Original Article :

Pregnant Women's Knowledge and Beliefs Regarding the Effect of Obesity on the Continuation of Breast Feeding

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Abstract

Background and Aims:
Assessing the knowledge and beliefs of pregnant women regarding the effect of obesity on breastfeeding continuation is crucial in understanding potential barriers to successful breastfeeding amongst this demographic. This study aims to evaluate pregnant women's knowledge and beliefs about the effect of obesity on breastfeeding continuation.

Methods:
A descriptive cross-sectional design was adopted. The sample of 550 pregnant women was purposively selected whether primiparous or multi-pregnant, aged 20-39 years in the second or third trimester of pregnancy. The study was carried out within second-cluster hospitals in the Riyadh region. The tools used to collect the necessary data were; a structured interviewing questionnaire, a structured obesity knowledge tool, and a Likert belief scale regarding the effect of obesity on breastfeeding continuation.

Results:
The mean age was 29.47 ± 8.6 years. About 57.8% of the study sample had an unsatisfactory level of knowledge about the effect of obesity on breastfeeding continuation compared to 42.2% who had a satisfactory level of knowledge. While 87.6% of the study sample had positive beliefs regarding the effect of obesity on breastfeeding continuation, 12.4% had negative beliefs. Amongst the study sample, no statistically significant relationship was found between the belief and knowledge categories regarding the effect of obesity on breastfeeding continuation ($P < 0.05$).

Conclusion:
The pregnant women had an unsatisfactory level of knowledge and positive beliefs regarding the effect of obesity on breastfeeding continuation. It was Recommended to deliver individualized education for obese pregnant women to cope with difficulties and misunderstandings regarding breastfeeding. Integrate obesity-specific breastfeeding interventions into public health, media and electronic communication, and hospital policies and practices.

Keywords:
Knowledge, beliefs, obesity, breastfeeding

Introduction:

Obesity has emerged as a pervasive global health concern, impacting nations across the development spectrum [1]. Within the Middle East, the prevalence of overweight and obesity has surged to concerning levels, with rates among women ranging from 33.1% to 21.2% in the 21st century [2]. Notably, in Saudi Arabia, the national prevalence of obesity, defined as a Body Mass Index (BMI) equal to or greater than 30, stands at 24.7% [3]. This surge in obesity rates can be largely attributed to shifting dietary patterns and increasingly sedentary lifestyles. Concurrently, obesity has become intricately linked with a plethora of health conditions that not only diminish individual quality of life but also exert strain on healthcare systems and impede national economic progress. According to the World Health Organization [4], obesity is characterized by abnormal or excessive fat accumulation posing health risks. Classifications based on BMI, as defined by the Institute of Medicine (IOM), categorize obesity into three classes: class I (BMI 30 to 34.9 kg/m^2), class II (BMI 35 to 39.9 kg/m^2), and class III (BMI ≥ 40.0 kg/m^2).

Breastfeeding offers manifold maternal health benefits alongside promoting optimal infant health, including reduced risk of infection, obesity, diabetes, and sudden infant death syndrome. Moreover, breastfeeding mothers exhibit decreased susceptibility to metabolic syndrome, type 2 diabetes mellitus, cardiovascular ailments, and cancer [5]. However, obesity substantially impedes exclusive breastfeeding and heightens the likelihood of lactation disruptions [6]. Successful breastfeeding hinges on the proper development and normal functioning of mammary glands, enabling infants to meet their nutritional requirements of 8–12 daily feedings, and consuming an average of 710 ml of breast milk daily. Obesity is identified as a catalyst for delayed lactogenesis and diminished milk supply,[7] exacerbates lactation dysfunction, necessitating premature formula supplementation.

Maternal pre-pregnancy BMI exerts considerable influence on infant feeding intentions [8.] Research indicates a 4% increase in the likelihood of breastfeeding discontinuation with each unit rise in BMI [9]. Additionally, studies in Taiwan have revealed associations between maternal obesity or underweight and premature breastfeeding cessation[10]. Furthermore, An article published recently explored the correlation between maternal obesity and patterns of breastfeeding, the analysis revealed that increased BMI was associated with reduced levels of early breastfeeding and a decreased number of months of breastfeeding [11].

While several studies in Saudi Arabia have explored pregnant women's awareness of obesity's role in cardio-metabolic diseases and its impact on pregnancy and delivery outcomes, scant attention has been devoted to examining obesity-related knowledge and beliefs concerning breastfeeding continuation. The current obesity epidemic underscores the entrenched influence of cultural norms hindering behavioral modifications. Moreover, obesity during reproductive years remains a neglected facet in maternal and child health services. Consequently, this study endeavors to assess pregnant women's knowledge and beliefs regarding the impact of obesity on breastfeeding continuation.

