or older, (2), no prior experience with TRE, specifically with an 8h restricted eating period during daytime, (3) fluent in English or German. The criteria were chosen to ensure a broader representation of participants of different societal groups. Additionally, it ensured that participants' responses were based on perceptions rather than prior personal experiences with TRE. The initial recruitment took place through the personal network of the researcher and was extended via snowball sampling. The target sample size was set to approximately 10 people or until thematic saturation was reached.

Materials

A semi-structured interview guide (see Appendix C) was employed to investigate participants' perceptions of perceived health risks, expected benefits, barriers, and self-efficacy when considering whether to start TRE. The interview guide was grounded on a study by Rathomi et al. (2015), who explored individual motivation to TRE using the Health Belief Model (HBM). This interview guide was adapted to the needs of this research. Thus, only questions that fit participants with no experience of TRE were included, or the questions were rewritten so that they fulfilled the research purpose. The use of a semi-structured interview provides the advantage standardised structure while allowing the possibility of responding to the participants' answers and asking follow-up questions. To ensure that all participants understood the main principle of TRE, they were given information about the method, its implementation and some health benefits before answering the questions (see Appendix B). They were also able to ask questions about the method and were asked to give their immediate opinion on what they heard.

Procedure

Ethical approval for this study was granted by the BMS Ethics Committee of the University of Twente (Humanities & Social Sciences domain) under approval number 250621.

To examine how individuals with no prior experience perceive TRE, semi-structured interviews were used. Depending on the participants' language abilities, the interviews were in either English or German. Interviews were conducted either in person or online (via Microsoft Teams) to ensure convenience and flexibility for each participant. The period of data collection lasted from 31.03.2025 to 18.04.2025.

Prior to the interview, participants received detailed study information (see Appendix B), and they were asked to provide written informed consent. This included consent for the participation, audio recording of the interview, and the use of anonymised data. Interviews began only after consent was obtained and all questions were addressed.

To standardise the interview process, the same interview guide as well as procedure was used for all participants. The expected duration for the interviews was 30 minutes. Moreover, all interviews were audio-recorded. The recordings were treated confidentially and anonymized during processing. In accordance with data security guidelines, the recordings were deleted right after the transcription of the interviews was completed. The interviews were transcribed verbatim. Anonymised data will be stored in Microsoft OneDrive and retained for a minimum of 10 years in accordance with the institutional policies of the University of Twente.

Data Analysis

The data collected through semi-structured interviews were analysed using thematic analysis according to the six-phase approach by Braun & Clarke (2006). This method was chosen because of its flexibility for analysing and summarising patterns within qualitative data. To support a systematic analysis, the software ATLAS.ti (version 25.0.1) was used.

Initially, an inductive approach was applied to generate codes and themes that emerged from the data. These themes were later reviewed and grouped deductively using the Health Belief Model (HBM). Additionally, coding was organised per research question to ensure a structured analysis and to support a clear link between the data and the study's aims.

The Six Steps of Thematic Analysis were applied as follows:

1. *Familiarisation with the data*

The researcher started by transcribing the interviews verbatim and clearly reading the transcripts. This active beginning allowed for a deep understanding of the content and potential areas of interest were already noted.

2. *Generating initial codes*

The transcripts were systematically coded. The codes were developed with precise consideration of the respective research question. The initial coding was conducted inductively, allowing codes to emerge from participants' responses. The coding was applied consistently to all transcripts, and relevant segments could be assigned multiple codes if appropriate.

3. *Searching for Themes*

The codes created before were grouped into potential sub-themes based on shared content and meaning. These groups were first created inductively, based on the data itself. In a subsequent step, these sub-themes were reviewed deductively using the HBM as a theoretical framework and then grouped into overarching themes aligning with HBM elements. Visualisation tools (e.g., code groups) were used to organise and explore relationships between codes. In this step, preliminary themes and sub-themes were developed, while considering both the content of the data and the theoretical alignment with the HBM.

4. *Reviewing Themes*

The topics were checked for internal coherence and relevance for the entire data set. In this iterative phase, some themes were refined, merged or discarded. Particular attention was paid to whether the themes adequately captured the data and corresponded to the constructs of the HBM and the specific research questions.

5. *Defining and Naming Themes*

Each theme was clearly defined and labelled to reflect its core message and scope. Sub-themes were developed where needed to organise more specific patterns within broader thematic categories. Subsequently, the names of the themes were chosen, while keeping them concise and informative and representative descriptions were written. This process ensured each theme addressed one or more research questions explicitly.

6. *Producing the report*

The findings were reported in a coherent narrative that directly addressed the research questions and sub-questions. To support each theme, representative quotations from the interviews were integrated into the discussion. The themes were interpreted both within the

framework of the Health Belief Model (HBM) and in relation to the existing literature to ensure that the analysis made a meaningful contribution to the understanding of the research topic.

