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Article

Examining gender disparities in obesity clinic utilization: An analysis of sex and gender influences via the X.0 wave theory

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Abstract: Background: Obesity is a growing global health issue with significant social, psychological, and physical consequences. Despite a higher prevalence of obesity among men, women have historically been the predominant patients in obesity treatment centers. However, recent trends show an increasing male involvement in bariatric surgery. Understanding the motivations and societal influences driving these gender-based differences is critical to addressing obesity treatment disparities. **Objectives:** This paper investigates gender disparities in obesity clinic utilization and bariatric surgery motivations through the lens of the X.0 Wave Theory, as a comprehensive framework conceived, invented, introduced, and developed by Prof. Dr. Hamid Mattiello. The X.0 Wave Theory segments human history into transformative epochs characterized by significant advancements in knowledge, technology, and business. These epochs include the Agricultural Age (X.0 = 1.0), the X.0 Wave/Tomorrow Age ($2.1 \leq X.0 \leq 2.2$), and the current Age of Artificial Intelligence (X.0 = 4.0), with projections into the Human Age (X.0 = 5.0) and Transhuman Age (X.0 = 6.0) and beyond. **Methods:** We conducted a survey with 75 participants (69% women, 29% men) to investigate gender-based differences in motivations for seeking bariatric surgery. The survey captured various factors, including aesthetic concerns, health reasons, self-confidence, and quality of life, alongside the influence of societal pressures and social media. **Results:** The findings revealed distinct gender-based differences in motivations. Women primarily cited aesthetics, self-confidence, and social pressures, while men were more focused on health concerns and improving quality of life. The study also highlighted that women faced greater societal expectations and were more likely to engage with social media for information regarding treatment options. **Discussion:** The X.0 Wave Theory offers valuable insights into how emerging technological, social, and cultural waves influence decision-making in bariatric surgery. By understanding these gender disparities within the context of shifting societal norms and digital engagement, this study advocates for the development of gender-sensitive interventions in obesity management. The findings underscore the importance of addressing these differences to improve treatment approaches and outcomes. This research also offers predictions on how future technological and societal shifts may continue to shape gender disparities in healthcare decisions.

Keywords: bariatric surgery; gender differences; obesity treatment; health motivations; aesthetic concerns; societal pressure; social media influence; patient demographics; gender disparities; obesity clinic utilization; the X.0 wave theory; motivations for surgery; health and aesthetics

1. Introduction

Obesity has increasingly become a chronic condition over recent decades, with its prevalence doubling in Switzerland over the past 30 years [1–3]. Despite growing

recognition of obesity as a serious health issue, it is often still perceived primarily as a "lifestyle problem" rather than a chronic disease. Globally, obesity is recognized as a significant public health issue, with its prevalence rising annually. The World Health Organization (WHO) categorizes obesity into three grades: Grade I (BMI 30–34.9 kg/m^2), Grade II (BMI 35–39.9 kg/m^2), and Grade III (BMI $\geq$ 40 kg/m^2), with surgical intervention typically indicated from Grade II onwards [4].

Technological advancements in surgical techniques continue to progress, yet misconceptions about bariatric surgery persist among obese patients, often due to fears of invasive procedures and potential outcomes. Globally, the prevalence of obesity is rising annually, with rates among men in Switzerland increasing from 6% in 1992 to 13% as of 31 January 2024, and among women from 5% to 11% [5]. Although the COVID-19 pandemic heightened awareness of obesity's role as a risk factor for severe health outcomes, this shift in perception has been modest. Despite these advancements, many still view obesity mainly as a lifestyle problem. Recent advancements in obesity treatment, particularly the development of GLP-1 receptor agonists (Glucagon-like Peptide-1 analogs), have attracted significant media attention. These medications, which enhance insulin secretion, inhibit glucagon release, and promote satiety by slowing gastric emptying, offer a less invasive alternative to traditional treatments and have encouraged more patients to seek help at obesity centers [6]. However, bariatric surgery remains the most effective and sustainable treatment, especially for obesity classified as WHO Grade II–III [7,8].

Despite the higher prevalence of obesity among men, women are more likely to seek treatment and surgical interventions at obesity centers. This discrepancy is particularly interesting, given the higher obesity rates among men, yet women tend to seek help more frequently.

This disparity may stem from different fat distribution patterns, with men often accumulating more visceral fat, which is associated with a higher prevalence of metabolic syndrome. Consequently, there has been a shift from standardized treatment approaches to more tailored therapies [7,8]. Obesity significantly raises the risk of various diseases, including diabetes mellitus, arterial hypertension, hepatic steatosis, cardiovascular conditions, and certain cancers, particularly in men [9]. Men with substantial visceral fat present unique challenges for surgical interventions, as techniques like gastric bypass may not be feasible due to difficulties in performing a tension-free gastroenterostomy.

This study aims to investigate the gender-based differences in attitudes and motivations influencing treatment decisions at obesity centers. Specifically, it will explore why more women than men seek treatment and whether socio-cultural gender differences further affect these motivations. Utilizing the X.0 Wave Theory, this research analyzes these disparities within the context of evolving social, technological, and cultural waves. The theory provides a framework to understand the influences of societal, technological, and cultural changes on health behaviors and treatment outcomes, helping to explain how these shifts impact gendered patterns of healthcare utilization [9].

2. Background (literature review)

This section provides a comprehensive review of the literature relevant to understanding gender disparities in obesity clinic utilization and bariatric surgery. We examine key concepts and frameworks, including the X.0 Wave Theory, to contextualize the evolving landscape of obesity treatment and the distinct factors influencing patient motivations and behaviors [10].

2.1. Bariatric surgery

Bariatric surgery encompasses various surgical procedures aimed at achieving significant weight loss and managing obesity-related health conditions, including gastric bypass, sleeve gastrectomy, and adjustable gastric banding. Studies have shown mixed findings on gender differences in outcomes and motivations. While both men and women benefit from the procedures, gender-specific motivations for seeking surgery vary, with women more likely to cite aesthetic concerns and men more focused on health-related issues. Understanding these differences is crucial to providing tailored care [11].

2.2. Gender differences

Gender differences in health-seeking behaviors are significant when it comes to obesity treatment. These differences can be influenced by a combination of biological, psychological, and societal factors. Women tend to seek treatment more often than men, motivated by a mix of aesthetic concerns and societal pressures related to body image. In contrast, men's motivations are more commonly health-related, influenced by risk factors like diabetes and cardiovascular disease. The X.0 Wave Theory provides a useful lens to explore how gender roles and expectations have evolved across different societal epochs, particularly in the context of obesity treatment [12].

2.3. Obesity treatment

Obesity treatment is multifaceted, ranging from lifestyle modifications to medical therapies and bariatric surgery. Gender, socioeconomic status, and cultural factors heavily influence which treatments individuals pursue. The societal evolution described by the X.0 Wave Theory, from the Agricultural Age through to the Human Age, has shaped these treatment-seeking behaviors, with each era altering the pressures and motivations that drive people, especially women, to obesity clinics [13].

2.4. Health motivations

Health motivations, such as reducing the risk of chronic diseases and improving overall quality of life, are central to why individuals pursue obesity treatment. The X.0 Wave Theory allows us to understand how technological advancements have altered patient behaviors over time, with shifting societal views on health, wellness, and beauty, often leading women to pursue surgical options in greater numbers than men.

2.5. Aesthetic concerns

Aesthetic concerns often play a key role in the decision to undergo bariatric surgery, especially among women. Social media and media portrayals of the "ideal

body" contribute significantly to these concerns. These influences have evolved in tandem with technological advancements in communication, as outlined in the X.0 Wave Theory. As society moves toward the Intelligence Age (X.0 = 4.0), women face increasing pressures to conform to body ideals, which may explain their overrepresentation in obesity clinics.

2.6. Societal pressure

Societal pressure regarding body image is a powerful motivator for seeking obesity treatment. The X.0 Wave Theory suggests that societal expectations have evolved over time, with gender roles becoming more rigid in certain waves. Women, in particular, face significant pressure to meet specific physical ideals, which may encourage them to seek bariatric surgery, whereas men are more influenced by health-related concerns.

2.7. Social media influence

Social media has had a profound impact on shaping public perceptions of body image. The rise of platforms like Instagram and TikTok has amplified societal pressure, particularly among women, contributing to their increased presence in obesity clinics. The X.0 Wave Theory helps us understand how digital technologies have exacerbated these pressures, leading to increased treatment-seeking behaviors, particularly among women.

2.8. Patient demographics

Demographics such as age, gender, education level, and socioeconomic status play a key role in obesity treatment-seeking behaviors. By applying the X.0 Wave Theory, we can better understand how the shifting social and technological landscape has altered demographic patterns in healthcare utilization, with women often leading in obesity treatment uptake due to a combination of aesthetic concerns and societal pressures [14].