Obesity stands as a significant and escalating health challenge afflicting both developed and developing nations, bringing with it manifold health, financial, and social ramifications. A nationwide cross-sectional survey in Saudi Arabia revealed that nearly one-quarter of the study sample exhibited obesity [3]. Given its association with comorbidities and its profound impact on the health of women and their newborns, obesity emerges as a paramount healthcare concern. Healthcare providers, including nurses, must prioritize the monitoring of women's BMI throughout gestation and highlight awareness regarding the risks linked with obesity. This study has the potential to facilitate the dissemination of critical information among healthcare teams, particularly nurses working in maternity and antenatal care settings, concerning the sequelae of obesity on women and newborn health. By doing so, women can benefit from informed decision-making. Moreover, this study has the potential to enhance nursing practice by integrating health information into nursing curricula, thereby equipping nursing students with the necessary knowledge to ensure that nurses across various settings, including maternity care, are cognizant of the importance and potential risks associated with obesity in reproductive health. Educating nursing students also serves to address public apprehensions surrounding obesity. Hence, this study aims to evaluate pregnant women's knowledge and beliefs regarding the impact of obesity on breastfeeding continuation. Specifically, the study sought to address the following question: What is the extent of pregnant women's knowledge regarding the influence of obesity on breastfeeding continuation? What are the prevailing beliefs among pregnant women regarding the influence of obesity on breastfeeding continuation?

Materials and Methods

Study Design:

A descriptive cross-sectional study was adopted for this research.

Study Setting:

The study took place in a secondary hospital in the Riyadh region.

Study Sample:

A purposive sample comprising 550 pregnant women was recruited.

Inclusion criteria:

primi or multigravida pregnant women, aged between 20-39 years, and in their second or third trimester of pregnancy.

Exclusion criteria:

include twin pregnancy, non-lactating in a previous pregnancy, and any medical conditions or history of breast surgery.

Sampling:

The sample size was determined using Cochran's sample size formula.

$$n=\frac{z^2*p*(1-p)/e^2}{1+\frac{z^2*p*(1-p)}{e^2*N}}, n=\frac{1.96^2*0.5*(1-0.2)/.05^2}{1+\frac{1.96^2*0.2*(1-0.2)}{.05^2*89750}} = 550, N$$

= Population size, z = Critical value of the normal distribution at the required confidence level, z = 1.96, p = Sample proportion,p= 0.2 and e = Margin of error, e =.05.

Data Collection :

Data for this study was collected using a Google survey administered to pregnant women via hospital messages. Participants were invited to complete the study, which included questions about socio-demographic characteristics, obstetric history, and responses to the obesity knowledge and beliefs scales. The survey was disseminated electronically through hospital communication channels. This work was done between January 2024 and April 2024.

Study Instruments:

The tools used to collect the data were divided into three parts, with the first part comprising six topics designed to assess pregnant women's demographic data, namely age, marital status, education level, occupation, BMI (BMI was computed from the weight in kilograms and height in meters as participants self-reported using an online survey), and feedback obtained from their obstetrical history, specifically the duration of breastfeeding but also other data such as gravidity, parity, abortion, living children, and gestational age.

The second part sought to assess pregnant women's knowledge with a tool with two sections. Part (A) was involved with data concerning a general understanding of obesity and was adopted from this research [12]. This section comprised questions on factors that lead to obesity, health consequences related to obesity, and the participants' impression of the extent of obesity among Saudi women. To maintain the specificity and relevance to the culture, the questions were reviewed by a panel of experts in maternal and community health in Saudi Arabia and then piloted on 10 typical respondents to confirm comprehensiveness and compliance with Saudi culture. All necessary changes were made

Table 2: Correlation between Socio-demographic Variables (N=176):

depending on the feedback received. Five questions in Part (B) were strategically targeted at testing the participants' knowledge regarding the impact of obesity on breastfeeding. A scoring system was applied: When the respondents provided the correct answers they were assigned a score of 1 while wrong answers or "don't know" responses attracted a score of 0. The total scores obtained were then proportionately transformed into percentages and any score below 50 percent was rated as unsatisfactory knowledge while any score above 50 percent was rated as satisfactory knowledge.

The last, third, tool of data collection was the Obesity Beliefs Scale, which was designed to assess pregnant women's beliefs. Based on the instrument adapted from this research [13], the pregnant women's belief in obesity's impact on breastfeeding duration was evaluated. The scale employed a Likert format with the answers on the scale being 1 disagreeing, 2 being neutral and 3 agreeing. The total belief scores were categorized into two levels: The negative beliefs ranged from 1 and 6 while the positive beliefs ranged from 7 to 12. Like the knowledge tool, the belief scale was evidenced to experts and peers in Saudi Arabia for culture relevancy and relevance to the sample population, with modifications made according to the suggestions

Validity and Reliability:

The content validity, relevance, and clarity of the tools were evaluated by a panel of three experts in community health nursing and maternity care. Adjustments were made accordingly. The reliability of tools (2 and 3) was assessed using Cronbach's alpha test, indicating high dependability (0.78 & 0.77).

Ethical Considerations:

Ethical clearance was obtained from the Local Committee of Bioethics (LCBE) with IRB LOG NUMBER 23-606C and the institutional review board (IRB) at Majmaah University number (MUREC-Des. 18/CONI-2O23 / 35-2). Pregnant women received detailed information about the study's purpose, risks, benefits, and required information, and provided voluntary informed consent. Withdrawal from the study is permitted without penalty. Pregnant women's privacy and confidentiality were ensured, with data stored securely.

Statistical Analysis:

Data was coded, tabulated, and analyzed using a personal computer using the Statistical Package for the Social Sciences (SPSS) program version 25 statistical software. Mean and standard deviation were used for continuous variables. The categorical variable was expressed by frequency and proportions. For categorical variables,

the Chi-square test was used. The signifi- cance level was chosen as $p<0.05$.

