INJNS (38)2 (2025) 16-26

Iraqi National Journal of Nursing Specialties

Journal homepage: https://injns.uobaghdad.edu.iq/index.php/INJNS

Research Article Open Access

Assessment of the Pregnant Women's Self-Efficacy for Maintaining a Healthy Weight during Pregnancy

Ahmed M. Younus MSc.*; Zahid J. Mohammed, Ph.D.**.
* Instructor, Clinical Nursing Department, College of Nursing, Tikrit University, Iraq.
Email: ahmedm.younes@tu.edu.iq
** Professor, Basic Science of Nursing Department, College of Nursing, University of Baghdad, Iraq.
Email: dr.zahid@conursing.uobaghdad.edu.iq

ARTICLE INFO

Article history:
Received: 17/05/2023
Accepted: 23/07/2023
Published: 31/12/2025

Keywords:
Assessment,
self-efficacy,
healthy weight,
pregnancy,
nursing

ABSTRACT

Objective(s): To assess the pregnant women's self-efficacy for maintaining weight during pregnancy.
Method(s): A descriptive study design was conducted in Mosul city for the period from July 2nd, 2022 to November 7th, 2022. A non-probability (convenience) sample was selected from (532) pregnant women who attended the primary health care centers. A questionnaire was developed through review of relevant literature, and consists of two parts namely: participant socio-demographic characteristics, and self-efficacy of pregnant women in relation to physical activity and healthy eating habits and behaviors to assess self-efficacy of pregnant women. The data was collected through the use of the study tool and the interview technique. The data was analyzed using the SPSS program, version (26), applying the descriptive approach to data analysis.
Results: The results of the study showed that (31.8%) of pregnant women were aged between (26-30) years, (84.02%) of them lived in the city, (68.80%) were housewives, more than half of pregnant women lived in their own homes (57.89%). The study also showed that more than half of pregnant women were overweight during pregnancy at a rate of (68.3%), and (44.18%) of them consumed unhealthy food.
Conclusions: The study showed that most of pregnant women suffer from overweight and obesity during pregnancy, as they do not practice daily physical activity, and follow an unhealthy food.
Recommendations: The study recommended the need to develop educational programs about the importance of exercise, healthy nutrition, and the risks of gain weight during pregnancy.

*Corresponding author: Instructor, Clinical Nursing Department, College of Nursing, Tikrit University, Iraq. **Email:** ahmedm.younes@tu.edu.iq (A. M. Younus). ORCID: https://orcid.org/0009-0007-1459-6246. **DOI:**https://doi.org/10.58897/8dd4sr16

تقييم القابلية الذاتية للنساء الحوامل للحفاظ على وزن صحي أثناء الحمل

المستخلص

الأهداف: لتقييم القابلية الذاتية للنساء الحوامل للحفاظ على وزن صحي أثناء الحمل.
منهجية البحث: دراسة وصفية أجريت في مدينة الموصل للمدة من ٢ تموز ٢٠٢٢ الى ٧ تشرين الثاني ٢٠٢٢, وتم اختيار عينة ملائمة من (٥٣٢) من النساء الحوامل اللائي ارتادوا المراكز الصحية الاولية. تم تكوين استبانة من خلال مراجعة الأدبيات ذات الصلة، وتتكون من جزئين: جزء يقيس المعلومات الاجتماعية والديموغرافية، وجزء يقيس بيانات نمط حياة المرأة الحامل المتعلقة بالنشاط البدني وعادات وسلوكيات الاكل الصحي لتقييم القابلية الذاتية للمرأة الحامل. تم جمع البيانات من خلال استخدام أداة الدراسة وتقنية المقابلة. تم تحليل البيانات باستخدام برنامج SPSS النسخة (٢٦) من خلال تطبيق المنهج الوصفي.
النتائج: أظهرت نتائج الدراسة الى ان (٣١.٨٪) من النساء الحوامل تتراوح أعمارهم بين (٢٦-٣٠) سنة، (٨٤%) منهن يعيشون في المدينة، (٦٨.٨%) هم من ربات البيوت، أكثر من نصف النساء الحوامل يسكنون في منازل خاصة بهن (٥٧.٨٩%). كما أظهرت الدراسة الى ان أكثر من نصف النساء الحوامل يعانين من زيادة الوزن والسمنة خلال الحمل بنسبة بلغت (٦٨,٣٪). بينت الدراسة ايضا الى ان (٤٤.١٢%) من الحوامل لا يمارسن النشاط البدني اليومي, كما اظهرت الدراسة الى ان (٤١.١٨%) يتناولن الاطعمة الغير الصحية يوميا.
الاستنتاجات: بينت الدراسة الى ان معظم النساء الحوامل يعانين من زيادة الوزن والسمنة خلال الحمل، ولا يمارسن النشاط البدني اليومي، ويتبعن نمطا غذائيا غير صحيا يوميا.
التوصيات: أوصت الدراسة بضرورة تطوير برامج تعليمية حول اهمية ممارسة الرياضة والتغذية الصحية وحول مخاطر زيادة الوزن على الحمل.