2.9. Gender disparities

Gender disparities in obesity clinic utilization are evident, with women more likely to seek treatment than men, despite higher obesity rates in men. These disparities can be explained by societal expectations, aesthetic concerns, and health motivations, all of which are influenced by the evolving societal waves. The X.0 Wave Theory provides an insightful framework to analyze these disparities, highlighting the cultural, technological, and economic shifts that have shaped the gender gap in healthcare [15].

2.10. Obesity clinic utilization

Obesity clinic utilization is influenced by various factors, including personal motivations, societal pressures, and the availability of treatments. The increasing utilization of bariatric surgery, particularly among women, reflects broader societal trends influenced by technological advancements and cultural shifts, which are key components of the X.0 Wave Theory.

2.11. The X.0 wave/tomorrow age theory or theory of comprehensive everything

The X.0 Wave Theory, developed by Prof. Dr. Hamid Mattiello, offers a comprehensive framework for understanding societal evolution, focusing on how technological, cultural, and economic changes have shaped gender disparities in obesity treatment. The theory categorizes human history into distinct waves, each marked by significant technological advancements that redefine gender roles and societal expectations. In the context of obesity treatment, the theory suggests that the societal pressures that disproportionately affect women have evolved across different waves, from the Agricultural Age to the present Digital Age. It segments history into waves of advancement, from the Agricultural Age (X.0 = 1.0) to the Age of Artificial Intelligence (X.0 = 4.0) and the Human Age (X.0 = 5.0). At the first edge of tomorrow, focusing on human-centric advancements and ethical considerations and the Transhuman Age ($6.0 \leq X.0$). Where technology and biology converge, shaping a new frontier of human evolution. This theory helps contextualize how evolving technological and societal paradigms influence contemporary behaviors and practices, including those related to obesity and healthcare. The future of obesity treatment, as envisioned in the X.0 Wave Theory's Transhuman Age (X.0 = 6.0), may offer more equitable healthcare access and reduced gender disparities through personalized medicine and technology-driven health interventions [16].

2.11.1. The X.0 wave theory: Stages of societal evolution and gender disparities in obesity clinic utilization

The X.0 Wave Theory, also known as the Theory of Comprehensive Everything, is an innovative framework conceived, introduced, and developed by Prof. Hamid Mattiello in 2010. This theory maps the evolution of human behavior, knowledge, technology, business (KTB), and societal structures, offering insights into how shifts in culture, economics, and technology influence behaviors across historical epochs. One key application of the theory is to understand gender disparities in healthcare, specifically in the field of obesity treatment (See **Figure 1**).

Figure 1 is the KTB model and provides a framework for understanding the reciprocal relationship between Knowledge, Technology, and Business across the different ages or waves in the X.0 Wave Theory. These three pillars work together to drive societal evolution, with each wave marking a significant development phase in all three domains.

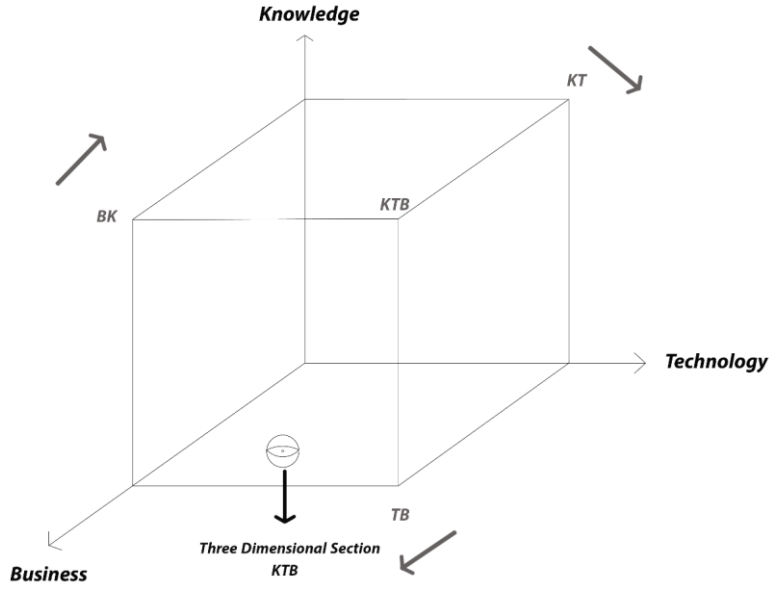

Figure 1. Knowledge, technology, and business (KTB) model. [16,17]

Prof. Mattiello's X.0 Wave/Age Theory uses the Seven Pillars of Sustainability (7PS) model to analyze how transformative innovations across different waves or ages shape societal behaviors and interactions, including health-seeking patterns between men and women. These waves capture significant technological advancements that redefine societal roles, expectations, and the utilization of healthcare services. The framework's KTB model allows for an in-depth exploration of how each age has influenced gender dynamics in obesity clinic utilization (See **Figure 1**).

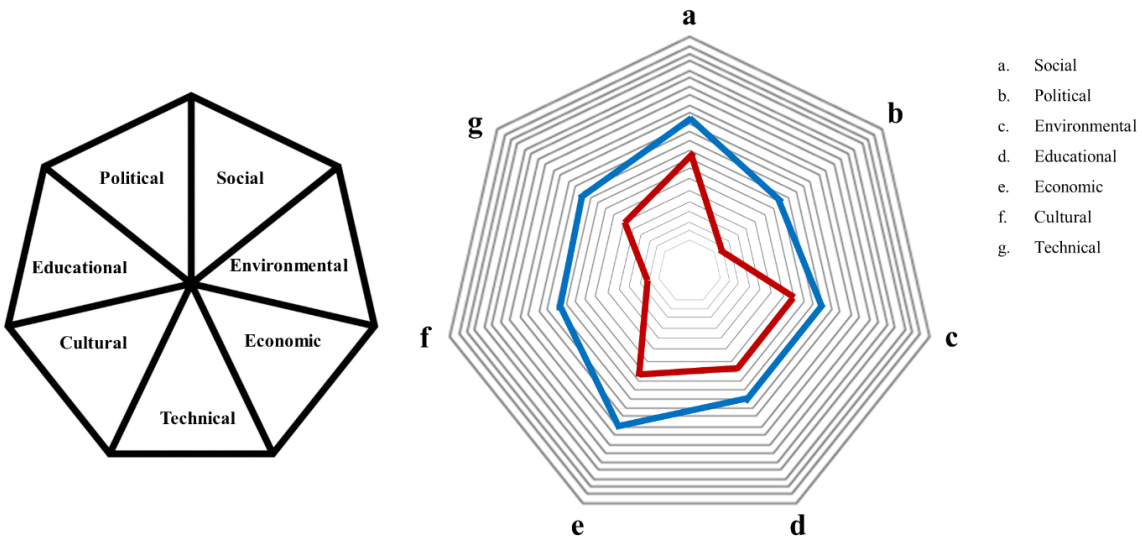

Figure 2. Spider diagram of the seven pillars of sustainability (7PS) model [16,17].

The findings revealed distinct gender-based differences in motivations. Women primarily cited aesthetics, self-confidence, and social pressures, while men were more focused on health concerns and improving quality of life (See **Figures 2** and **3**). The study also highlighted that women faced greater societal expectations and were more likely to engage with social media for information regarding treatment options.

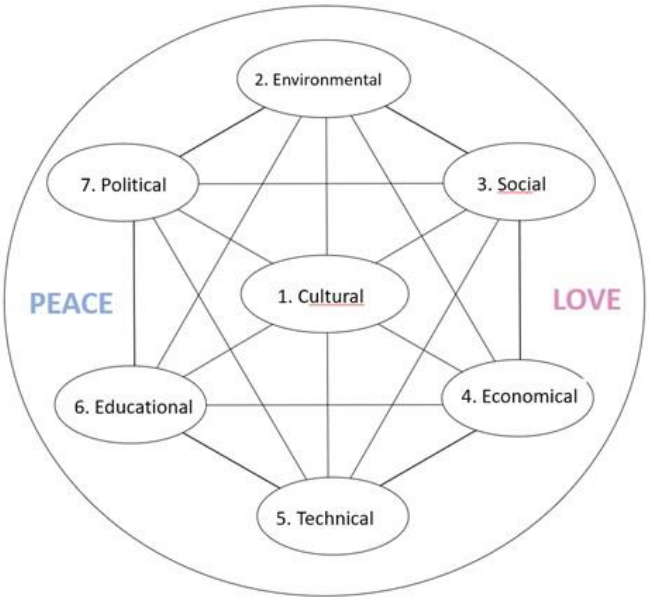

Figure 3. The seven pillars of sustainability (7PS) model, connections, priorities, and values (peace & love) [16,17].