Table 1: Percentage description of study sample about demographic characteristics (n=550).

Demographic characteristics	Freq.	%
Maternal Age (years)		
less than 20	24	4.4
from 20 to less than 30	148	26.9
from 30 to less than 40	211	38.4
more than 40	167	30.4
Mean age (mean ±SD) yrs.	29.47	± 8.6
Level of education		
Can't read and write	8	1.5
Primary school	30	5.5
Intermediate education.	46	8.4
Secondary school	101	18.4
University level	365	66.4
Occupational level		
Working	292	53.1
	215	39.1
Housewives	43	7.8
Student		
Marital Status		
Married	510	92.7
Divorced	40	7.3

Table (1): The demographic profile indicates that 38.4% of the study sample fell within the age range of 30 to less than 40, with a mean age of 29.47 ± 8.6 years. A majority of participants were employed, and more than half (66.4%) had completed university-level education. Furthermore, a substantial proportion (92.7%) of the study sample was married.

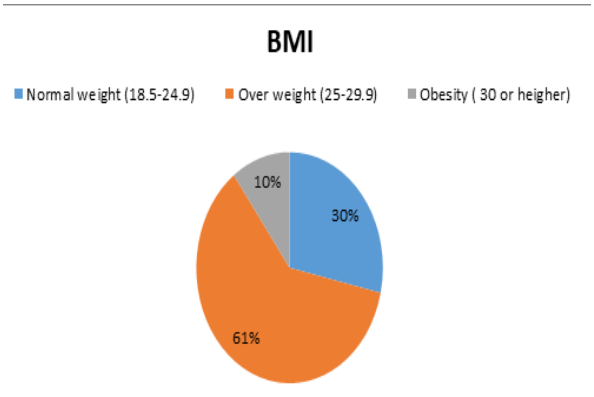


Figure 1: Percentage distribution of the Selected Sample toward their Body Mass Index (BMI) (n=550).

Figure (1): The data reveals a significant finding – more than half (61%) of the study sample were classified as overweight.

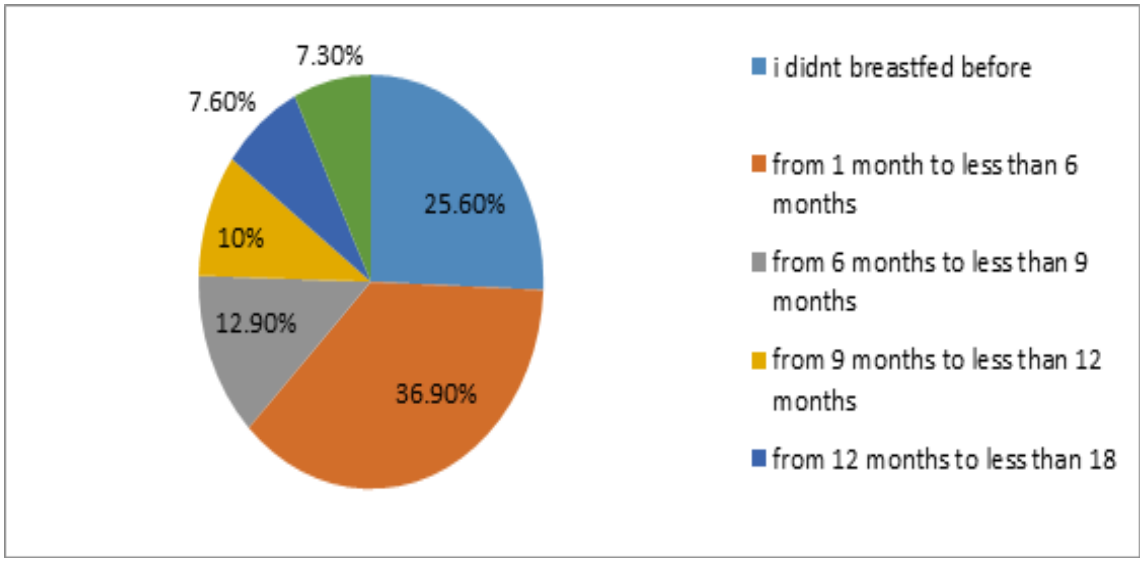


Figure 2:Percentage distribution of duration of breastfeeding for Sample (n=550).

Figure (2): It's noteworthy that 25% of the sample had not breastfed previously, while the majority (36.9%) had engaged in breastfeeding for a duration ranging from 1 to less than 6 months.