Results

Participants

A total of 10 participants took part in this study. The sample included 6 females and 4 males, providing a balanced gender variation. The participants ranged in age from 20 to 45 years with a mean age of M = 26.7 years. Participants nationalities were German (80%), French (10%), Japanese (10%), and Indonesian (10%)[1].

Table 1

Demographics of Participants

Participant	Age	Gender	Nationality	Mode of interview	Occupation	General experience with dieting
01	22	Male	German	In person, English	Retail	No
02	22	Female	German	In person, English	Psychology Student	Yes
03	20	Female	German	Online, English	None	No
04	22	Female	Japanese	In person, English	Psychology Student	No
05	23	Female	French, German	In person, English	Psychology Student	Yes
06	43	Female	German	Online, German	Housewife	Yes
07	45	Male	German	Online, German	Paramedic	Yes
08	25	Male	German	In person, English	Psychology Student	Yes
09	21	Female	Indonesian	In person, English	Psychology Student	No
10	24	Male	German	In person, English	Office Administration	Yes

[1]One participant had dual nationality (French-German) and was counted in both categories. The percentages are therefore based on the total number of nationalities (N = 4) and not on the number of participants.

Thematic Analysis

Table 2

Perceived Benefits of TRE

Themes	Sub-themes	Codes	n of contributing participants
Perceived Benefits	Health improvements	Weight loss	4
		Improved metabolism	4
		Improved sleep	4
	Controlling eating behaviour	Regulating snacking	4
		More awareness of food intake	3
	Daily structure	Improved personal structure	4

The theme of perceived benefits reflects the advantages participants associate with TRE. The benefits can be grouped into sub-themes primarily related to health improvements, controlling eating behaviour, and daily structure.

Several participants recognised different health improvements, encompassing improvements in weight, metabolism, and sleep. Some positively acknowledged Weight Loss (n=4) as a benefit with physical and psychological effects. Thus, a participant expressed, *"If I would lose weight, I would feel better about myself. And then I would have some mental boost"* (P10, 24-year-old male with prior dieting experience). Moreover, participants expressed the possible advantage of an Improved Metabolism (n=4). Particularly, the advantage of digesting before going to sleep was frequently mentioned, stating, *"If someone were disciplined enough to follow a restricted schedule, then your body would have time to process food during the day while you're still active"* (P9, 21-year-old female, psychology student with no prior dieting experience). In addition, some participants mentioned Improved Bodily Rhythms (n=4), i.e. improved inner cycles and sleep rhythm. They expected *"better sleep, because your body is not trying to digest large amounts of food while you sleep"* (P5, 23-year-old female psychology student).

The second sub-theme reveals different advantages in relation to Controlling Eating Behaviour. On the one side, participants emphasised Regulating Snacking (n=4), hoping for *"less snacking all day and like a healthy focus on meals"* (P4, 22-year-old Japanese female

without dieting experience). On the other side, they expect to achieve More Awareness of their Food Intake (n=3), expressing to be *"more aware of what you eat and when and how you eat"* (P5 23-year-old French-German female with dieting experience).

Finally, some perceived benefits were also connected to Daily Structure. They anticipated to achieve an Improved Personal Structure (n=4) through TRE. Therefore, one participant said, *"Organising my eating schedule would also help systemize my day, which would make my daily routine more organized"* (P9, 21-year-old Indonesian female).

Table 3

Perceived Health Risks of TRE

Themes	**Sub-themes**	**Codes**	**n of contributing participants (N=10)**
Perceived Health Risks	Risk of eating disorders	Risk of underweight	1
		Binge eating	1
	Energy deficiency symptoms	Fatigue and sleepiness	2
		Low concentration	1
	Nutritional concerns	Low blood sugar consequences	3
		Insufficient nutrients	2

Although TRE is often associated with various health benefits, several participants expressed Perceived Health Risks. These concerns were grouped into risks of eating disorders. Energy deficiency symptoms and nutritional concerns

Firstly, a few participants mentioned that a restricted diet might raise the Risk of Eating Disorders. Views on this varied with one being the Risk of Underweight (n=1), *"If you already don't weigh that much and you still think you need to do it, then like obviously you get thinner, which wouldn't be healthy"* (P2, 22-year-old female psychology student). Contrary, it was also talked about the risk of Binge Eating (n=1), reflecting, "*after you stop this diet (...) you go back into your old eating behaviour, and you eat a lot (...) like binge eating"* (P3, 20-year-old German female with no dieting experience).

Moreover, some participants emphasized the risk of Energy Deficiency Symptoms, i.e. symptoms caused by missing energy intake. One concern that came up is Fatigue and Sleepiness (n=2), exemplified by, *"When I can eat a lot in a short time, I'm like going to*

sleep, become sleepy" (P4, 22-year-old Japanese female with no dieting experience). Another worry is Low concentration (n=1), as a possible consequence of not eating when feeling the need for it, therefore one admitted, *"I'm reactive to that. I can feel it instantly. (...) And I can't concentrate"* (P8, 25-year-old German male with dieting experience).