2.11.2. The X.0 waves of civilization

The X.0 Wave Theory divides the evolution of human civilization into distinct waves, each marked by major technological advancements and societal shifts. The key waves include:

1) X.0 = 1.0—The Cognition and Agricultural Age: This wave signifies the beginning of structured societies, with agriculture establishing traditional gender roles. Men's and women's roles were clearly divided between fieldwork and domestic tasks. Healthcare, focused on survival, offered little distinction in gender-based health-seeking behaviors, with obesity being a rare concern.
2) X.0 = 2.0—The Industrial Age: Marked by the 1st and 2nd Industrial Revolutions, this age saw a shift in societal structures. While technological advancements began to reshape work environments, they also solidified societal expectations around gender roles. Women faced increasing pressure regarding physical appearance, leading to early disparities in how they accessed healthcare, particularly for appearance-related concerns such as obesity.
3) X.0 = 3.0—The Information Age/Post-Industrial Age: Introduced by Alvin Toffler's "Third Wave", the Information Age redefined global interactions and gender dynamics, especially in the workplace. Women's entry into the workforce was accompanied by heightened societal pressures on appearance, further contributing to their overrepresentation in obesity treatment facilities.
4) X.0 = 4.0—The Intelligence Age (Digitalization Age): This wave brought advances in artificial intelligence, biotechnology, and virtual reality, transforming healthcare systems and societal expectations. Women continue to experience heightened pressure due to social media, driving them to seek medical interventions for obesity at higher rates than men. In contrast, men are increasingly motivated by health awareness and access to digital health tools.
5) X.0 = 5.0—The Human Age or The Age of Integration: Based on Prof. Mattiello's 5th Wave/Tomorrow Age Theory, this wave marks the integration of

technology with human biology. Personalized healthcare driven by AI begins to reduce the gender gap in healthcare access, offering more tailored interventions for obesity that are less influenced by societal pressures.

2.11.3. X.0 = 6.0—The transhuman age or the age of imagination

In this future wave, the integration of human capabilities with advanced technology will redefine healthcare systems entirely. Prof. Mattiello's X.0 Wave Theory envisions a future where gender disparities in healthcare, including obesity treatment, may be eradicated through personalized medicine and equitable access to technology-driven health interventions.

2.11.4. Clinical applications: Understanding gender disparities in obesity clinic utilization

- The X.0 Wave Theory offers a powerful lens for analyzing how societal and technological changes shape gender disparities in healthcare utilization, particularly in obesity clinics. For example, during the Intelligence Age (X.0 = 4.0), the rise of social media has disproportionately impacted women, leading to heightened societal expectations around body image and overrepresentation in obesity clinics. Conversely, men's motivations for seeking obesity treatment have evolved, driven more by health awareness than appearance (See **Figure 4**).
- Clinicians like Dr. med. Diana Mattiello, Senior Physician Surgery at Limmattal Hospital, Switzerland, and her husband Prof. Dr. Hamid Mattiello can apply the X.0 Wave Theory to tailor obesity treatments that address both the physica**l** and psychological needs of patients. By understanding the gender-specific influences of each societal wave, clinicians can craft more effective interventions that resonate with the underlying motivations driving treatment-seeking behavior in men and women.
- For example, the Human Age (X.0 = 5.0) heralds the integration of AI-driven personalized medicine, offering new opportunities to minimize gender disparities. As healthcare becomes more personalized and equitable, societal pressures that disproportionately affect women's health decisions may diminish, allowing for a more balanced and inclusive approach to obesity treatment (See **Figure 4**).
- Research Opportunities: Investigating Gender Disparities via the X.0 Wave Theory: Collaborating with the authors of this paper could explore these insights in a research project titled "Examining gender disparities in obesity clinic utilization: An analysis of sex and gender influences via the X.0 Wave Theory". This study would investigate how historical waves have shaped gender-specific health-seeking behaviors and predict how future waves, particularly the Transhuman Age (X.0 = 6.0), could minimize these disparities (See **Figure 4**).
- As AI-driven personalized healthcare becomes the norm, there is potential for gender disparities in obesity treatment to be significantly reduced, providing equitable access to healthcare for both men and women. The X.0 Wave Theory offers a comprehensive framework for understanding these shifts and preparing for a more inclusive future in healthcare.

- Motivations for Surgery: Motivations for surgery encompass the various reasons individuals pursue surgical interventions, including health-related, aesthetic, and psychological factors. Understanding these motivations is key to addressing patient needs and improving treatment outcomes.

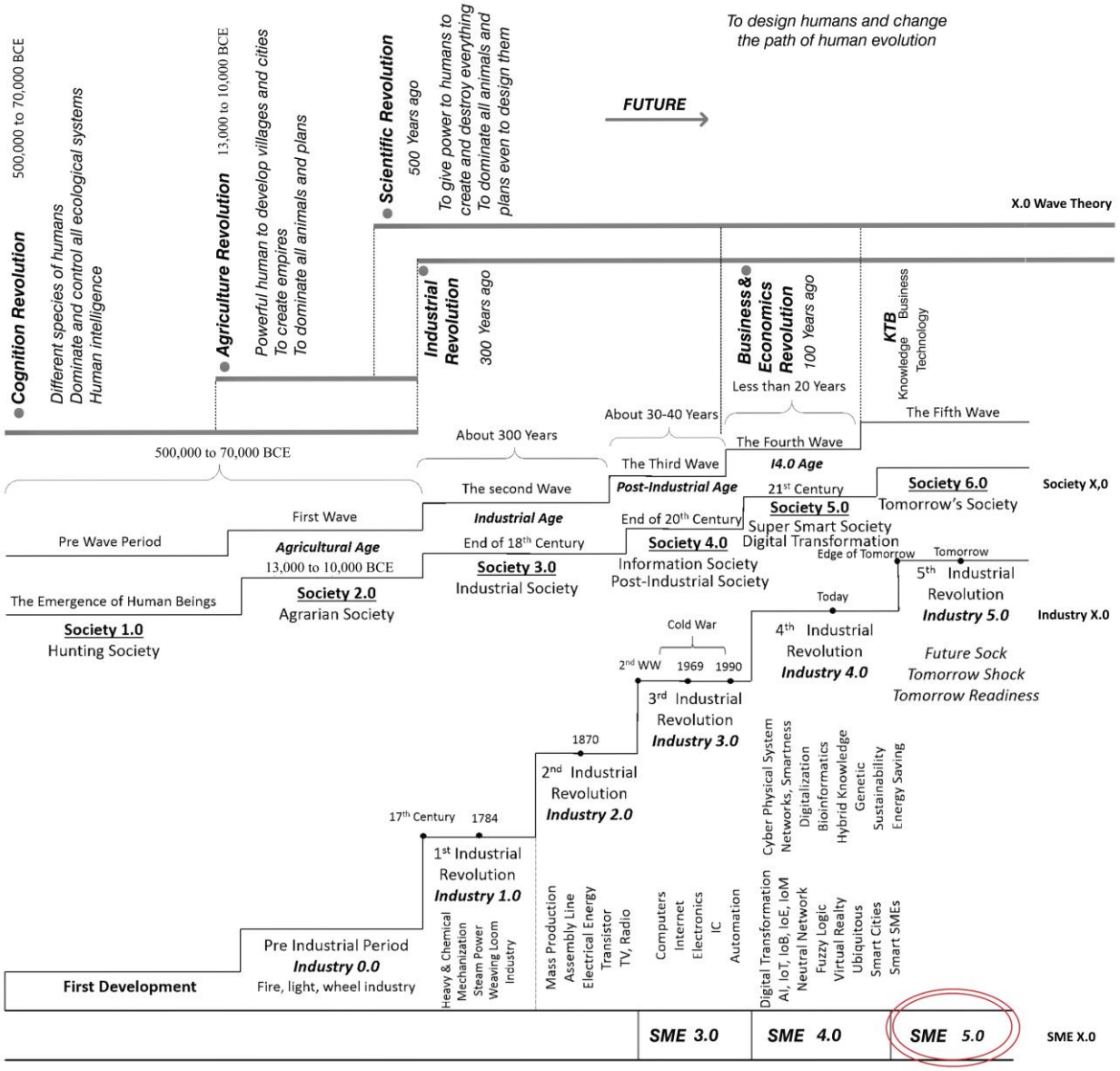

Figure 4. The X.0 wave/age ($1.0 \leq X.0 \leq 5.0$) theory, revolutions, ages, society, industries, technologies, and SMEs [16,17].

The literature reveals significant gender differences in obesity treatment motivations and outcomes. Studies consistently show that women are more likely to cite aesthetic concerns and social pressures as motivators for bariatric surgery, while men often focus on health-related reasons. For instance, women frequently report seeking surgery to improve body image and self-confidence, whereas men are more driven by the desire to alleviate health conditions associated with obesity.

Societal pressure plays a critical role in shaping these motivations. Women, particularly those with lower socioeconomic status or education levels, experience greater societal pressure to conform to body ideals, which can influence their decision

to seek obesity treatment. This pressure is often exacerbated by media portrayals and social media, which reinforce certain body standards and may contribute to the higher prevalence of aesthetic motivations among women.

The X.0 Wave Theory provides a valuable framework for understanding these dynamics. By examining how historical and technological advancements have shaped societal attitudes and healthcare practices, the theory offers insights into how contemporary trends, such as the rise of social media and advances in medical technology, impact gender disparities in obesity treatment. This theoretical perspective helps to contextualize the evolving landscape of bariatric surgery and highlights the need for ongoing research to address these disparities effectively.

