

## Determinants of Obesity Control Behavior in the Oil and Gas Industry: A Review Integrating the Theory of Planned Behavior with Occupational Health Factors

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### Abstract

*The rising prevalence of obesity among the workforce poses a significant challenge, particularly within high-demand industrial sectors like oil and gas. While the Theory of Planned Behavior (TPB) provides a robust framework for understanding health intentions, its application often overlooks potent, context-specific occupational factors. This narrative review aims to synthesize literature on the determinants of obesity control among workers by integrating the core constructs of the TPB with critical findings from occupational health science. A literature search was conducted focusing on studies from 2015-2025 related to the TPB, workplace health, work stress, fatigue, and social culture, particularly in industrial settings. The review finds that while attitude, subjective norms, and perceived behavioral control are key predictors, their effects are significantly influenced by workplace realities. Specifically, work-related fatigue, often exacerbated by long hours or shift work, creates a gap between intention and behavior. High occupational stress can trigger automatic unhealthy eating patterns as a coping mechanism. Furthermore, the unique social culture within industrial workplaces provides powerful, immediate pressure that shapes choices through social identity and descriptive norms. As a synthesis of the reviewed evidence, this article presents an integrated conceptual framework that illustrates the complex interplay between these psychosocial and occupational determinants. This framework provides a more holistic understanding and can serve as a guide for future research and the development of more effective wellness interventions in demanding industrial environments.*

**Keywords :** Occupational Health: Obesity: Oil and Gas Industry: Theory of Planned Behavior: Workplace Health

## 1. INTRODUCTION

The global obesity epidemic continues to be a major public health challenge, with a significant and growing impact on the adult workforce (Goettler et al., 2017; World Health Organization, 2024). The issue is particularly pronounced in high-demand industrial sectors, none more so than the oil and gas industry, where unique work conditions contribute to an elevated risk of obesity and related non-communicable diseases (NCDs) (Lunde et al., 2022; Saeidpour et al., 2021).

A prime example of this complex environment can be seen within PT. Pertamina (Persero), Indonesia's state-owned enterprise that manages the nation's vast and critical energy resources from upstream exploration to downstream distribution (PT. Pertamina (Persero), 2024a). The operational environment in this sector is often characterized by high-pressure performance targets, long working hours, and for many, remote or shift-based schedules that disrupt normal physiological rhythms (Saeidpour et al., 2021). As a leading national company, Pertamina emphasizes a strong commitment to employee well-being through comprehensive Health, Safety, and Environment (HSE) policies, which are integral to its operational sustainability (PT. Pertamina (Persero), 2024b).

Despite these formal commitments to health, lifestyle-related challenges persist. Preliminary observations within one of its units, EP CEPU Zona 11, indicated a high prevalence of BMI-related issues among its workforce. A notable paradox was also reported: despite the availability of comprehensive sports facilities, many employees cited work-related fatigue as a primary barrier to their utilization. This specific case is not an anomaly but rather an illustration of a systemic issue within the broader industry. It highlights a critical gap between corporate wellness provisions and the complex reality of employee behavior, demonstrating the urgent need for a deeper understanding of the factors at play.

Therefore, this review aims to synthesize existing literature on the determinants of obesity control among workers in demanding environments. We use the Theory of Planned Behavior (TPB) as a foundational framework to structure and integrate key psychosocial determinants with critical occupational health factors (Ajzen, 1991). The goal is to provide a more holistic conceptual framework that can explain the challenges observed in settings like Pertamina and guide the development of more effective interventions.

## 2. METHOD

This study uses a qualitative approach with a literature study method. The instrument is the author's observation through a literature search corresponding to the discussed problem topic. The subjects of this article are international and national journals from previously conducted and published research, providing secondary data. The procedure for this study is as follows:

### 2.1 Problem Formulation

The author determines the problems to be discussed, focusing on the determinants of obesity control behavior in demanding workplace settings.

### 2.2 Literature Search

The author conducted a search for information sources from academic databases (including PubMed, Google Scholar, Scopus) for peer-reviewed articles published between 2015-2025. Keywords included "Theory of Planned Behavior", "obesity", "workplace", "oil and gas industry", "shift work", "work-related fatigue", "occupational stress", and "workplace social culture".

### 2.3 Data Evaluation

The author evaluates the content of the obtained research journals for their relevance to psychosocial and occupational determinants of health behaviors in industrial or comparable work environments.

### 2.4 Data Analysis and Interpretation

The data analysis technique used is content analysis. The results from different fields of study are synthesized to build a coherent understanding of the interplay between various determinants, culminating in an integrated conceptual framework.

## 3. RESULT AND DISCUSSION

### 3.1 Psychosocial Determinants through the Lens of the TPB

The literature consistently supports the TPB's utility in explaining the cognitive antecedents of health behavior among employees. The theory's strength lies in its structured approach to understanding how intentions are formed. A deeper analysis of its core components reveals important nuances relevant to the workplace context.