Lastly, Nutritional Concerns were pointed out, doubting meeting nutritional needs when practising TRE. Thus, some feared Low Blood Sugar Consequences (n=3). One expressed "*With a lack of sugar, they feel dizzy or sometimes they get unwell"* (P4, 22-year-old female psychology student). In addition, a general risk of Insufficient Nutrients (n=2) was seen. As P2 (22-year-old German female with dieting experience) put it, *"Even if your body tells you, you need to eat and you don't, then it doesn't get like the nutrients it needs or something like that"*.

Table 4

Anticipated Barriers to TRE

Themes	**Sub-themes**	**Codes**	**n of contributing participants (N=10)**
Perceived Barriers	Biological obstacles	Feelings of hunger	6
		Low energy	3
		Menstrual Burdens	1
	Social influences	Eating out	4
		Seeing others eat	3
		Family obligations	2
	Lifestyle conflicts	Work schedule	2
	Self-efficacy	Social facilitation	6
		Low self-efficacy	4
		Conditional confidence	3

Another theme that was revealed during the interviews was Perceived Barriers to adopting TRE. These barriers were grouped into different sub-themes, including biological obstacles, social influences, lifestyle conflicts, and self-efficacy beliefs.

The first sub-theme of biological obstacles emphasized different physical or hormonal barriers to TRE. The most frequently cited biological barrier included Feelings of Hunger

(n=6). One person noted, *"When I'm hungry, I'm not in the best mental state"* (P8. 25-year-old German male). A further challenge that was mentioned in this context was Low Energy (n=3). This was described in the statement, "*If I start the day early in the morning and have no power, like if I don't eat, then I can't really start functioning"* (P7, 45-year-old male paramedic with dieting experience). Moreover, one participant raised concerns about the Menstrual Burdens (n=1), related to energy fluctuation due to hormonal changes, noting that *"it could be complicated for them because they don't get the energy that they have normally during the day"* (P3, 20-year-old female with no dieting experience).

Furthermore, many participants emphasized the sub-theme of Social Influences, i.e. the impact of social surroundings and situations on the ability to follow TRE. Some portrayed Eating out (n=4) as a primary social challenge. One response described, "*I guess it would be my biggest challenge, (...) when I go out, maybe that I need to restrict myself in these points also"* (P1, 22-year-old male with no dieting experience). Others mentioned the barrier of Seeing Others Eat (n=3), as one stated, *"You're maybe hungry and then you see your friends eating, I think it can pull you maybe down a bit in this moment"* (P3, 20-year-old German female with no dieting experience). Apart from that, Family Obligations (n=2) were also described as a challenge: *"If you care for a family, it's difficult to follow such a diet"* (P6, 43-year-old housewife with dieting experience).

In addition, Lifestyle Conflicts were seen to interfere with a diet like TRE, especially seen in conflicts with Work Schedule (n=2). Illustrating the conflict, one said, *"Unfortunately, when I'm on shift, I can't choose when I eat, how long I eat and yes, that would be my concern"* (P7, 45-year-old male paramedic).

Lastly, barriers stemming from Self-efficacy beliefs, i.e. the individual's belief in their capacity to execute TRE, were also present. The most important influence was Social Facilitation (n=6), meaning that the social support would make it easier to adhere: "*If the family follows with it, of course. That's actually the only thing I see as a problem, but it's also the only thing I'm sure would be extremely helpful"* (P6, 43-year-old German housewife). Others demonstrated general Low Self-efficacy (n=4) as a barrier to following TRE. For example, P8 stated, *"I'm not a big fan of strict rules that you have to follow"*, reflecting an unconvinced attitude and lack of motivation to commit to structural changes.

A final factor mentioned was Conditional Confidence (n=3), stating their ability to adhere to TRE would depend on a current lifestyle factor, mostly work. Thus, it was expressed, *"If I didn't have to work. If I didn't have to work shifts. If I could organize daily life completely myself. Then that would certainly work."* (P7, 45-year-old male paramedic).

Overall, the thematic analysis offered an in-depth understanding of how people view TRE. The findings demonstrate a dynamic interaction between perceived barriers, health-related risks, estimated benefits, and various factors influencing different degrees of self-efficacy. Many participants were positive and cited possible benefits including better health and structure. However, a variety of biological, social, and psychological reasons were mentioned and effected the self-efficacy in relation to TRE.

Discussion

This study aimed to explore how individuals with no prior experience of time-restricted eating (TRE) perceive its benefits, health risks, and barriers. The findings revealed key psychological, social, and practical factors that may influence their decision-making process regarding TRE.