The review underscores the importance of considering gender differences, societal pressures, and technological influences in obesity treatment. By integrating these factors with the X.0 Wave Theory, we gain a comprehensive understanding of how historical and contemporary forces shape patient motivations and healthcare utilization [16–24].

3. Research methods

3.1. Questionnaire

A total of 24 questions were formulated for this study. The first 4 questions addressed demographic information, while the next 3 questions focused on the personal medical history of the participants regarding obesity. Questions 8 through 24 explored the participants' attitudes towards obesity, with a specific focus on differences between men and women.

Study Participants.

Over a period of 6 weeks, the questionnaires were distributed to patients during bariatric consultations by the secretarial staff and the researcher. The condition for participation was that patients had to understand German adequately and return the completed questionnaire immediately. Additionally, 20 questionnaires were distributed and filled out at a self-help group meeting.

In total, 75 completed questionnaires were returned and analyzed.

3.2. Survey and results

As part of our additional training in "CAS in Sex- and Gender-Specific Medicine" at the University of Bern, we are addressing key topics related to sex- and gender-specific differences in the diagnosis and treatment of medical conditions. Our research focuses on exploring the differences in motivations between men and women when seeking treatment at an obesity center. To gather insights, we administered a questionnaire, which participants were asked to complete and return to the secretariat. Below is a summary of the questionnaire and its objectives:

Questionnaire Overview: This questionnaire was designed to gather demographic and medical information, as well as to explore participants' perspectives on obesity treatment, with an emphasis on gender differences in motivations for seeking treatment.

Demographic Information and Bariatric Surgery History

A total of 24 questions were formulated for this study. The first 4 questions addressed demographic information, while the next 3 questions focused on the personal medical history of the participants regarding obesity. Questions 8 through 24 explored the participants' attitudes towards obesity, with a specific focus on differences between men and women.

Table 1 summarizes the demographic information and bariatric surgery history of the participants. It includes questions about gender, age, education level, marital status, and details regarding any previous bariatric surgery undergone by the participants, along with their reasons for undergoing the surgery (**Table 1**).

Table 1. Demographic information and bariatric surgery history.

Question	Options
1. Gender at Birth	Female (1), Male (2), Non-binary (3), Other (4), Prefer not to disclose (5)
2. Current Age	[Fill in Age]
3. Highest Level of Education	Compulsory School (1), Apprenticeship (2), Secondary School (3), University Degree (4), Academic Title (5)
4. Current Marital Status	Single (1), In a stable partnership (2), Married (3), Divorced (4), Widowed (5)
5. Have you undergone bariatric surgery?	Yes, No
6. Reasons for Surgery (If Yes)	Health reasons, Psychological factors, Medical recommendation, Social pressure, Professional reasons, Family support, Other
7. Duration of Obesity Before Appointment	[Fill in months/years]

Societal Views on Obesity and Bariatric Surgery

Table 2 delves into societal views on obesity and bariatric surgery. The participants' perceptions of the prevalence of obesity in society, who is more likely to undergo bariatric surgery, and who is more likely to seek treatment for obesity are addressed in the questions presented in this table.

Table 2 illustrates the societal views on these issues and helps identify how participants perceive the societal attitude towards obesity treatment, particularly when considering gendered perspectives (**Table 2**).

Table 2. Societal views on obesity and bariatric surgery.

Question	***Options***
8. How would you assess the extent of obesity in society?	Very high (1), High (2), Medium (3), Low (4), Very low (5)
9. Who is more likely to undergo bariatric surgery?	Men (1), Women (2), Equal numbers (3), I don't know (4)
10. Who seeks treatment for obesity more, women or men?	More women, More men, Equal numbers, I don't know
11. Who is more likely to seek treatment for obesity?	Men (1), Women (2), Equal numbers (3), I don't know (4)
12. Do men and women have different motivations for undergoing surgery?	Yes (1), More likely yes (2), Neutral (3), More likely no (4), No (5)

Motivations for Seeking Treatment

Table 3 focuses on the motivations behind why women and men seek treatment for obesity. The questions highlight the various reasons, such as social pressure,

aesthetic considerations, and health improvement, that may influence both genders when seeking treatment (**Table 3**).

Table 3. Motivations for seeking treatment.

Question	***Options***
13. Reasons for Women to Seek Treatment for Obesity	Social pressure, Aesthetic reasons, Health improvement, Quality of life, Increased self-confidence, Easier access to information, Available resources, Other
14. Reasons for Men to Seek Treatment for Obesity	Social pressure, Aesthetic reasons, Health improvement, Quality of life, Increased self-confidence, Easier access to information, Available resources, Other

Influence of Social and Medical Factors

In **Table 4**, we explore the impact of social stigmatization and medical recommendations on the decision to undergo surgery, differentiating between men and women. The responses offer insight into how social and medical influences might vary across gender and affect individuals' decisions to seek obesity treatment (**Table 4**).

Table 4. Influence of social and medical factors.

Question	***Options***
15. Can social stigmatization prevent men from undergoing surgery?	Yes (1), More likely yes (2), Neutral (3), More likely no (4), No (5)
16. Can social stigmatization prevent women from undergoing surgery?	Yes (1), More likely yes (2), Neutral (3), More likely no (4), No (5)
17. Influence of Medical Recommendations on Men's Decision to Undergo Surgery	Very large (1), Large (2), Little (3), Very little (4), No influence (5)
18. Influence of Medical Recommendations on Women's Decision to Undergo Surgery	Very large (1), Large (2), Little (3), Very little (4), No influence (5)

Supportive Environment and Aesthetic Considerations

Table 5 looks into the role of supportive environments and the importance of aesthetic reasons for both men and women. This table highlights how supportive environments and the desire for aesthetic improvement can influence gender-specific motivations for undergoing surgery (**Table 5**).

Table 5. Supportive environment and aesthetic considerations.

Question	***Options***
19. Importance of Supportive Environment (Men)	Very important (1), Important (2), Neutral (3), Unimportant (4), Not important (5)
20. Importance of Supportive Environment (Women)	Very important (1), Important (2), Neutral (3), Unimportant (4), Not important (5)
21. Importance of Aesthetic Reasons (Women)	Very important (1), Important (2), Neutral (3), Unimportant (4), Not important (5)
22. Importance of Aesthetic Reasons (Men)	Very important (1), Important (2), Neutral (3), Unimportant (4), Not important (5)

Societal Pressure and Information Sources

Lastly, **Table 6** examines societal pressure and the sources of information participants use when seeking obesity treatment. The questions focus on the gendered impact of societal pressure and the role of social media in seeking information about obesity treatment (**Table 6**).

Table 6. Societal pressure and information sources.

Question	***Options***
23. Does societal pressure play a greater role for men or women?	Greater for men (1), Greater for women (2), Equal (3), No role (4)
24. Who is more likely to seek information on obesity treatment via social media?	More men (1), More women (2), Equal numbers (3), I don't know (4)

This survey seeks to collect comprehensive data on the gender differences in motivations and external influences regarding obesity treatment. The responses will help identify whether gender-specific approaches are needed in the treatment and support structures for obesity.

Findings

Table 7 presents demographic details and information about respondents' bariatric surgery history. It highlights gender distribution, average age, education level, marital status, and bariatric surgery status. According to the data, the majority of the respondents were women, with 52 women (69%) and 22 men (29%) providing responses. The average age for women was 43.2 years (ranging from 24 to 66 years), while for men, it was 40 years (ranging from 23 to 64 years). The table also shows the educational background of the participants, with a notable percentage having completed an apprenticeship. Regarding bariatric surgery, 63% of women and 77% of men had undergone surgery, while a smaller proportion had not.

Table 7. Demographic information and bariatric surgery history.

Question	***Women (%)***	***Men (%)***
Gender at Birth	52 (69%)	22 (29%)
Average Age	43.2 (24–66)	40 (23–64)
Education Level		
- Compulsory School	10%	5%
- Apprenticeship	63%	45%
- Secondary School	15%	32%
- University Degree	8%	18%
- Academic Title	5%	1%
Marital Status		
- Single	17%	18%
- In a Partnership	23%	18%
- Married	44%	59%
- Divorced/Separated/Widowed	14%	5%
Bariatric Surgery Status		
- Underwent Surgery	63% (n = 32)	77% (n = 17)
- Did Not Undergo Surgery	21% (n = 18)	14% (n = 6)

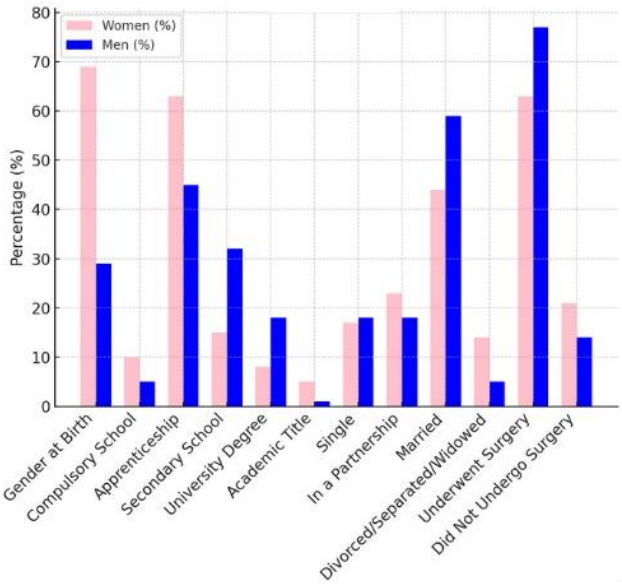

Figure 5. Demographic and surgical characteristics of respondents.