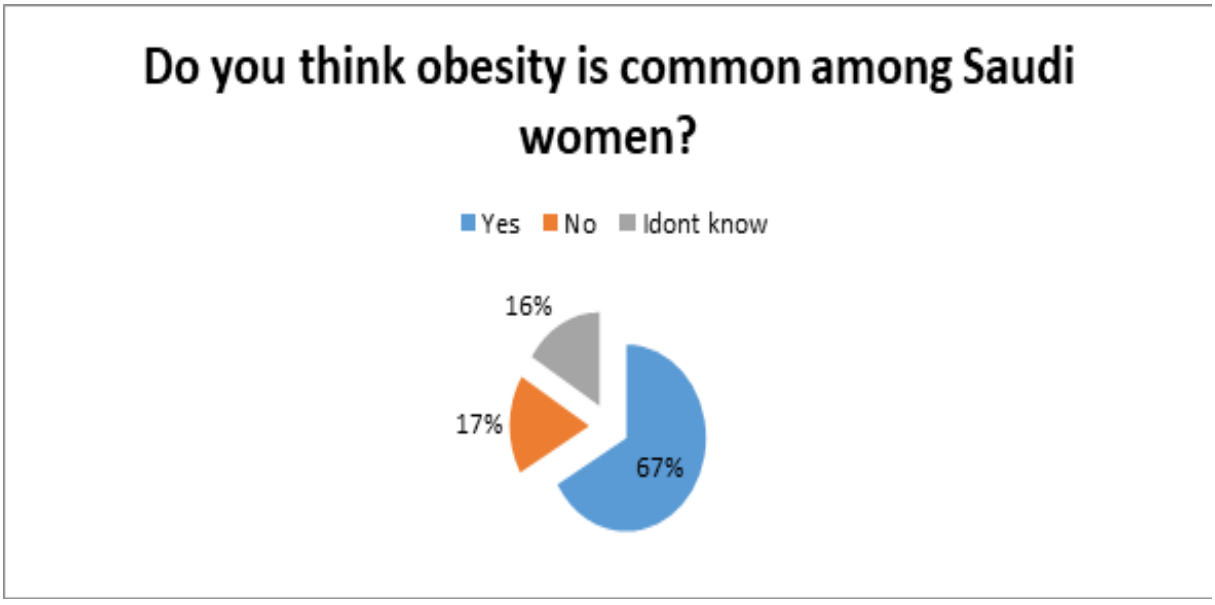


Figure 3: perception of the selected sample toward the prevalence of obesity among Saudi women (n=550).

Figure (3): The findings indicate a significant perception within the sample, with more than half acknowledging that obesity is common among Saudi women.

Table 2: Percentage distribution of the study sample toward Obstetrical profile (n=550)

Variables	.Freq	%
Primigravida Gravida (2-4) More than 4	135 248 167	24.5 45.1 30.4
Nullipara Para from (1-3) More than 3	136 213 201	24.7 38.7 36.5
Number of abortion 0 1-2 ٢>	 367 141 42	 66.7 25.6 7.6
Number of children 0 1-3 ٣>	 138 178 234	 25.1 32.4 42.5
Gestational age (Weeks)	±8.01 32.09	

Table (2): The demographic breakdown of the study sample reveals that 45% were in the 2-4 gravida range, while 38% had a parity of 1-3. A substantial majority (66.7%) reported no history of abortion. Additionally, 42% had more than three children. The mean gestational age stands at 32.09 ± 8.10.

Table 3: Percentage distribution of the study sample regarding general knowledge about obesity (n=550).

General knowledge about obesity	**Yes** **(1)**	**NO** **(0)**
	No. (%)	**No. (%)**
1) Do you know what obesity is?	488(88.7)	62(11.3)
If yes, how do you define obesity? **(n=488)** ▪ Weight gain above normal. ▪ Fat accumulation in the body that leads to health problems ▪ Increase in the BMI over 25 ▪ Weight disproportionality with height	 100 (20.5) 95 (19.5) 250 (51.2) 43 (8.8)	

2) Knowing the causes of obesity	467(84.9)	83(15.1)
If yes, state the causes of obesity (n=467)		
▪ Unhealthy food, frequent fried food consumption	100 (21.4)	
▪ Eating more than the normal requirement	70 (14.9)	
▪ Excess sugar consumption in the form of sweets; additional sugars in coffee/tea/milk	150 (32.1)	
▪ Frequent consumption of sugar-sweetened beverages (Pepsi/coca-cola/sweetened juices	57 (12.2)	
Heredity and hormonal disturbance	20 (4.3)	
▪ Pregnancy	9 (1.9)	
▪ Smoking	7 (1.4)	
▪ Some medication	13(2.7)	
▪ Constant stress	11(2.3)	
▪ Lack of exercise	30(6.4)	
3) Knowing the health risks of obesity	478(86.9)	72(13.1)
If yes, state the health risks of obesity (n=478)		
▪ Diabetes mellitus, hypertension, and stroke	150 (31.4)	
▪ Heart diseases, such as heart attack, increased cholesterol levels,	123 (25.7)	
▪ Joint problems	197(41.2)	
▪ Respiratory problems	8 (1.7)	

Table (3): It's interesting to note that, a significant percentage (88.7%) of the study sample recognizes obesity. Define it primarily as a BMI over 25. Additionally, more than three-quarters are aware of obesity causes, with 32% attributing it to excess sugar consumption. Notably, only a minority mentioned smoking and pregnancy as causes. Furthermore, a substantial portion (86%) acknowledges the health risks of obesity, with 41% specifically citing joint problems as a concern.