Participants identified various perceived benefits of TRE when thinking of what they would hope to gain from the diet. Weight loss, improved metabolism and better sleep quality were often highlighted as possible health improvements. Additionally, snacking regulation, mindful eating, and structured daily routines were emphasised as possible behaviour enhancements. In sum, health-related and behaviour-related benefits were mentioned equally often, suggesting behavioural benefits are seen just as important as health-related benefits, highlighting a holistic perception of dietary success.

When asked about perceived health risks, participants noted diverse concerns, such as disordered eating, nutritional deficiencies, fatigue, dizziness, or low blood sugar. It was noticeable that the participants found it more difficult to imagine risks, which is shown by the versatile answers and their low contribution. Nevertheless, the answers showed emotional logic and fear-based reasoning, indicating that perceived health risks can influence decision-making.

Regarding the last sub-question about perceived barriers, diverse biological, social, lifestyle, and self-efficacy-related responses were gathered. Particularly striking were concerns about hunger, low energy, and the difficulty of eating out and resisting food in social settings. Furthermore, social facilitation was shown to have an important influence on participants' self-efficacy beliefs. Thus, they make their success dependent on whether the social environment supports them or not.

Taken together, the findings reveal that even with no prior experience, participants were able to construct anticipated benefits, barriers and risks regarding TRE. These perceptions appear to significantly influence individuals' decision-making processes, as well as their own beliefs in their ability to adopt the method.

As previously noted, participants identified both behaviour and health related benefits that were equivalent to those shown in previous studies investigating experienced practitioners of TRE (e.g. O'Connor et al., 2022; Rathomi et al., 2025). Consistent with results from practitioners, reported health benefits included weight loss, improved metabolic functions and

better sleep quality (Regmi & Heilbronn, 2022). However, what is striking in this study is the emphasis on behavioural benefits, such as increased structure, mindful eating and reduced snacking. This indicates that individuals interpret the advantage of TRE in personal ways, perhaps influenced by their existing routines, psychological needs or lifestyle goals. These findings are particularly interesting because the majority of earlier studies have concentrated on experienced TRE users, whose observations are based on experience rather than expectation. Such variation might reflect the fact that health behaviour beliefs develop not only through experience but are also shaped by indirect cues, normative influence, and exposure to information that contribute to the development (Taflinger & Sattler, 2024). Whereas the participants of this study consisted of mostly younger and healthy individuals, most existing TRE studies focus on older adults with various health conditions (e.g. Rathomi et al., 2025; O'Connor et al., 2022; Wilkinson et al., 2020). These demographic and motivational differences may explain the greater emphasis on behavioural and social factors. Importantly, this finding is an important indication of the flexibility of TRE, as its appeal is not only the physiological outcomes but also the perceived potential to improve self-regulation and structure, areas that have been less explored in current literature.

Furthermore, by participants in this study identified social facilitation as condition for self-efficacy. This indicates that social support is a psychological prerequisite for self-efficacy and that a lack of social support can demotivate people before they have even started, which is consistent with previous research showing the role of social influence on self-regulatory habits. For example, Wang et al. (2019) observed that higher levels of social support led to higher self-efficacy in university students participating in physical activity. Similarly, Yang et al. (2012) discovered that low social support was related to reduced dietary self-efficacy in patients with type-2 diabetes. Accordingly, people may link their belief in their ability to follow TRE to interpersonal dynamics and thus rely on affirmation and alignment to feel able to succeed. Consequently, social facilitation may serve as a psychological filter that is not only a practical obstacle but also crucial to the pre-adoption decision-making.

Despite participants being able to identify various potential health risks associated with TRE, including fatigue, eating disorders and low blood sugar, these answers were generally less consistent and more conjectural than those for other themes. Many participants found it difficult to articulate particular concerns, instead focusing on vague justifications or hypothetical fears. This suggests that emotional intuitions, such as running out of energy,

were frequently the basis for perceived health risks rather than factual knowledge. This pattern may be more prominent among individuals without prior experience, as these concerns were not emphasised by experienced users (e.g. Rathomi et al., 2025). For instance, some participants expressed concerns about low energy or fatigue resulting from skipping breakfast or delayed food intake. However, Liu et al. (2022) suggest that such symptoms only occur during the initial adaptation phase and improve when the body becomes accustomed to a new eating rhythm. Furthermore, while some feared effects of low blood sugar, studies have shown that blood glucose regulation usually improves rather than worsens, even though there may be brief side effects during initial adaptation (Regmi & Heilbronn, 2020; Wilkinson et al., 2020). However, even in the early phases of behaviour change, the perceived legitimacy of a risk, regardless of its clinical basis, can still be a significant barrier. This shows the importance of health communication that addresses concerns while emphasising subjective fear and objective evidence.