Figure 5 visually summarizes the demographic characteristics of the respondents alongside their bariatric surgery history, providing a clear comparative representation of both groups based on gender.

Table 8 explores societal perceptions regarding obesity and bariatric surgery, showing differences between women and men. The majority of women (55%) and men (62%) perceived obesity as a significant issue in society. In terms of bariatric surgery, a higher percentage of women (71%) believed that women were more likely to undergo surgery, compared to 36% of men. Additionally, the table indicates that 81% of women were aware that more women undergo bariatric surgery, while only 41% of men held this view.

Table 8. Societal views on obesity and bariatric surgery.

Question	***Women (%)***	***Men (%)***
Perception of Obesity in Society		
- High	55% (*n* = 28)	62% (*n* = 13)
- Very High	33% (*n* = 17)	24% (*n* = 5)
Perception of Who is More Likely to Undergo Surgery		
- More likely to be women	71% (*n* = 37)	36% (*n* = 8)
- More likely to be men	2% (*n* = 1)	0% (*n* = 0)
- Approximately equal	27% (*n* = 14)	32% (*n* = 7)
Knowledge of Treatment Recipients		
- More women	81% (*n* = 42)	41% (*n* = 9)
- More men	4% (*n* = 2)	18% (*n* = 4)
- Equal numbers	15% (*n* = 8)	14% (*n* = 3)

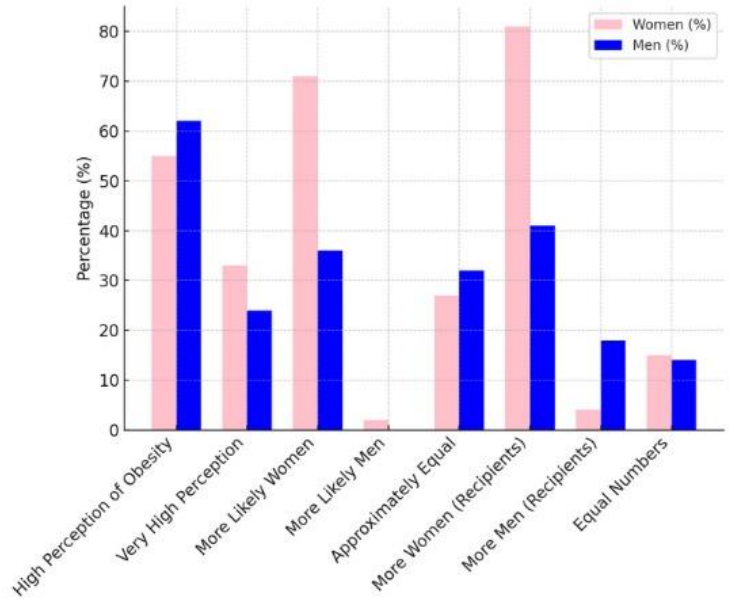

Figure 6. Perceptions of obesity and bariatric surgery in society.

Figure 6 offers a visual representation of societal perceptions of obesity and bariatric surgery, comparing how women and men perceive the issue and its prevalence.

Table 9 investigates the reasons why individuals seek bariatric surgery, highlighting gender-based differences. Health problems were the most common motivation for both women (36%) and men (35%). Psychological reasons, medical recommendations, and family support were also notable motivations. The table indicates that psychological reasons were more prevalent among women (18%) than men (14%).

Table 9. Motivations for seeking treatment.

Question	***Women (%)***	***Men (%)***
Motivations for Surgery		
- *Health Problems*	36% (*n* = 32)	35% (*n* = 15)
- *Psychological Reasons*	18% (*n* = 16)	14% (*n* = 6)
- *Medical Recommendation*	15% (*n* = 13)	21% (*n* = 9)
- *Social Reasons*	2% (*n* = 2)	2% (*n* = 1)
- *Professional Motives*	1% (*n* = 1)	2% (*n* = 1)
- *Family Support*	7% (*n* = 6)	9% (*n* = 4)

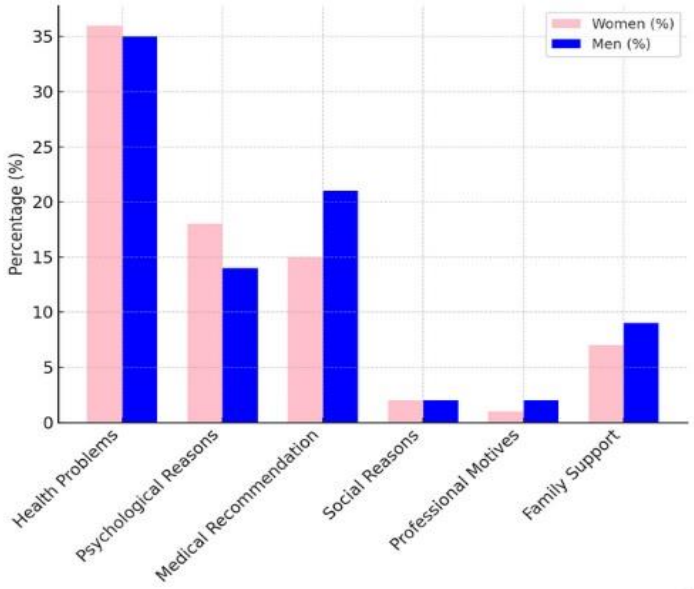

Figure 7. Motivational factors influencing bariatric surgery decisions.

Figure 7 visualizes the different motivational factors that influence bariatric surgery decisions, clearly depicting the gender differences in the motivations for seeking treatment.

Table 10 explores the impact of social and medical influences on the decision to undergo bariatric surgery. It reveals that more women (16%) felt the impact of discrimination on their decision compared to men (28%). Additionally, both women and men reported that medical recommendations had a substantial influence on their decision-making, with 57% of women and 59% of men acknowledging a large influence.

Table 10. Influence of social and medical factors.

Question	***Women (%)***	***Men (%)***
Impact of Discrimination on Decision		
- *Yes*	16% (*n* = 8)	28% (*n* = 6)
- *Rather Yes*	25% (*n* = 13)	9% (*n* = 2)
- *Neutral*	23% (*n* = 12)	27% (*n* = 6)
- *No*	12% (*n* = 6)	9% (*n* = 2)
Influence of Medical Recommendations		
- *Very Large Influence*	14% (*n* = 7)	14% (*n* = 3)
- *Large Influence*	57% (*n* = 29)	59% (*n* = 13)
- *Very Large and Large Combined*	71% (*n* = 36)	73% (*n* = 16)
- *Little Influence*	27% (*n* = 14)	18% (*n* = 4)

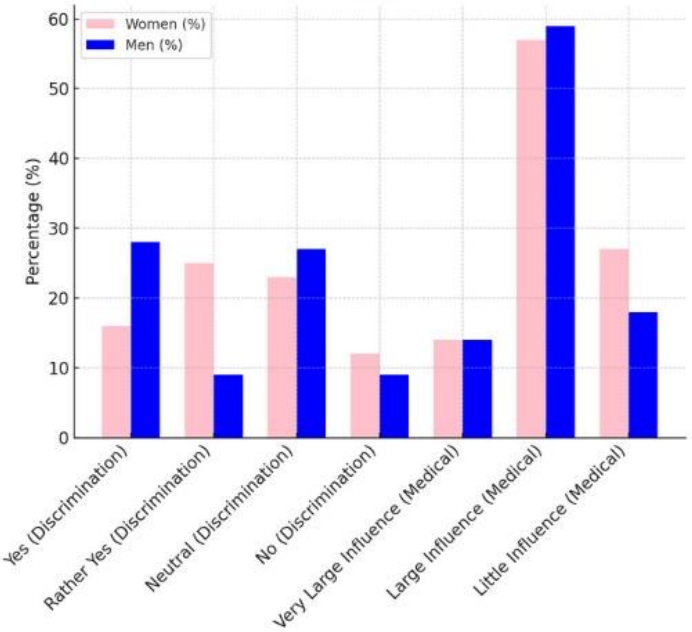

Figure 8. Impact of social and medical factors on bariatric surgery decisions.

Figure 8 shows the influence of social and medical factors on individuals' decisions to undergo bariatric surgery, providing a comparison between women and men.