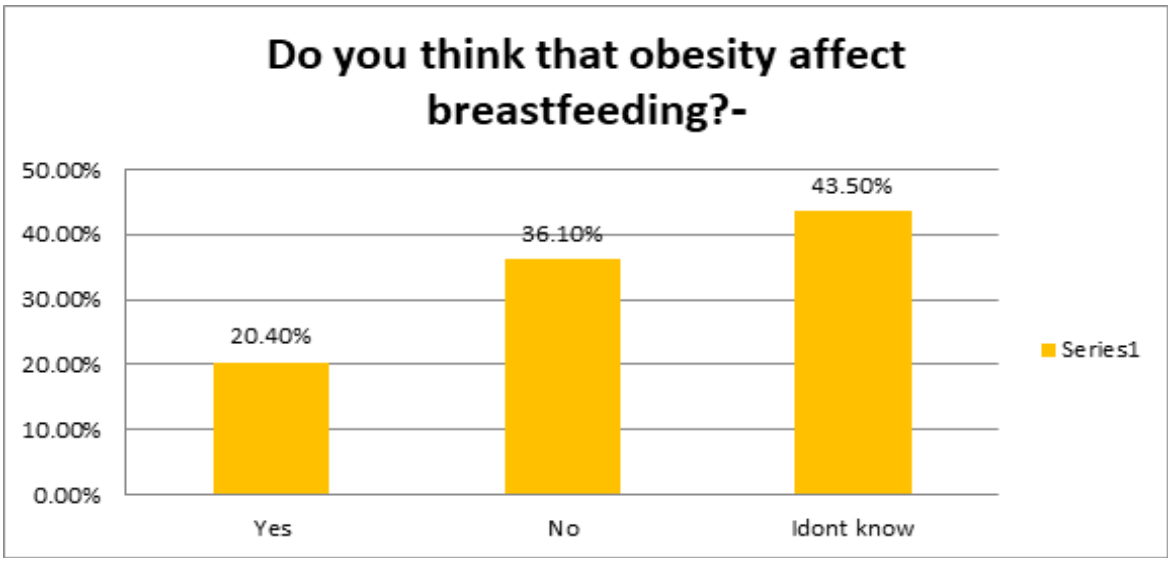


Figure 4: Perception of the selected sample toward the effect of obesity on breastfeeding (n=550).

Figure (4): revealed that 43% are unaware of the impact of obesity on breastfeeding

Table 5: Percentage distribution of the Study Sample Regarding Knowledge about the Effect of Obesity on Breast>Feeding Continuation(n=550).

Knowledge	Yes (2)	I don't know(1)	No (0)
	No (%)	No (%)	No (%)
Effect of Obesity on Breastfeeding Continuation			
1) Obesity leads to a decreased initiation of breastfeeding.	118(21.5)	277(50.4)	155(28.2)
2) Obesity leads to a shortened duration of breastfeeding.	102(18.5)	308(56)	140(25.5)
3) Obesity leads to a less adequate milk supply.	107(19.5)	268(48.7)	175(31.8)
4) Obesity leads to difficulty in the baby latching on to the breast correctly.	119(21.9)	274(49.8)	157(28.5)
5) Obesity leads to feelings of embarrassment during breastfeeding.	274(49.8)	6(1.1)	270(49.1)
Total mean knowledge score	4.67 ± 3.16.		
Minimum – Maximum	0-10		

Table (5) shows that half of the study sample didn't know the effect of obesity on breastfeeding continuation.

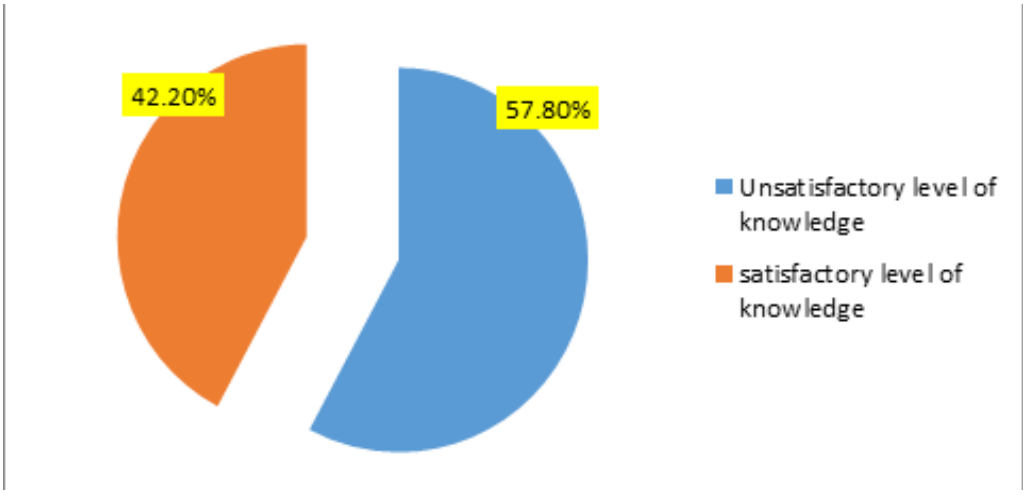


Figure5 : Percentage distribution of the Selected Sample toward Level of Knowledge (n=550).

Figure (5) shows that 57.8% of the study sample had an unsatisfactory level of knowledge about the effect of obesity on breastfeeding continuation, compared to 42.2% who had a satisfactory level of knowledge, with a mean knowledge score of 4.67 ± 3.16.

Table 6: Percentage distribution of the study sample toward beliefs regarding the effect of obesity on breastfeeding continuation (n=550).