This research contributes to a significant perspective of TRE by specifically focusing on individuals with no prior experience with the diet. While this group was previously under-represented in research, comprehensive pre-adoption perceptions of TRE were explored, which revealed important insights about the decision-making process of individuals. Further, the Health Belief Model (HBM), as a theoretical framework, helped to structure the exploration of key perceptions. Using this framework helped to systematically collect perceptions about perceived benefits, barriers, health risks, and self-efficacy. Ultimately, the study achieved a satisfying theoretical saturation. Despite a sample size of ten participants, various themes and sub-themes were identified, which were frequently present throughout the different interviews. This demonstrates the credibility and richness of the versatile results.

Despite its contributions, this study has limitations that should be acknowledged. First, this research is conducted by a single researcher, leading to potential interviewer bias or selective probing. Although this was minimised by using semi-structured interview guides and reflexivity, the absence of a further coder may have an impact on the results. Moreover, the demographic composition of the sample was relatively homogeneous. Thus, most of the participants were either young, university students, or all of the above. Although attempts were made to integrate different age groups and take cultural diversity into account, this could still be improved. Therefore, the results may not apply to older people or different cultural aspects, particularly older, non-central European people, or cultures with different social

eating norms may not be represented by the findings. The limitations of this work provide important indications for possible future research.

The Health Belief Model (HBM) served as a suitable framework for exploring how individuals with no prior experience with TRE perceive its potential benefits, health risks, and barriers. The framework includes six components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Rosenstock, 1974). In this study, the HBM provided conceptual structure to examine participants perceptions about TRE. However, the analysis revealed influential factors that the model does not incorporate. For instance, social facilitation, i.e. social support or disapproval, emerged to have a significant influence on the self-efficacy beliefs of participants. In addition, some responses revealed conditional confidence regarding the adoption of TRE, stating they would feel capable of adhering to the diet if certain factors would change, e.g. working hours. These findings suggest that self-efficacy seems to be a context-dependent rather than a fixed internal variable, as traditionally stated by the HBM. Although the model successfully assessed the evaluations of participants, it lacks in incorporating social influences and personal circumstances, which appeared to be fundamental for decision-making in this study.

The findings offer several practical implications valuable for health communication and interventions. First, the results highlight the importance for health professionals to not only address the benefits of TRE but also to proactively address typical concerns and misconceptions that might discourage people from attempting TRE, such as missing energy and social exclusion. Addressing concerns beforehand can help to resolve worries or to approach with a clear strategy. In addition, public health messaging should also consider portraying TRE as a flexible lifestyle intervention that may appeal to people seeking behavioural improvements, such as increased structure. Tailoring such messages to different motivational profiles, for instance, those seeking positive health outcomes versus those motivated by improved routine, could enhance the perceived relevance of TRE.

A further implication is the possible creation of digital self-monitoring tools for TRE, such as an app. This is supported by the findings, which demonstrate that participants self-efficacy is linked to structure and social support. Such digital tools could enable users to share actual experiences and stories by combining interactive, social aspects with helpful advice and insights. This could promote a feeling of belonging and may compensate for the absence of direct social support, which was declared as essential for adhering to TRE. Research on

diet- and nutrition-related apps suggests that such tools can help behaviour change by encouraging self-awareness, goal-setting and social comparison, showing positive effects on users' perseverance and self-efficacy (West et al., 2017).

The results of this study suggest several future implications for TRE research. First, longitudinal research should explore people's perceptions both before and after engaging in TRE. By contrasting expected benefits and barriers with actual experiences, one can reveal how accurately individuals predict outcomes, helping to identify misconceptions and develop enhanced support plans.

Second, future research could explore to what extent the findings of TRE are applicable to other forms of intermittent fasting, such as alternate day fasting (ADF). Practicing ADF involves alternating between one day of regular eating and one day of fasting with no or very little food intake (Varady & Hellerstein, 2007). A comparison of perceived benefits and barriers between these methods can provide insight on whether the perceived benefits and barriers are method-specific or general to fasting. These insights could support the development of tailored interventions and improve public health communication.

In addition, it may be beneficial to expand the HBM to capture a more comprehensive understanding of health-related decision making. For example, social and environmental influences could be integrated as it shows to have significant influence on individuals' evaluations of dietary behaviours. Therefore, additional frameworks like the Theory of Planned Behaviour (TPB) (Ajzen, 1991) could also be integrated. The TPB has already been implemented in dietary research before (e.g. Grønhøj et al., 2012), which makes it a useful addition to the HBM. Particularly the inclusion of the TPB components Subjective Norms and Perceived Behavioural Control could enhance the explanation of interpersonal and contextual factors.

Lastly, more culturally diverse samples should be examined. Social norms and values, such as individualism versus collectivism, shape eating habits, particularly in social contexts. Cross-cultural studies, especially in non-European countries, could improve the cultural relevance of fasting interventions. Additionally, research comparing different age groups and generations could provide insight into how TRE is perceived and accepted across life stages.