## 3.1.1 Attitude

Attitude is an individual's overall evaluation of a behavior. This evaluation comprises two distinct sub-dimensions: instrumental attitude (cognitive assessment of the behavior's usefulness and outcomes) and affective attitude (emotional assessment of whether the behavior is pleasant or unpleasant) (Conner & Norman, 2023). In a work context, an employee might hold a positive instrumental attitude, believing that exercise is beneficial for their long-term health. However, their affective attitude may be negative, viewing exercise as an unenjoyable chore after a long and tiring workday. This internal conflict between "knowing it's good for me" and "not feeling like doing it" is a critical barrier, and research suggests that affective attitudes can often be a stronger predictor of immediate behavioral intention than instrumental beliefs (Rhodes et al., 2019).

## 3.1.2 Subjective Norm

This construct reflects perceived social pressure. It is also composed of two key components: injunctive norms (perceptions of what significant others think one should do) and descriptive norms (perceptions of what others are actually doing) (Cialdini et al., 1990). In an organization, management might promote an injunctive norm through official health policies and emails encouraging healthy lifestyles. However, if the observable descriptive norm among colleagues involves frequent consumption of unhealthy snacks during breaks, the latter often exerts a more powerful influence on an individual's behavior (Rivis & Sheeran, 2003). This discrepancy between what is officially encouraged and what is culturally practiced is a major source of conflict for employees.

## 3.1.3 Perceived Behavioral Control (PBC)

PBC refers to an individual's perception of their ability to perform a behavior. This concept encompasses both self-efficacy (belief in one's own capabilities) and controllability (belief about the extent to which the behavior is under one's voluntary control) (Ajzen, 2002). For example, an oil and gas worker might have high self-efficacy, feeling personally capable of following a diet plan. However, they may perceive low controllability over their food choices when working on a remote rig where meals are provided by a catering service. Similarly, unpredictable work schedules or mandatory overtime can severely limit an employee's perceived control over their ability to engage in regular physical activity, even if they feel physically capable.

## 3.2 Critical Occupational Factors Influencing Health Behaviors

While the TPB provides the psychosocial foundation, our review identified three critical occupational factors that profoundly influence these cognitions and behaviors, particularly in the oil and gas industry.

### 3.2.1 The Impact of Work-Related Fatigue

In the oil and gas industry, long and irregular work schedules, such as 12-hour shifts and rotational work (e.g., two weeks on, two weeks off), are common and are primary contributors to fatigue (Di-Corso et al., 2023). This is not merely tiredness; it involves significant circadian rhythm disruption, which impairs both physical and cognitive functions (Caruso, 2014). The mechanism behind this can be understood through the lens of self-regulatory resource depletion, often termed 'ego depletion' (Inzlicht et al., 2017). The sustained mental and physical effort required during a long shift depletes the finite cognitive resources needed for self-control, leaving employees with little capacity to execute physically or mentally demanding health behaviors after their shift, regardless of their prior intentions (Hagger et al., 2010). This state of fatigue promotes choices that offer immediate gratification and require minimal effort, such as consuming readily available, energy-dense foods provided in mess halls, rather than seeking out healthier options (Lowden et al., 2021). This explains why the intention-behavior gap is so prevalent among rotational and shift workers in this sector.

### 3.2.2 The Influence of Workplace Social Culture

The social environment on remote sites like offshore platforms or drilling camps fosters a unique and powerful micro-culture, often characterized by a "work-hard, play-hard" ethos and strong masculine norms (Mearns & Flin, 1999). The influence of this culture can be analyzed through Social Identity Theory, where participating in communal rituals especially shared meals serves to affirm one's identity as part of the "in-group" (Melnyk & Kelly, 2018). Declining such an invitation may be perceived as a social rejection. As discussed, the power of descriptive norms (observing what colleagues actually do) often outweighs injunctive norms (beliefs about what one should do) (Cialdini et al., 1990). In a setting where large, hearty meals are seen as a deserved reward after a hard day's work, the observable behavior of the group creates a powerful script that is difficult for an individual to resist, even if they hold personal intentions to eat more healthily (Robinson et al., 2015).

### 3.2.3 The Role of Work Stress as a Behavioral Trigger

The oil and gas industry is inherently high-stress, with workers facing a unique combination of physical risks, high-stakes responsibility for expensive equipment, and psychosocial stressors like job insecurity due to market volatility and long periods of isolation from family (Hossain et al., 2021; Saeidpour et al., 2021). The link between this specific occupational stress and unhealthy eating is not merely psychological but also physiological. Chronic stress increases levels of the hormone cortisol, which stimulates appetite for hyper-palatable foods (Tomiya, 2019). Cognitively, stress imposes a high mental load that impairs executive functions governed by the prefrontal cortex. This impairment hinders rational decision-making and impulse control, allowing more automatic, habit-driven responses such as turning to comfort food as a coping mechanism to bypass an individual's conscious health intentions (Adam & Epel, 2017).

## Discussion

### 3.3 Synthesis and the Integrated Framework

The evidence reviewed indicates that a linear, additive application of the TPB is insufficient without accounting for the dynamic and interactive nature of the workplace's contextual variables. The integrated conceptual framework emerging from this synthesis reveals a system of competing goals and depleting resources. At its core, the framework follows the TPB, where an employee's Attitude, Subjective Norm, and PBC shape their Intention. However, this rational process is continuously challenged.