Table 11 examines the role of supportive environments and aesthetic considerations in the decision to undergo bariatric surgery. A greater proportion of women (50%) than men (28%) felt that a supportive environment was very important. When considering aesthetic reasons, 63% of women indicated that aesthetics were very important, compared to 38% of men.

Table 11. Supportive environment and aesthetic considerations.

Question	***Women (%)***	***Men (%)***
Influence of Supportive Environment		
- *Very Important*	50% (*n* = 11)	28% (*n* = 14)
- *Important*	27% (*n* = 6)	33% (*n* = 17)
- *Very Important and Important Combined*	77% (*n* = 17)	77% (*n* = 31)
Aesthetic Reasons for Surgery		
- *Very Important*	63% (*n* = 33)	38% (*n* = 8)
- *Important*	31% (*n* = 16)	52% (*n* = 11)
- *Neutral*	2% (*n* = 2)	5% (*n* = 2)
- *Not Important*	0% (*n* = 0)	5% (*n* = 1)

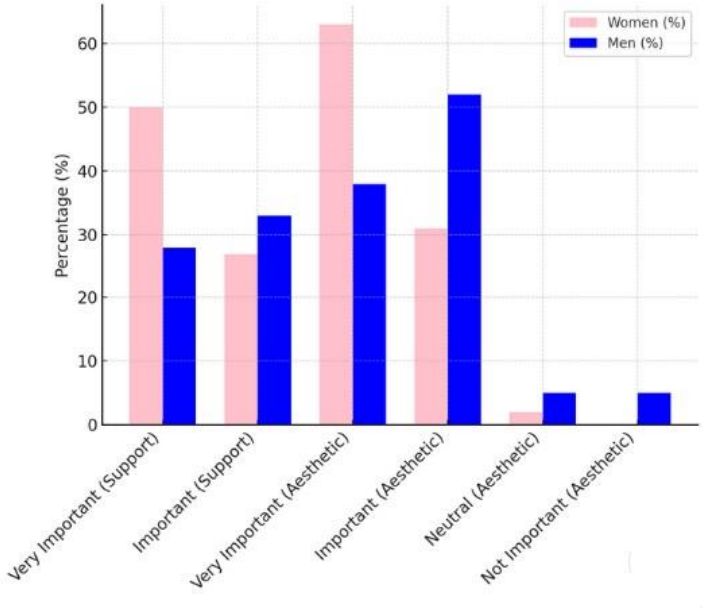

Figure 9. Role of support systems and aesthetic motivations in surgery choices.

Figure 9 visualizes the importance of supportive environments and aesthetic motivations in bariatric surgery decisions, showing gender-based differences in responses.

Table 12 delves into the societal pressures and media influences on bariatric surgery decisions. Social pressure was cited by 17% of women and 23% of men as a reason for undergoing surgery. Awareness through media also played a significant role, with 63% of women and 48% of men being influenced by media. Health campaigns were also recognized as an important source of awareness.

Table 12. Societal pressure and information sources.

Question	***Women (%)***	***Men (%)***
Reasons for Bariatric Surgery		
- *Social Pressure*	17% (*n* = 32)	23% (*n* = 18)
- *Quality of Life*	19% (*n* = 35)	20% (*n* = 16)
- *Self-Confidence*	20% (*n* = 37)	20% (*n* = 16)
Awareness Through Media		
- *Influenced by Media*	63% (*n* = 33)	48% (*n* = 10)
- *Health Campaigns*	25% (*n* = 13)	32% (*n* = 7)

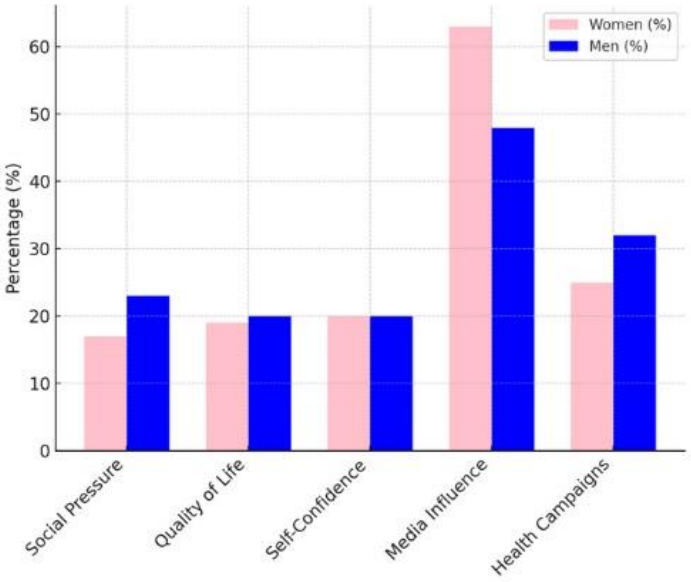

Figure 10. Influence of societal pressure and media on bariatric surgery awareness.

Figure 10 illustrates the influence of societal pressure and media on the awareness of bariatric surgery, highlighting the gender differences in responses.

4. Results

4.1. Gender disparities in obesity treatment utilization

The analysis revealed pronounced gender disparities in obesity treatment, consistent with prior trends. Despite the higher prevalence of obesity among men, women have historically dominated as patients in obesity clinics. From 2014 to 2018, 75.5% of surgical patients were women (n = 750), compared to 24.6% men (n = 244). Between 2019 and 2023, the proportion of men undergoing surgery increased slightly to 28.6% (n = 224), while women constituted 71.4% (n = 559). However, this observed increase in men's participation was not statistically significant (Fisher's exact test, p = 0.0576). The survey further supported this gender distribution, with women representing 69% of respondents and men 29%.

4.2. Motivations for seeking bariatric surgery

Significant gender differences emerged in the motivations for pursuing bariatric surgery.

- Primary Motivator: Health was the most cited reason among all participants (31%), with a near-equal emphasis from women (36%) and men (35%).
- Gender-Specific Motivators: Women more frequently reported psychological factors (18%), social reasons (2%), and work-related issues (1%) as influences. Conversely, men were more likely to mention medical recommendations (21%) and family support (9%).
- Quality of Life and Aesthetic Factors: Quality of life was a motivator for 25% of women, compared to 17% of men. Aesthetic concerns, self-confidence, and

overall quality of life were significant to both genders, though women placed greater emphasis on these aspects.

4.3. Influence of societal and medical factors

The role of societal views and medical recommendations in bariatric surgery decisions was explored:

- Discrimination as a Barrier: Men (28%) were more likely than women (16%) to report discrimination as a factor influencing their decision.
- Medical Recommendations: A large influence from medical recommendations was reported by 71% of women and 73% of men.

4.4. Supportive environment and societal pressure

Support systems and societal pressures played an essential role in treatment decisions:

- Supportive Environment: Both genders emphasized the importance of a supportive environment, with 77% of respondents rating it as "very important" or "important".
- Aesthetic and Social Factors: Women more frequently cited aesthetic reasons (63%) as very important compared to men (38%). Similarly, social pressures were more influential for women (17%) than men (23%).

4.5. Awareness through media and information sources

Media and health campaigns significantly impacted awareness and decisions about bariatric surgery. Women were more likely to be influenced by media (63%) compared to men (48%), while men were slightly more influenced by health campaigns (32%) compared to women (25%).

5. Discussion

This study underscores significant gender disparities in obesity treatment, consistent with existing literature. Despite the higher prevalence of obesity among men, women remain the majority of patients seeking bariatric surgery. Analysis of data from our center (2014–2023) demonstrates that women constituted 75.5% (n = 750) of surgical patients between 2014 and 2018, compared to 24.6% (n = 244) for men. While the proportion of men increased modestly to 28.6% (n = 224) from 2019 to 2023, women still represented 71.4% (n = 559). This increase in male participation was not statistically significant (Fisher's exact test, p = 0.0576). Survey data from 75 participants aligned with this trend, with women comprising 69% of respondents and men 29%.

Gender-Specific Motivations for Bariatric Surgery.

Our findings highlight notable differences in the motivations for seeking bariatric surgery across genders, which reflect diverse social, psychological, and health-related factors:

- Primary Health Concerns: Health was the leading motivator for both genders, with 36% of women and 35% of men identifying it as a primary driver.

- Women's Motivations: Women reported a broader range of motivators, including psychological factors (18%), aesthetic concerns (63%), and work-related reasons (1%). Social pressures (17%) and quality of life improvements (25%) were also notable considerations.
- Men's Motivations: Men were more likely to be influenced by external recommendations, including advice from doctors (21%) and family support (9%). Quality of life improvements (20%) were also a key driver for men, whereas social reasons (23%) and aesthetics were less frequently reported.

These findings suggest that women's decisions are more influenced by social, aesthetic, and psychological factors, while men focus predominantly on health and quality of life improvements. The nuanced differences underscore the need for tailored approaches to address gender-specific motivations and barriers in obesity treatment.

Societal and Clinical Implications.