The aim of the present study was to investigate how individuals with no prior experience with TRE perceive its potential benefits, health risks, and barriers. The results revealed that people have complex expectations about TRE, even before attempting it, which

are influenced by social environment, emotional reasoning, and personal motives. Particularly, social and environmental factors played a significant role in participants' self-efficacy beliefs. These results highlight the significance of addressing pre-adoption views in health communication and intervention design, as they have an important effect on people's likelihood of adopting healthy behaviours.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-t

Anderson, E. S., Winett, R. A., & Wojcik, J. R. (2007). Self-regulation, self-efficacy, outcome expectations, and social support: Social cognitive theory and nutrition behavior. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, *34*(3), 304–312. https://doi.org/10.1007/bf02874555

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Grønhøj, A., Bech-Larsen, T., Chan, K., & Tsang, L. (2012). Using theory of planned behavior to predict healthy eating among Danish adolescents. *Health Education (Bradford, West Yorkshire, England)*, *113*(1), 4–17. https://doi.org/10.1108/09654281311293600

Jefcoate, P. W., Robertson, M. D., Ogden, J., & Johnston, J. D. (2023). Exploring rates of adherence and barriers to time-restricted eating. *Nutrients*, *15*(10). https://doi.org/10.3390/nu15102336

Keller, J., Kwasnicka, D., Klaiber, P., Sichert, L., Lally, P., & Fleig, L. (2021). Habit formation following routine-based versus time-based cue planning: A randomized controlled trial. *British Journal of Health Psychology*, *26*(3), 807–824. https://doi.org/10.1111/bjhp.12504

Koome, F., Hocking, C., & Sutton, D. (2012). Why routines matter: The nature and meaning of family routines in the context of adolescent mental illness. *Journal of Occupational Science*, *19*(4), 312–325. https://doi.org/10.1080/14427591.2012.718245

Liu, D., Huang, Y., Huang, C., Yang, S., Wei, X., Zhang, P., Guo, D., Lin, J., Xu, B., Li, C., He, H., He, J., Liu, S., Shi, L., Xue, Y., & Zhang, H. (2022). Calorie restriction with or without time-restricted eating in weight loss. *The New England Journal of Medicine*, *386*(16), 1495–1504. https://doi.org/10.1056/NEJMoa2114833

Nejad, L. M., Wertheim, E. H., & Greenwood, K. (2005). Comparison of the health belief model and the theory of planned behavior in the prediction of dieting and fasting behavior. *E-Journal of Applied Psychology: Clinical and Social Issues*, *1*(1), 63–74. https://doi.org/10.7790/ejap.v1i1.10

O'Brien, B. C., Harris, I. B., Beckman, T. J., Reed, D. A., & Cook, D. A. (2014). Standards

for reporting qualitative research: a synthesis of recommendations. *Academic Medicine: Journal of the Association of American Medical Colleges*, *89*(9), 1245–1251. https://doi.org/10.1097/ACM.0000000000000388

O'Connor, S. G., Boyd, P., Bailey, C. P., Nebeling, L., Reedy, J., Czajkowski, S. M., & Shams-White, M. M. (2022). A qualitative exploration of facilitators and barriers of adherence to time-restricted eating. *Appetite*, *178*(106266), 106266. https://doi.org/10.1016/j.appet.2022.106266

O'Neal, M. A., Gutierrez, N. R., Laing, K. L., Manoogian, E. N. C., & Panda, S. (2022). Barriers to adherence in time-restricted eating clinical trials: An early preliminary review. *Frontiers in Nutrition*, *9*, 1075744. https://doi.org/10.3389/fnut.2022.1075744

Rathomi, H. S., Mavaddat, N., Katzenellenbogen, J. M., & Thompson, S. C. (2025). "It just made sense to me!" A Qualitative Exploration of Individual Motivation for Time-Restricted Eating. *Appetite*, *204*(107751), 107751. https://doi.org/10.1016/j.appet.2024.107751

Regmi, P., & Heilbronn, L. K. (2020). Time-restricted eating: Benefits, mechanisms, and challenges in translation. *iScience*, *23*(6), 101161. https://doi.org/10.1016/j.isci.2020.101161

Rosenstock, I. M. (1974). The health belief model and preventive health behavior. *Health Education Monographs*, *2*(4), 354–386. https://doi.org/10.1177/109019817400200405

Taflinger, S., & Sattler, S. (2024). A situational test of the health belief model: How perceived susceptibility mediates the effects of the environment on behavioral intentions. *Social Science & Medicine (1982)*, *346*(116715), 116715. https://doi.org/10.1016/j.socscimed.2024.116715

Tavakoli, H. R., Dini-Talatappeh, H., Rahmati-Najarkolaei, F., & Gholami Fesharaki, M. (2016). Efficacy of HBM-based dietary education intervention on knowledge, attitude, and behavior in medical students. *Iranian Red Crescent Medical Journal*, *18*(11), e23584. https://doi.org/10.5812/ircmj.23584

Urbanovich, T., & Bevan, J. L. (2020). Promoting environmental behaviors: Applying the health belief model to diet change. *Environmental Communication*, *14*(5), 657–671. https://doi.org/10.1080/17524032.2019.1702569

Vitaterna, M. H., Takahashi, J. S., & Turek, F. W. (2001). Overview of circadian rhythms. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism*, *25*(2), 85–93.