الكلمات المفتاحية: تقييم ، الكفاءة الذاتية ، الوزن الصحي ، الحمل.

Introduction

Pregnant women experience a variety of psychological and physiological alterations as a result of gestation, which is a natural process. Yet, it may also be followed by some of the typical gestational complications and issues that could endanger the life of the pregnant women and or her fetus [(1)], including the mother's overweight [(2)].

Overweight is an abnormal buildup of fat of the body that typically exceeds a person's optimal body weight by twenty percent or more. According to the Organization of World Health, obesity considered a global epidemic, and the diseases that might result from it are spreading more widely [(3)]. It is determined using the Body Mass Index (BMI). and the waist-hip proportion is then used to assess how fat is distributed [(4)].

Significant risk factors for a number of illnesses, such as type II diabetes mellitus, hypertension, heart illness, menopause, colon and pancreatic cancer, and all-cause mortality, include being overweight or obese. An increase in all-cause mortality is shown as a result of the morphological and physiological pressures placed on the body [(5)].

Unfavorable birth outcomes, including gestational hypertension, preeclampsia, macrosomia, and emergency cesarean birth, are very common in overweight, obese pregnant women, or who gain weight throughout gestation [(6)]. When a woman is obese and her body mass index is greater than 30 kg/m, it might also worsen the results of assisted reproductive technologies and pregnancy [(7)].

Pregnancy-related causes are thought to be responsible for around one-third of a million deaths globally each year, with 99 percent of these deaths taking place in underdeveloped nations and almost three-quarters of them being preventable [(6)].

Numerous lifestyle choices can have a negative impact on a woman's health and wellness throughout gestation, childbirth, and after delivery [8].

Though a few cases are predominantly brought on by genes, endocrine problems, drugs, or psychiatric diseases, overweight is most frequently brought on by a summation of high food calories, inactivity, and hereditary vulnerability [4][9].

Overweight has become more prevalent in society as a result of poor eating habits, such as increasing the intake of sweetened drinks and energy-dense diets, as well as eating patterns change toward purified grains, sugars fats adding, snacks, drinks, fast food, and eating out [10].

Beginning with the earliest stages of embryo developing, at delivery, during first years, childhood stage, adolescence stage, and even adults, good feeding is essential for surviving, physical intellectual growth and developing, performing, producing, well-being, and health across an entire spans of lifestyle. Also, a nutritious diet can reduce a number of illnesses, like obesity and overweight, poor nutrition, anemia due to iron-deficiency, cardiovascular illness, hypertension, dyslipidemia, diabetes type two, illness in oral, osteoporosis, diverticular disease, and impaction [11].

All people from the age of 18 to 64 are advised by the World Health Organization (WHO) to engage in physical activity (PA) of no less than 150 minutes weekly at a middle density or 75 minutes at a high intensity, or a mix of these activities. Expectant mother and their fetuses are thought to be safer while exercising at a mild intensity (PA) [12].

The best gestational circumstances may lessen the load of non-infectious illness in the fetus, and modifiable factors of lifestyle through gestation have been linked to both maternal and fetus health. Physical activity (PA) during pregnancy is thought to be healthy and safer to each of mother and her fetus and appears to lower the risk of premature delivery, delivery by cesarean section, diabetes mellitus during pregnancy, gestational hypertensive disorders, excessive weight gain through pregnancy, and lumbo-pelvic pain [13].

Mother lower education, joblessness, gestational disturbances, multiparty, strength or weariness lacking, time lacking, desire lacking, safety worries or fear are just a few of the variables that have been demonstrated to affect to the participation expectant mother in physical activity (PA). A social support lacking, beliefs relater to religion and culture, as well as other duties, have been noted in certain research. Insufficient resources accessing and unfavorable climate were also mentioned in research describing environmental obstacles to physical activity (PA) through gestation [14].

Methods

Study Design and Setting

A descriptive study is carried out from July 2nd، 2022 to November 7th 2022**.** The study is conducted in AL-Sukar Primary Health Care Center, AL-Qudes PHC, AL-Rashydia PHC, AL-Sharqi PHC, AL-Karama PHC, AL-Zahraa PHC, at the left side of Mosul city. AL-Garbee PHC, AL-Hadbaa PHC, Tamoz PHC, AL-Mansoor PHC, AL-Rafdain PHC, and AL-Tob Alryadi. at the right side of Mosul City.