The persistent gender imbalance in obesity treatment highlights the need for increased engagement with men. Societal stigma, lower levels of health-seeking behavior, and under-recognition of obesity as a critical health issue among men may contribute to their lower participation rates. Targeted health campaigns and supportive interventions tailored to men's specific motivators—such as quality of life improvements and medical recommendations—could help address this disparity.

Strengths and Limitations.

This study provides valuable insights into gender disparities in bariatric surgery, utilizing both clinical data and survey results. However, the relatively small survey sample size (n = 75) may limit the generalizability of findings. Future research should incorporate larger and more diverse populations to further validate these trends.

5.1. Possible mechanisms

The gender disparity observed in obesity treatment may be partly explained by sociocultural factors. Women, particularly those with lower educational attainment, often face greater societal rejection and discrimination related to their body image, which may encourage them to seek treatment more frequently than men. For women, aesthetics, self-confidence, and societal pressures play a central role in their decision to pursue bariatric surgery. These pressures are often intensified by unrealistic beauty standards perpetuated by social media and the media at large. Men, in contrast, tend to place greater emphasis on health outcomes and quality of life when considering bariatric surgery, reflecting less societal pressure related to appearance.

Our findings suggest that men experience less societal pressure to undergo bariatric surgery, which could explain their lower rate of treatment-seeking behavior compared to women. The societal pressure that women face regarding body image may drive their higher rates of surgery and treatment-seeking behavior. Additionally, women's greater interaction with healthcare providers—such as during routine check-ups and pregnancies—may also increase their likelihood of seeking treatment. These interactions provide more opportunities for healthcare professionals to influence treatment decisions, including the option of bariatric surgery.

5.2. Comparison with similar studies

Our findings are consistent with several studies that show a higher proportion of women seeking treatment for obesity despite the higher prevalence of obesity in men. Research from other regions has similarly documented that women are more likely to seek bariatric surgery, often driven by a combination of societal pressures and the desire to meet beauty ideals. While the exact mechanisms behind these gender differences remain complex, existing literature suggests that the societal perception of obesity in women is more critical, contributing to higher rates of surgical intervention among them. Additionally, studies have highlighted that men may be less likely to seek treatment, not only due to lower societal pressure but also due to cultural attitudes that stigmatize men seeking help for weight-related issues.

5.3. Challenges

This study faced several limitations that should be considered when interpreting the results. A significant limitation was selection bias due to the exclusion of patients with limited proficiency in German, which may have affected the diversity of the sample. Additionally, a positive selection bias was observed, as men who underwent bariatric surgery were more likely to attend follow-up appointments compared to women, resulting in a higher proportion of men (77%) in the survey participants who had undergone surgery compared to women (63%). These biases may limit the generalizability of our findings and should be taken into account when interpreting the results. Future research could address these issues by including a more diverse patient population, including those with language barriers, and exploring the long-term effects of these gender disparities on treatment outcomes.

5.4. The X.0 wave theory: Stages of societal evolution and gender disparities in obesity clinic utilization

The X.0 Wave Theory, proposed by Prof. Dr. Hamid Mattiello, maps the evolution of human behavior, knowledge, technology, business (KTB), and societal structures across different historical epochs. Since 2010, Prof. Mattiello, as the theorist of the X.0 Wave/Tomorrow Age Theory or Theory of Comprehensive Everything, has provided a framework for understanding how shifts in culture, economics, and technology drive changes in societal behaviors. This theory is particularly useful for examining gender disparities in fields such as obesity treatment and healthcare utilization.

The theory outlines key waves of societal evolution, demonstrating how each phase has influenced health-seeking behaviors across genders, with notable impacts on obesity management and treatment. The Waves/Ages of Civilization.

The X.0 Wave/Age Theory proposes that human history can be divided into distinct waves or ages of civilization, each characterized by significant technological advancements that fundamentally change the way people live and interact with each other and their environment. The theory emphasizes the importance of innovation and technological progress in shaping human history while also acknowledging the new challenges and risks that each wave/age brings.

This framework, denoted as f(x), where X represents different stages (1, 2, 3, 4, 5, 6, etc.), outlines the evolution of human civilization through these transformative waves, each bringing about profound changes in how societies function and interact.

The X.0 Wave/Age Theory posits that human history can be segmented into distinct waves, each characterized by significant technological advancements that transform human interaction and societal organization. The theory currently identifies several key waves (See **Figure 11**):

(The X.0 Wave/Age Theory, f(x), when X = 1,2,3,4,5,6, …).

1) Pre-Agricultural Age or Pre Wave Period (X.0 ≤ 1.0)—Before 500,000 Years Ago

In this era, survival was the primary concern. Gender differences in health-seeking behaviors were minimal, as societal structures were non-existent, and healthcare, as we know it, had not yet developed. Physical appearance held little relevance, and obesity was not an issue due to high physical activity and caloric scarcity.

2) Agricultural Age and Cognition Revolution (X.0 = 1.0)—500,000 to 70,000 Years Ago

The emergence of agriculture solidified traditional gender roles, with men working in the fields and women focused on domestic tasks. Healthcare remained rudimentary, focused on survival rather than individual health. Obesity was rare due to a physically demanding lifestyle and limited food availability.

3) Early Industrial Ages (2.1 ≤ X.0 ≤ 2.2)—17th and 18th Centuries

As industrialization progressed, societal norms began to shift, with women increasingly facing societal pressures regarding appearance. While healthcare was becoming more formalized, gender-specific behaviors emerged, influencing how men and women accessed medical care. This era saw the beginnings of women's engagement with healthcare for appearance-related issues like obesity.

4) Post Industrial Age or Information Age (X.0 = 3.0)—Around 1970 During the Cold War

The industrial revolution brought significant changes to gender roles, with more women entering the workforce. However, societal pressures around appearance for women intensified. This era laid the foundation for modern gender disparities in healthcare access, particularly in relation to body image and obesity treatment. Men's health-seeking behaviors remained focused on work-related physical health concerns.

5) Artificial Intelligence Age (X.0 = 4.0)—About 2000 to 2010

In the present wave, technological advances like artificial intelligence and digitalization have transformed healthcare and societal expectations. Women face increased societal pressures through social media, leading to their overrepresentation in obesity clinics. Men, conversely, are increasingly driven by health motivations as digital health information becomes more accessible. Though the gap in treatment-seeking behaviors is beginning to narrow, gender disparities are still evident, shaped by these societal influences.

6) The Human Age or The Age of Integration (X.0 = 5.0)—Based on Prof. Mattiello's 5th Wave/Tomorrow Age Theory which is the first age of tomorrow (2020–2030)

In this transitional wave, advanced technology begins integrating with human biology, leading to personalized healthcare approaches. Artificial intelligence plays a central role in diagnosing and treating conditions like obesity, potentially reducing gender disparities. Healthcare becomes more tailored to individual needs, minimizing societal pressures and allowing for more equitable treatment decisions.

7) Transhuman Age (X.0 = 6.0)—The Future

In the Transhuman Age, human capabilities are further enhanced by advanced technology, revolutionizing healthcare systems. Gender disparities in obesity treatment may shift dramatically as personalized medicine becomes more accessible. Societal constructs around gender may become less relevant as AI and biotechnology drive equitable healthcare interventions for all.

8) Beyond Transhuman Age (6.0 ≤ X.0) The Far Future

In this speculative future, the fusion of biological and artificial intelligence may erase traditional gender constructs. Healthcare will become hyper-personalized, removing societal pressures around gender and enabling equal access to obesity treatments for all individuals, regardless of gender.

Figure 11 illustrates the stages of societal evolution through the X.0 Wave Theory, from the Pre-Agricultural Age (X.0 ≤ 1.0) to the Transhuman Age (X.0 = 6.0 and beyond). It shows how technological and societal shifts have influenced gender disparities in obesity clinic utilization. Early periods had minimal gender differences, while the Industrial and Post-Industrial Ages saw increased societal pressures on women's appearance. In the AI Age (X.0 = 4.0), women became overrepresented in obesity clinics due to social media, while men focused more on health. Future advancements in personalized healthcare (X.0 = 5.0) and biotechnology (X.0 = 6.0) are expected to reduce these disparities.

The diagram highlights the evolving relationship between technological advancements, societal pressures, and gender disparities in healthcare, with particular reference to obesity treatment across different historical epochs. The graph also anticipates a future where advancements in AI and biotechnology could lead to more equitable healthcare systems [16–24].