Varady, K. A., & Hellerstein, M. K. (2007). Alternate-day fasting and chronic disease

prevention: a review of human and animal trials. *The American Journal of Clinical Nutrition*, *86*(1), 7–13. https://doi.org/10.1093/ajcn/86.1.7

Wang, T., Ren, M., Shen, Y., Zhu, X., Zhang, X., Gao, M., Chen, X., Zhao, A., Shi, Y., Chai, W., Liu, X., & Sun, X. (2019). The association among social support, self-efficacy, use of mobile apps, and physical activity: Structural equation models with mediating effects. *JMIR mHealth and uHealth*, *7*(9), e12606. https://doi.org/10.2196/12606

West, J. H., Belvedere, L. M., Andreasen, R., Frandsen, C., Hall, P. C., & Crookston, B. T. (2017). Controlling your "app"etite: How diet and nutrition-related mobile apps lead to behavior change. *JMIR mHealth and uHealth*, *5*(7), e95. https://doi.org/10.2196/mhealth.7410

Wilkinson, M. J., Manoogian, E. N. C., Zadourian, A., Lo, H., Fakhouri, S., Shoghi, A., Wang, X., Fleischer, J. G., Navlakha, S., Panda, S., & Taub, P. R. (2020). Ten-hour time-restricted eating reduces weight, blood pressure, and atherogenic lipids in patients with metabolic syndrome. *Cell Metabolism*, *31*(1), 92-104.e5. https://doi.org/10.1016/j.cmet.2019.11.004

Yang, L., Li, K., Liang, Y., Zhao, Q., Cui, D., & Zhu, X. (2021). Mediating role diet self-efficacy plays in the relationship between social support and diet self-management for patients with type 2 diabetes. *Archives Belges de Sante Publique [Archives of Public Health]*, *79*(1), 14. https://doi.org/10.1186/s13690-021-00533-3

Appendix A

AI Statement

During the preparation of this work the author (Danica Müller) used ChatGPT in order to:

1. Brainstorm and ideation
2. Receive feedback on structure and flow
3. Develop and test argumentation
4. Copy-editing, including minor revisions for conciseness and clarity of writing and reformatting references.

After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.

Appendix B

Information Sheet for Study "How Individuals with No Prior Experience Evaluate Time-Restricted Eating (TRE) Through the Lens of the Health Belief Model"

Purpose of the Research

You are invited to participate in a research study conducted as part of my bachelor thesis at the University of Twente. The study aims to examine how individuals with no prior Experience to Time-Restricted Eating (TRE) evaluate perceived health risks, expected benefits, barriers, and self-efficacy. Your participation will help to contribute to a better understanding of the expectations to TRE. To achieve this goal an interview will be conducted. The interview will last around 30 minutes.

This research has been reviewed and approved by the BMS Ethics Committee of the University of Twente (Humanities & Social Sciences domain) to ensure it meets ethical guidelines.

Inclusion Criteria

To participate in this study, you must meet the following criteria:

- You are 18 years of age or older
- You have no prior experience with TRE, specifically with an 8h restricted eating period during daytime
- You are fluent in English or German

If you do not meet these criteria, you are not eligible to participate in this study.

Benefits: While there may be no direct benefits for you, your participation will contribute to academic research and may provide valuable insights for future studies.

Risks: There are no known risks associated with participating in this study. However, if you feel uncomfortable at any time, you may withdraw without consequences.

Voluntary Participation and Withdrawal

Your participation is voluntary. You may choose to withdraw at any time without providing a reason and without negative consequences. If you decide to withdraw, any data collected from you will be deleted.

Collection and Protection of Your Data

This study will collect audio-recorded interviews and anonymised transcripts. Your responses will be treated confidential and anonymised, meaning all personal identifiers (e.g. your name or where you live) will be removed or replaced with general terms.

You have the right to access, correct, or request the deletion of your data before anonymisation.

If you wish to exercise any of these rights, please contact:

Danica Müller, d.muller-2@student.utwente.nl

Use of Your Data

Your anonymised data will be used for academic purposes and will not be shared with third parties in an identifiable form.

All data will be stored securely on the University of Twente's OneDrive and will be accessible only to authorised researchers.

After the study, anonymised transcripts will be archived in the UT-Student Theses Repository to allow future research and learning.

The findings of this research may be published in my bachelor thesis and could be used in academic publications or presentations.

Retention Period of Your Data

Your anonymised data will be retained for a minimum of 10 years in accordance with the guidelines of the University of Twente.