Beliefs about the effect of obesity on breastfeeding continuation	**Agree N (%)**	**Neutral N (%)**	**Disagree N (%)**
1. Do you think that large breast size among obese women leads to difficulty in breastfeeding?	93(16.9)	302(54.9)	155(28.2)
2. Do you think that large breast size among obese women affects the baby's position during breast-feeding?	189(34.4)	235(42.7)	126(22.9)
3. Do you think that obese women feel low self-esteem and self-image while breastfeeding a child in public?	245(44.5)	209(38)	96(17.5)
4. Do you think that lack of psychological support for obese women affects breastfeeding?	245(44.5)	233(42.4)	72(13.1)
Total means belief score			8.59 ± 1.56
Minimum – Maximum			5 – 11

The overall mean belief score of 8.59 ± 1.56 indicates a certain level of consensus within the study sample. Notably, 28% disagree that large breast size among obese women leads to difficulty in breastfeeding, while 34% agree that it affects the baby's position during breastfeeding. Additionally, 44% believe that obese women may

experience low self-esteem and self-image while breastfeeding in public, and a similar percentage (44.5%) agree that the lack of psychological support for obese women can impact breastfeeding.

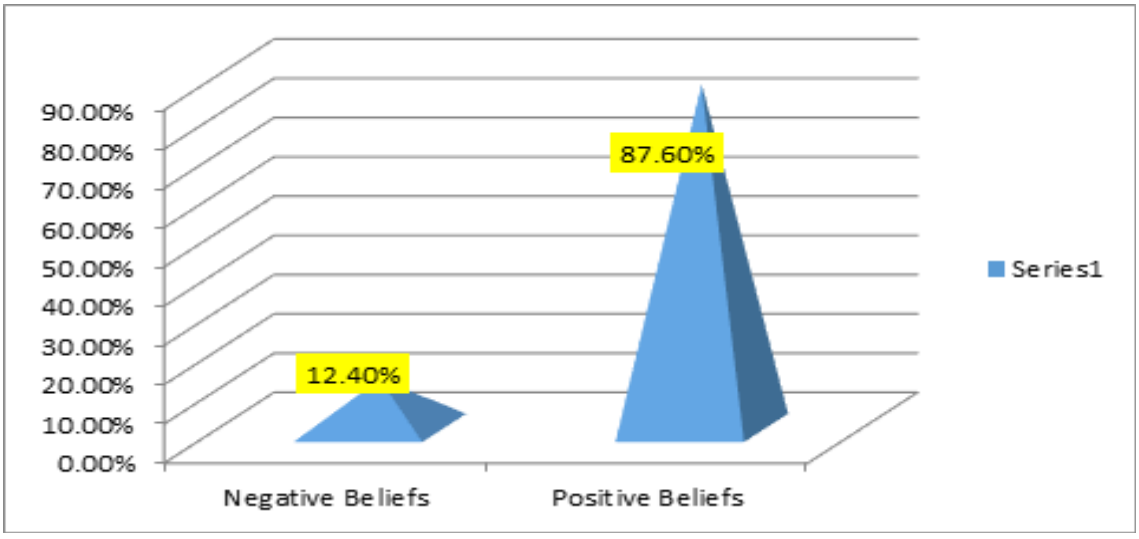


Figure 6: Percentage distribution of the study sample toward the level of beliefs regarding the effect of obesity on breastfeeding continuation (n=550).

Figure (6): The data demonstrates a notable trend, with approximately 87.6% of the study sample holding positive beliefs about the impact of obesity on breastfeeding continuation, while only 12.4% express negative beliefs.

Table 7: Relationship between total knowledge and their belief regarding the effect of obesity on breastfeeding continuation (n=550).

Belief categories	Total knowledge scores		p-value
	Satisfactory	Unsatisfactory	
-Negative	29	39	χ^2=0.007
-Positive	203	279	P=0.934

Table 7 illustrates that belief categories: Negative or Positive do not correlate with total knowledge scores: Satisfactory or Unsatisfactory using a chi-squared value of 0.007(p-value =0.934).

Discussion

The study provides insights into pregnant women's knowledge and beliefs regarding obesity's impact on breastfeeding continuation. The findings of this study revealed a notable trend wherein over half of the participants were categorized as overweight, echoing the global surge in obesity rates, particularly among women of reproductive age in Saudi Arabia[14]. This observation underscores the urgent necessity of

addressing obesity as a paramount public health issue, given its far-reaching implications for maternal and child health outcomes, as underscored by [15]. Nonetheless, it is imperative to acknowledge the intricate complexity of maternal health, extending beyond the singular focus on obesity.

Obesity has been intricately associated with challenges in both the initiation and continuation of breastfeeding[6]. Numerous studies have corroborated the notion that obese women exhibit lower rates of breastfeeding initiation and face an elevated risk of premature breastfeeding cessation[11]. Factors such as delayed lactogenesis and insufficient milk supply, frequently observed in cases of maternal obesity, contribute to the obstacles encountered during breastfeeding[7]. Furthermore, maternal obesity often results in physical discomfort and difficulties in adopting comfortable breastfeeding positions, further impeding the successful establishment of breastfeeding[10,18]. On the contrary, studies conducted in Saudi Arabia [19] did not identify obesity as a factor associated with delayed breastfeeding.

Moreover, maternal obesity exerts a discernible influence on infant feeding intentions, with research indicating that higher maternal BMI correlates with an increased likelihood of prematurely discontinuing breastfeeding[15,9,8]. This underscores the pivotal role of addressing obesity among women of reproductive age not only in safeguarding maternal health but also in fostering optimal infant feeding practices and enhancing child health outcomes.