Samples and Sampling

A non-probability (convenience sample) technique used to include (532) of pregnant women who visited the primary health care centers to attain essential health care and to follow their health status during pregnancy.

Data Collection and Study Instruments

To achieve the study aims, a constructed questionnaire has been used by reviewing of relevant literature, and

consultation of a panel of experts. The questionnaire is involving of (28) item which assess pregnant women eating patterns and physical activity during pregnancy, the physical activity measured as (Never, less than 1/2 hour per day, 1/2 to 1 hour per day, 1 to 2 hour per day, 2 to 3 or more hours per day), and the eating patterns measured as (Daily, Weekly, Monthly, Occasionally, Never) to measure weight maintaining through pregnancy.

Validity and Reliability of the Questionnaire

To determine the content validity and internal consistency reliability of the study instrument, a pilot study is carried out from Jun 1st to 15th Jun 2022. A purposive sample of (20) pregnant is selected for the purpose of the questionnaire reliability. Cronbach alpha correlation coefficient (0.83%) is computed for such reliability. Fifteen experts are asked to determine of the instrument content's validity. Study instrument and the interview technique are used to collecting of the data.

approach which includes frequency, percent and total score. Which applied to all variables of the questionnaire.

Ethical Considerations

Ethical approval has been obtained from the research ethics committee in the College of Nursing/University of Baghdad, Official agreement (٢٠٢٢/٤/٢٤-١٤٤) was gained from the Ministry of Planning Department of the general statistical organization. Also, approval obtained from Nineveh Health Director/Training Center and Human Development. Study participants completed consent forms and acknowledging their understanding that their participation is voluntary and that the information would be treated in confidence and used exclusively for research purposes.

Data analysis

Data were analyzed through the application of the descriptive data analysis

Results:

Table 1. Socio-demographic characteristics for Pregnant Women (n=532)

Variables	Frequency	Percentage
Age		
16-20	81	15.2
21-25	145	27.3
26-30	169	31.8
31-35	82	15.4
36-40	42	7.9
41-45	13	2.4
	M, SD 27.2 ± 2.75	
Residence		
Rural	85	15.98
Urban	447	84.02
Occupation		
Employee	90	16.92
Housewife	366	68.80
Student	61	11.47
Daily wages	8	1.50
Employee (private sector)	7	1.32

Residential type		
Owner	308	57.89
Rent	224	42.11

F= Frequency, **%**= Percentage, **M**= Mean, **SD**= Standard Deviation

Table (1) reveals that only (31.8%) of pregnant women were (26-30) years old, (84%) were lived in the city areas, (68.8%) of them had an occupation as housewives, and (57.89%) were lived in a house of their own.

Table 2. Body Mass Index of pregnant women before and during pregnancy (n=532)

(BMI) Classification	Pre-pregnancy		During pregnancy	
	F	%	F	%
Underweight (Less than 18.5)	39	7.3	15	2.8
Normal weight (18.5-24.9)	371	**69.7**	110	20.7
Overweight (25-29.9)	86	16.2	226	42.5
Obesity Class I (30-34.9)	18	3.4	137	25.8
Obesity Class II (35-39.9)	15	2.8	31	5.8
Obesity Class III (40 Or more)	3	0.6	13	2.4
Total	532	100%	532	100%

F= Frequency, **%**= Percentage, **BMI**= Body Mass Index.

Table (2) shows that the highest percentage of women before pregnancy had a normal weight, with a rate of (69.7%), those who were overweight were (16.2%) of them, while the percentage of the study sample who had obesity class; I, II, III was (3.4%), (2.8%), and (0.6%), respectively. As for the body mass during pregnancy, the results indicate that almost half of women was overweight (42.5%), while the percentage of those who had obesity class I, II, III was (25.8%), (5.8%), and (2.4%), respectively.