Contact Information

If you have any questions about this research or if you are interested in the research results, please contact:

Researcher: Danica Müller – d.muller-2@student.utwente.nl

Supervisor: dr. Annemarie Braakman-Jansen - l.m.a.braakman-jansen@utwente.nl

For ethical concerns you may contact:

Ethics Committee/domain Humanities & Social Sciences of the Faculty of BMS at the University of Twente - ethicscommittee-hss@utwente.nl

Consent Form for Study "How Individuals with No Prior Experience Evaluate Time-Restricted Eating (TRE) Through the Lens of the Health Belief Model"

Please tick the appropriate boxes

Yes No

Taking part in the study

I have read and understood the study information dated [/ /], or it has been read to me.

I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I confirm to meet the following criteria to participate in this study:

- I am 18 years of age or older.
- I have no prior experience with Time-Restricted Eating (TRE), specifically with an 8-hour restricted eating period during the daytime.
- I am fluent in English or German.

By checking the boxes, I confirm that I meet the criteria outlined above and am eligible to participate in the study.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions, and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves an audio-recorded interview, where your responses will be captured through voice recording for later text transcription and analysis. The audio recording will be deleted after the transcript has been created.

Use of the information in the study

I understand that information I provide will be used for a bachelor thesis. The findings will also contribute to an academic report, and presentation. Additionally, the findings may also contribute to further research, ensuring confidentiality is maintained.

I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team.

I agree that my information can be quoted in research outputs

Consent to be Audio/video Recorded

I agree to be audio recorded.

Future use and reuse of the information by others

I give permission for the anonymised transcript that I provide to be stored in the One Drive of the University of Twente for internal use and archived in the UT Student Theses Repository so it may be used for future research and learning.

The data will be deposited in the form of anonymised transcripts, where all personal identifiers, such as names, locations, and any other identifying details, will be removed or replaced with generic descriptors. Access to the deposited data will be subject to the following restrictions: It will be available for educational purposes only and in anonymised form only.

I agree that my anonymised information may be shared with other researchers for future research studies that are similar to this study. The shared information will not include any details that can directly identify me. Researchers will not contact me for any follow-up studies.

Retention of the data

I understand that my anonymised data will be retained for 10 years in accordance with the guidelines of the University of Twente. This retention period is in place to ensure the research's validity and reproducibility, following ethical and research best practices. After this period, my data will be securely deleted, unless required for longer-term archiving under specific circumstances.

Signatures

_____	_____	_____
Name of participant	Signature	Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Danica Müller _____ _____ _____

Researcher name Signature Date

Study contacts details for further information:

Danica Müller
d.muller-2@student.utwente.nl

Contact Information for Questions about Your Rights as a Research Participant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities & Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-hss@utwente.nl

Appendix C

Semi-structured Interview Guide

Topic	**Question/Prompt**
General Experience	Can you tell me about your previous experiences with dieting - *What methods have you tried in the past? And what was your experience?* - *What were your considerations in choosing a particular method to control your weight?*
TRE	Have you ever heard of time-restricted eating? - *If yes: What do you know about it?* - *If no: Explanation* Time-restricted eating (TRE) is a diet form where the daily calorie intake is limited to around 6-10 hours during the active phase of the day. Thereby, the existing eating behaviour, i.e. food choice and portions, is often not altered in the first place, as the focus is to maintain the body's natural circadian rhythm (day and night rhythm). Adherence to the circadian rhythm, not only in nutrition, brings various bodily benefits, which is why TRE is carried out for a variety of reasons. What are your initial thoughts about TRE? Do you know someone who tried TRE? Reasons for TRE: Can you tell me what could be reasons to start TRE? What would hold you back from trying TRE?
Perceived health risks	Can you think of health risks that could lead someone to try TRE? - *How likely would you be in this situation?*
Experiences	If you would practice TRE, what would be your daily experiences? How would you structure your typical day when practising TRE?

	- *Is it always the same between days, or there is difference, for example weekdays and weekend?*
Perceived Benefits	What are benefits you would expect from TRE? - *What are the advantages of TRE in your opinion compared to other methods?*
Perceived Barriers	What are the obstacles/challenges that you would assume to experience doing TRE? - *How would you handle them?* - *How would you feel when you do not stick to your TRE plan (e.g. guilty)?*
Social life/Support	What impact would you on your social life when doing TRE? How does it fit with your culture? What would your surrounding (e.g. Family/Friends) think if you would start TRE? - Would they *support you or push back?* - *How important is support to you?*
Future	What are your final perceptions about TRE? - *Pro/Cons?*
Self-efficacy	If you decided to try TRE, how confident do you feel in your ability to follow it? - *What support or resources would help you feel more confident in adopting TRE?*
Closing	Based on what we've discussed, do you think TRE is something you would consider trying? - *Why or why not?* Is there anything else you would like to add about your thoughts on TRE?