Hence, while addressing obesity stands as a pivotal step in alleviating its adverse repercussions on maternal and child health, interventions must also prioritize the facilitation of breastfeeding initiation and continuation among obese women [20]. This could entail the implementation of targeted breastfeeding support programs, dissemination of education regarding breastfeeding techniques and benefits, and the mitigation of barriers such as discomfort and perceived challenges associated with breastfeeding among obese individuals [6]. By integrating strategies aimed at combating obesity with initiatives geared towards fostering successful breastfeeding practices, public health interventions can achieve more holistic advancements in maternal and child health outcomes [21].

The study's findings unveil a significant pattern where a considerable portion of participants opted for breastfeeding for less than six months, echoing the findings of Tuoyire [22], which indicated that obese women tend to plan shorter durations for breastfeeding. While shedding light on a critical aspect of infant feeding practices within the study population, this observa-

tion also prompts questions regarding the underlying factors influencing this decision[23]. One plausible explanation may stem from participants' perception that obesity could negatively impact milk production, as suggested by the results. This underscores the necessity for further exploration into the intricate interplay of factors affecting breastfeeding duration among women affected by obesity [24].

However, despite being aware of the health risks associated with obesity, the study participants showed a lack of knowledge about how obesity affects breastfeeding, mirroring findings from previous research [13]. This highlights the need for educational programs tailored to address these knowledge gaps and empower women to make informed decisions about breastfeeding.

In a recent study, there was no relationship between the knowledge scores and the belief categories in the current study this may be due to many reasons. The described discrepancy between knowledge and beliefs might be caused by issues such as inadequate information regarding the effects of obesity on breastfeeding, provided by Healthcare providers or gotten from community resources, which might not cover the topic at all; cultural factors, in obesity as a non-threatening issue or its potential consequences for breastfeeding might not be considered; conflicts of an emotional nature such as low self-esteem, or body image issues, that may lead to doubts about one's ability. These issues cannot be solved by increasing knowledge alone, but by changing the environment so that beliefs correspond to organizational knowledge and proven best practices [25]. This finding corresponds with previous research in Saudi Arabia that stresses the importance of addressing these determinants to promote successful breastfeeding [26]. To improve outcomes for obese women, interventions should be put in place to dispel misconceptions and provide comprehensive psychosocial support.

Moreover, the absence of a significant difference between knowledge levels and beliefs implies a complex interplay of factors influencing women's perceptions and attitudes. This underscores the necessity for multifaceted interventions addressing both knowledge deficits and psychosocial barriers to breastfeeding continuation [27].

Conclusion:

the study shows the importance of taking a comprehensive approach to encourage breastfeeding for pregnant women who are obese. This involves addressing gaps in knowledge, changing societal attitudes, and providing emotional support, which are all important factors in improving breastfeeding practices and ultimately promoting better health outcomes for both

mothers and children.

Recommendation:

Create program educational interventions to enhance pregnant women's awareness about obesity and breastfeeding through group sessions, online sessions, or personalized counseling sessions from healthcare professionals, organize group sessions, videos or live sessions, and workshops, and Educate healthcare providers in certain communicational skills (use of feelings such as empathy, and avoiding the judgment of patient). Direct awareness campaigns for obesity-apprise overweight women for breastfeeding separate the myth and misconception for stigma, different media publishes and availing community partners for effective reach. Further research is needed to investigate the effectiveness of targeted interventions tailored to this population.

Limitation:

The limitations of self-reported data (BMI), may contain various biases. Also, utilizing purposive sampling techniques might lead to selection bias. So future studies using random sampling methods are needed to increase representativeness.

Authors' Contributions:

All authors have contributed equally to all processes of the research work. They have read and agreed to the published version of the manuscript.

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Ethical approval:

Ethical clearance was obtained from the Local Committee of Bioethics (LCBE) with IRB LOG NUMBER 23-606C and the institutional review board (IRB) at Majmaah University number (MUREC-Des. 18/CONI-2O23 / 35-2).

Conflict of interest:

The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article

Informed Consent:

All participants provided informed consent, and confidentiality was assured throughout the study.

References:

1. Fox A, Feng W, Asal V. What is driving global obesity trends? Globalization or "modernization"? Global Health. 2019;15(1):32.
2. Okati-Aliabad H, Ansari-Moghaddam A, Kargar S, Jabbari N. Prevalence of Obesity and Overweight among Adults in the Middle East Countries from 2000 to 2020: A Systematic Review and Meta-Analysis. J Obes. 2022;2022:8074837. Published 2022 Feb 3. doi:10.1155/2022/8074837.
3. Althumiri NA, Basyouni MH, AlMousa N, et al. Obesity in Saudi Arabia in

2020: Prevalence, Distribution, and Its Current Association with Various Health Conditions. Healthcare (Basel). 2021;9(3):311.