SME	Society	Industry	Waves/Ages	Revolutions			Year
	Hunting Society Society 1.0		Pre wave period	-)Cognition Revolution -)To Dominate and Control all ecological System -) Human Intelligence	The Emergence of Human Beings	-)First Development -)Different Spices of Human	**500,000 to 70,000 BCE**
	Society 2.0 Agrarian Society	-) Pre Industrial Period -) Industry 0.0 -) Fire, Light, Wheel Industry	-)The First Wave -)Agricultural Age	-)Agriculture Revolution -) Powerful Human to Develop Urban Areas -) To Create Emprises To Dominate All Animals, Plans and planets			**13,000 to 10,000 BCE**
				-) Scientific Revolution -)To Give Power to Humans to Create and Destroy Everything In the Planet -) Just one Human Specie			500 Years ago
	Society 3.0 Industrial Society	-)1st Industrial Revolution -) Industry 1.0	The Second Wave Industrial Age	Industrial Revolution			17th Centaury
		-) Heavy and Chemical Industry -) Mechanization -) Steam Power -) Wearing Loom					1784
		-)2nd Industrial Revolution -) Industry 2.0 -)Mass Production -)Assembly Line -) Electrical Energy -) Transistor, TV, Radio					1870
SME 3.0	-) Society 4.0 -) Information Society -) Post Industrial Society	Industry 3.0 • Computers • Internet • Electronics • IC • Automation	-) The 3rd Wave -) Post Industrial Age	-)Business and Economics Revolution1 Future	To Design Humans and Change the Path of Human Evolution	100 Years 40 Years The Cold War	2nd WW 1969 1990 2000
SME 4.0 Smart SME	-)Society 5.0 -) Smart Citizen	The 4th Industrial Wave • AI, IoT, IoB, IoE • IoM, Neutral Network • Fuzzy Logic • Ubiquitous • Networks	-) 4th Industrial Wave -) Digitalization Age -) Digital Transformation -) Virtual Reality -) Cyber Physical Systems -) Smartness -) Digitalization	-)Business and Economic Revolution 2 -)Hybrid Organization -)Cloud HR -)Greenhouse Gases Reduction -)Energy Saving -) CSR	Bioinformatics Hybrid Knowledge Genetics Sustainability	10 Years	2006 2011 Today
SME 5.0 SMEs for Tomorrows' Shocks	Society 6.0	Industry 5.0	-) The 5th Industrial Wave -) Tomorrow Age		**KTB** Model Future Shocks Tomorrow Shocks	**The first Edge of Tomorrow (2020-2030)**	Tomorrow
SME X.0	**Society X.0**	**Industry 5.0**	**-) The Xth Industrial Wave**		**KTB Model**	**The Xth Edge of Tomorrow**	Tomorrow

Figure 11. Histomap of the X.0 wave/tomorrow age theory, ($1.0 \leq X.0 \leq 5.0$) from 500,000/70,000 years ago to the first edge of tomorrow (2020–2030) [16–24].

Clinical Applications: A Framework for Understanding Gender Disparities in Obesity Clinic Utilization.

The X.0 Wave Theory provides valuable insights into the societal and technological factors contributing to gender disparities in healthcare, particularly in obesity clinic utilization. Dr. med. Diana Mattiello, Senior Physician Surgery at Limmattal Hospital, Switzerland, could apply this theory in her clinical practice, analyzing how societal shifts and gender influences shape patient behavior and treatment decisions. By understanding how historical waves affect men and women differently, she could craft more personalized and effective obesity management strategies.

For example, during the Artificial Intelligence Age (X.0 = 4.0), the rise of social media has disproportionately impacted women by reinforcing societal expectations around body image. Meanwhile, men's motivations for seeking obesity treatment have become increasingly health-focused, driven by the accessibility of digital health information. Recognizing these gender-specific influences enables clinicians to develop more targeted interventions that address both the physical and psychological needs of their patients.

Collaborating the authors of this study could further investigate these dynamics in a research project titled "Examining gender disparities in obesity clinic utilization: An analysis of sex and gender influences via the X.0 Wave Theory". This study could explore how gender dynamics in healthcare have evolved over time and predict how they may change in the future.

As we approach the Transhuman Age (X.0 = 6.0), the integration of AI-driven personalized medicine holds great potential for minimizing gender disparities in healthcare. This technological progression may lead to a more equitable healthcare system, allowing both men and women to receive tailored, effective obesity treatments.

The pronounced gender disparity in obesity treatment aligns with existing literature, which consistently shows a higher representation of women in obesity clinics despite higher obesity rates among men. Sociocultural factors significantly contribute to this disparity, as women, especially those with lower educational attainment, face greater societal rejection. This societal pressure manifests in women's motivations for surgery, where aesthetics and self-confidence are more influential compared to men, who focus more on health and quality of life.

Our findings suggest that men experience less societal pressure, which may partly explain the lower rate of treatment-seeking behavior compared to women. The lesser impact of perceived discrimination on men challenges the idea that it is the primary driver for the higher rate of surgical intervention among women. Additionally, women's more frequent interactions with healthcare providers through routine exams and pregnancies likely enhance the influence of doctors on their decision to pursue bariatric surgery.

The study also underscores the role of environmental factors in treatment decisions. Women with children and no independent income, as well as men supported by family, find these factors significantly influential. The higher societal pressure on women, coupled with their greater engagement with social media, highlights the

necessity for targeted communication strategies to address these disparities and improve support for both genders [16–24].

6. Conclusion and future suggestions

6.1. Conclusion

This study highlights significant gender disparities in obesity clinic utilization and bariatric surgery motivations. Despite a higher prevalence of obesity among men, women continue to represent the majority of patients seeking treatment. The motivations for surgery differ between genders, with women more likely to be influenced by aesthetic concerns, self-confidence, and societal pressures, whereas men primarily focus on health and quality of life. The application of the X.0 Wave Theory provides a valuable framework for understanding these disparities, revealing how societal, technological, and cultural waves impact patient behaviors and treatment decisions.

The findings underscore the need for a nuanced understanding of gender differences in obesity treatment. Women, particularly those with lower socioeconomic status and educational attainment, are more motivated by social factors and societal pressure. Men, although increasingly seeking treatment, primarily emphasize health-related motivations. The influence of healthcare providers, societal expectations, and social media also plays a crucial role in shaping patient decisions.

6.2. Future suggestions

- Develop Gender-Sensitive Interventions: Healthcare providers and policymakers should design and implement gender-sensitive strategies to address the specific motivations and challenges faced by both men and women in obesity treatment. Tailored interventions could improve engagement and outcomes, particularly for women who may face more societal pressure and aesthetic concerns.
- Enhance Outreach and Education: Increasing awareness and education about obesity as a chronic disease, rather than a lifestyle issue, is essential. Public health campaigns should address the misconceptions around obesity and emphasize the importance of seeking medical help, particularly targeting groups with lower educational attainment.
- Expand Research on Social Media Influence: Given the role of social media in shaping patient perceptions and decisions, further research is needed to understand how social media platforms impact obesity treatment choices and how these influences can be leveraged to support patients more effectively.
- Address Discrimination and Societal Pressures: Additional studies should explore the impact of perceived discrimination on treatment decisions and identify strategies to mitigate these effects. Understanding how societal pressures and discrimination affect both men and women can help in creating supportive environments for patients.
- Investigate Technological and Cultural Shifts: Continued application of the X.0 Wave Theory to emerging technological and cultural shifts can provide deeper insights into how these waves influence obesity treatment dynamics. Future

research should examine how advancements in technology and changes in societal norms impact treatment accessibility and patient behaviors.

By addressing these suggestions, the healthcare community can better navigate the complexities of obesity treatment and work towards more effective, equitable, and patient-centered care.

Key Questions:

1) What are the primary motivations for seeking obesity treatment among different genders?
2) How do societal pressures and social media influence the decision to undergo bariatric surgery?
3) What are the gender-based differences in the utilization of obesity clinics and the impact of these differences on patient care?
4) How does the X.0 Wave Theory explain the observed disparities in obesity clinic utilization between men and women?

Key Impacts:

1) Enhanced Understanding: Provides a comprehensive insight into gender-specific motivations and societal pressures influencing obesity treatment decisions.
2) Tailored Interventions: Informs the development of gender-sensitive strategies and interventions to improve engagement and treatment outcomes in obesity clinics.
3) Policy Implications: Offers valuable insights for policymakers and healthcare providers to address disparities and enhance access and support for both men and women seeking obesity treatment.
4) Social Media and Awareness: Highlights the role of social media in shaping patient perceptions and decisions, emphasizing the need for targeted communication strategies.

Key Results:

1) Motivational Differences: Women prioritize aesthetics, self-confidence, and social factors more than men, who focus on health and quality of life.
2) Societal Pressure: Both genders perceive greater societal pressure on women to seek obesity treatment, with women reporting higher engagement with social media for related information.
3) Clinic Utilization Trends: A recent trend indicates a higher proportion of men undergoing bariatric surgery, though historically, women have been more prevalent in treatment centers.
4) X.0 Wave Theory Application: The theory provides a framework for understanding evolving gender dynamics in obesity treatment, revealing how social, technological, and cultural waves shape these dynamics and impact patient decisions.

Author contributions: Validation, HM and DM; formal analysis, HM and DM; investigation, HM and DM; resources, HM and DM; data curation, HM and DM; writing—original draft preparation, HM and DM; writing—review and editing, HM and DM; visualization, HM; supervision, HM; project administration, HM. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

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