The model highlights several key interactions. Work Stress does not merely lower PBC; it actively alters an employee's cognitive landscape. By increasing cognitive load and promoting emotional dysregulation, chronic stress can shift an employee's Attitude, promoting a dominant affective desire for comfort that makes unhealthy food a perceived coping tool, thus overriding a positive instrumental view of health (Klatzkin et al., 2018).

Furthermore, these factors create a debilitating vicious cycle. As supported by literature on occupational health, high work stress often disrupts sleep patterns, which directly leads to increased Work-Related Fatigue (Pereira & El-Akreimi, 2022). This fatigue, in turn, depletes the self-regulatory resources necessary to manage the next day's stressors, thus perpetuating the cycle and making employees more susceptible to impulsive behaviors.

Finally, the framework illustrates a system of competing goals (Gillebaart & de Ridder, 2015). The primary goal of health maintenance often competes with more immediate workplace goals: the goal of productivity (leading to stress and fatigue), the goal of social belonging (driving conformity to unhealthy cultural norms), and the fundamental goal of energy conservation (making sedentary choices preferable when fatigued). The ultimate health behavior is therefore not just a product of rational intention, but the outcome of how these competing goals are resolved within a resource-

depleted state. Work-Related Fatigue acts as the critical moderator, weakening the translation of health Intentions into Behavior precisely because it depletes the resources needed to prioritize the health goal over more immediate ones.

### 3.4 Practical Implications for the Oil and Gas Industry

The integrated framework has direct, actionable implications for companies like PT. Pertamina, moving beyond generic wellness advice to targeted, evidence-based strategies.

#### 3.4.1 Addressing Work-Related Fatigue

Implementing a systematic Fatigue Risk Management System (FRMS) is paramount (Gander et al., 2011). This is not merely about suggesting more sleep, but involves a multi-layered approach. It includes educating workers on sleep hygiene specific to rotational schedules to manage circadian disruption effectively. Operationally, it means optimizing shift designs based on ergonomic principles, such as favoring forward-rotating shifts and ensuring legally compliant rest periods are strictly enforced to allow for physiological recovery. Furthermore, providing adequate rest facilities, such as quiet, dark sleeping quarters on-site, becomes a critical engineering control rather than just a perk.

#### 3.4.2 Cultivating a Healthy Social Culture

Interventions must be two-pronged to be effective. A top-down approach is essential, where leadership actively models healthy choices. The principle of social modeling suggests that employees are more likely to adopt behaviors they see demonstrated by influential figures (Bandura, 2001). When a site manager consistently chooses the healthier meal option, it sends a powerful cultural signal. This must be complemented by a bottom-up strategy, such as establishing peer-led "Wellness Champions" programs. These champions, trained volunteers from the workforce, can promote health norms organically by organizing group fitness challenges or advocating for healthier options in the company canteen, leveraging peer influence in a positive direction (O'Donnell, 2017).

#### 3.4.3 Managing Occupational Stress

Companies should offer comprehensive and accessible mental health support. This includes providing confidential Employee Assistance Programs (EAPs), which have been shown to improve workplace outcomes by giving employees a safe space to seek professional counseling for work and personal issues (Richmond et al., 2017). Additionally, proactive, evidence-based workshops on mindfulness and resilience can equip employees with practical coping skills, such as breathing techniques and cognitive reframing, to manage the acute stressors inherent to the industry (Vonderlin et al., 2020). Training managers to recognize early signs of burnout and to foster a psychologically safe environment is another critical layer of defense against chronic stress.

### 3.5 Limitations and Future Research Directions

This review has several limitations that open avenues for future research. As a narrative review, it does not involve a systematic quantitative analysis of effect sizes, and there is potential for subjectivity in literature selection. Secondly, the proposed framework is conceptual and requires empirical validation.

Therefore, we propose the following directions for future research:

#### 1) Quantitative Validation

Conduct cross-sectional studies in oil and gas settings to statistically test the pathways proposed in the integrated framework using methods like Structural Equation Modeling (SEM).

#### 2) Longitudinal Studies

Implement longitudinal research to track workers over time, assessing how fluctuations in stress, fatigue, and work schedules dynamically impact their health intentions and behaviors.

### 3) Intervention Research

Design and evaluate the effectiveness of multi-component interventions based on this framework, using quasi-experimental or randomized controlled trial designs to measure real-world impact on health outcomes.

## 4. CONCLUSION

This review synthesizes evidence showing that employees' obesity-related health behaviors in the oil and gas industry are determined by a complex interplay of psychosocial and occupational factors. The integrated framework, derived from the literature, demonstrates that while the TPB offers a vital lens, its predictive power is enhanced when contextualized with the workplace realities of stress, fatigue, and social culture. The practical implications for companies such as PT. Pertamina are clear. The underutilization of wellness facilities is likely not due to a lack of interest, but is a symptom of deeper systemic issues. Therefore, effective interventions must be multifaceted, moving beyond simple education to include robust fatigue and stress management systems, alongside initiatives to foster a healthier social culture. This holistic approach holds the greatest promise for fostering sustainable health behavior change.

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