4. World Health Organization. (2020). Obesity and overweight. Retrieved from https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
5. Tschiderer L, Seekircher L, Kunutsor SK, Peters SAE, O'Keeffe LM, Willeit P. Breastfeeding Is Associated With a Reduced Maternal Cardiovascular Risk: Systematic Review and Meta-Analysis Involving Data From 8 Studies and 1 192 700 Parous Women. J Am Heart Assoc. 2022 .
6. Al-Anazi OM, Mohammad Haneef MS, Zafar M, Ahsan M. Association of Maternal Obesity and Diabetes Mellitus with Exclusive Breastfeeding Among Saudi Mothers in Jubail, Saudi Arabia. Int J Prev Med. 2022 Apr 8;13:68. Doi: 10.4103/ijpvm.IJPVM_61_20. PMID: 35706874; PMCID: PMC9188902.
7. Luzardo-Ocampo I, Dena-Beltrán JL, Ruiz-Herrera X, Ocampo-Ruiz AL, Martínez de la Escalera G, Clapp C, Macotela Y. Obesity-derived alterations in the lactating mammary gland: Focus on prolactin. Mol Cell Endocrinol. 2023 Jan 1;559:111810.
8. Achike M, Akpinar-Elci M. The Role of Maternal Prepregnancy Body Mass Index in Breastfeeding Outcomes: A Systematic Review. Breastfeed Med. 2021;16(9):678-686.
9. Hashemi-Nazari SS, Hasani J, Izadi N, et al. The effect of pre-pregnancy body mass index on breastfeeding initiation, intention, and duration: A systematic review and dose-response meta-analysis. Heliyon. 2020;6(12):e05622.
10. Chen CN, Yu HC, Chou AK. Association between Maternal Pre-pregnancy Body Mass Index and Breastfeeding Duration in Taiwan: A Population-Based Cohort Study. Nutrients. 2020;12(8):2361.
11. Bish MR, Faulks F, Amir LH, et al Relationship between obesity and lower rates of breastfeeding initiation in regional Victoria, Australia: an 8-year retrospective panel study BMJ Open 2021;11:e044884. doi: 10.1136/bmjopen-2020-044884.
12. Alhawiti, Rasha Mohammed. "Knowledge, attitude, and practice about obesity among adults (18-45 years) in primary health care in Medina, KSA 2019." International Journal of Medicine in Developing Countries 5.2 (2021): 648-648.
13. Chang YS, Glaria AA, Davie P, Beake S, Bick D. Breastfeeding experiences and support for women who are over-

weight or obese: A mixed-methods systematic review. Matern Child Nutr. 2020;16(1)

14. Alsulami S, Baig M, Ahmad T, et al. Obesity prevalence, physical activity, and dietary practices among adults in Saudi Arabia. Front Public Health. 2023;11:1124051
15. Larnkjær A, Ong KK, Carlsen EM, Ejlerskov KT, Mølgaard C, Michaelsen KF. The Influence of Maternal Obesity and Breastfeeding on Infant Appetite- and Growth-Related Hormone Concentrations: The SKOT Cohort Studies. Horm Res Paediatr. 2018;90(1):28-38.
16. Vasile CM, Padovani P, Rujinski SD, et al. The Increase in Childhood Obesity and Its Association with Hypertension during Pandemics. J Clin Med. 2023;12(18):5909.
17. Fair FJ, Ford GL, Soltani H. Interventions for supporting the initiation and continuation of breastfeeding among women who are overweight or obese. Cochrane Database Syst Rev. 2019;9(9)
18. Yuan ZW, Ma L, Ge WL, et al. The Influencing Factors of Breastfeeding for Full-Term Singleton Within Six Months of Birth in Xi'an Before the Covid-19 Pandemic. Front Pediatr. 2022;9:801436.
19. Ahmed, A.E., Salih, O.A. Determinants of the early initiation of breastfeeding in the Kingdom of Saudi Arabia. Int Breastfeed J 14, 13 (2019). https://doi.org/10.1186/s13006-019-0207-z
20. Farpour-Lambert NJ, Ells LJ, Martinez de Tejada B, Scott C. Obesity and Weight Gain in Pregnancy and Postpartum: an Evidence Review of Lifestyle Interventions to Inform Maternal and Child Health Policies. Front Endocrinol (Lausanne). 2018;9:546.
21. Aryeetey R, Dykes F. Global implications of the new WHO and UNICEF implementation guidance on the revised Baby-Friendly Hospital Initiative. Matern Child Nutr. 2018;14(3)
22. Tuoyire DA, Tampah-Naah AM. Association of breastfeeding duration with overweight and obesity among women in Ghana. Front Glob Womens Health. 2024 Sep 16;5:1251849. Doi: 10.3389/fgwh.2024.1251849. PMID: 39351345; PMCID: PMC11439822..
23. Tracz J, Gajewska D. Factors Influencing the Duration of Breastfeeding among Polish Women. J Mother Child. 2020;24(1):39-46.
24. Liu F, Lv D, Wang L, et al. Breastfeeding and overweight/obesity among children and adolescents: a cross-sectional study. BMC Pediatr. 2022;22(1):347.
25. Baumgartner T, Bhamidipalli SS, Guise D, et al. Psychosocial and Sociodemo-

graphic Contributors to Breastfeeding Intention in First-Time Mothers. Matern Child Health J. 2020;24(8):1047-1056.

26. Alshammari MB, Haridi HK. Prevalence and Determinants of Exclusive Breastfeeding Practice among Mothers of Children Aged 6-24 Months in Hail, Saudi Arabia. Scientifica (Cairo). 2021 Mar 27;2021:2761213. Doi: 10.1155/2021/2761213. PMID: 33854807; PMCID: PMC8019643..
27. Bai YK, Alsaidi M. Sustainable Breastfeeding: A State-of-the-Art Review. J Hum Lact. 2024;40(1).