Table 3. Pregnant women life style Patterns-Physical activity (n=532)

Item	Response scale										M	SD
	Non		Less than 1/2 hour per day		1/2 to 1 hour per day		1 to 2 hour per day		2 to 3 or more hour per day			
	No.	%	No.	%	No.	%	No.	%	No.	%		
1. Preparing meals (cook, set table, wash dishes)	206	38.72	17	3.20	119	22.37	21	3.95	169	31.77	3.99	1.03
2. Dressing, bathing, feeding children	26	4.89	157	29.51	142	26.69	139	26.13	68	12.78	2.37	1.17
3. Playing with children	9	1.69	218	40.98	85	15.98	205	38.53	15	2.82	1.86	0.90
4. Cleaning (Mop, put things away)	119	22.37	43	8.08	117	21.99	33	6.20	220	41.35	3.64	1.14
5. Shopping (for food, clothes, or other items)	17	3.20	130	24.44	154	28.95	157	29.51	74	13.91	2.42	1.10
6. Carrying children	12	2.26	310	58.27	57	10.71	120	22.56	33	6.20	1.72	1.03
7. Taking care of an older adult	22	4.14	314	59.02	71	13.35	71	13.35	54	10.15	1.87	1.22
8. Sitting and using a computer or writing	113	21.24	213	40.04	34	6.39	19	3.57	153	28.76	2.88	1.66

9. Watching TV or a video	161	30.26	78	14.66	49	9.21	7	1.32	237	44.55	3.74	1.31
10. Sitting and reading, talking, or on the phone	159	29.89	78	14.66	67	12.59	14	2.63	214	40.23	3.68	1.32
11. Walking **slowly** to go places (such as to the wok).	79	14.85	80	15.04	164	30.83	39	7.33	170	31.95	3.24	1.24
12. Walking **quickly** to go places (such as to the work).	41	7.71	152	28.57	171	32.14	46	8.65	122	22.93	2.73	1.30
13. Prenatal exercise class	22	4.14	305	57.33	67	12.59	90	16.92	48	9.02	1.86	1.19
14. Sitting at work or in a class	84	15.79	179	33.65	116	21.80	32	6.02	121	22.74	2.81	1.49
15. Standing or slowly walking at work	60	11.28	144	27.07	142	26.69	62	11.65	124	23.31	2.80	1.36
16. Walking quickly at work	41	7.71	166	31.20	165	31.02	58	10.90	102	19.17	2.61	1.31
General average		13.76		30.36		20.21		13.08		22.60	2.76	1.24

N= Number, %= Percentage**, M=** Mean**, SD=** Standard Deviation

Table (2) indicates that (30.36%) of pregnant women spend less than of 1/2 hour per day, while (20.21%), and (20.21%) of them spend of less than 1 hour per day, while (13.76%) of them non have any activity, with the overall mean of physical activity was 2.76 (SD=1.24).

Table 4. Pregnant women life style patterns- eating habits and behaviors (n=532)

Item	Response scale										M	SD
	Daily		Weekly		Monthly		Occasionally		Never			
	No.	%	No.	%	No.	%	No.	%	No.	%		
1. Starchy roots (Potato)	221	41.54	223	41.92	31	5.83	53	9.96	4	0.75	1.86	0.96
2. Cereals & Cereal Products (Rice, Bread)	380	71.43	90	16.92	30	5.64	29	5.45	3	0.56	1.47	0.87
3. Animal Products (meats, egg, milk, dairy products)	255	47.93	160	30.08	52	9.77	51	9.59	14	2.63	1.89	1.09
4. Legumes & nuts	153	28.76	213	40.04	65	12.22	75	14.10	10	1.88	2.14	1.07
5. Fruits	128	24.06	100	18.80	52	9.77	50	9.40	11	2.07	1.75	1.09
6. Vegetables	128	24.06	60	11.28	38	7.14	40	7.52	8	1.50	1.54	1.01
7. Fats and Oils (Refined vegetable oil)	314	59.02	106	19.92	40	7.52	64	12.03	8	1.50	1.77	1.11
8. Sugar sweetened Beverages	386	72.56	168	31.58	83	15.60	138	25.94	15	2.82	2.52	1.19
9. Eating fast food	100	18.80	134	25.19	93	17.48	179	33.65	26	4.89	2.81	1.23
10. Eating fried food	319	59.96	206	38.72	59	11.09	111	20.86	3	0.56	2.26	1.10

11. Ice Cream	169	31.77	156	29.32	47	8.83	183	34.40	18	3.38	2.64	1.27
12. Processed meat	76	14.29	157	29.51	64	12.03	134	25.19	101	18.98	3.05	1.37
General average		41.18		27.77		10.24		17.34		3.46	2.14	1.11

No.= Number**, %=** percentage**, M=** mean**, SD=** Standard Division.

Table (4) indicates that less than half (41.18%) of pregnant women consumed different kind of food daily, while only (3.46%) of the participant never eat the recommended foods.

Discussion

The present study found that the most of pregnant women lived in the city areas. This result interpreted in a way that the study is conducted in the city, obstacle village population from participating in the study due to distance. The result is inconsistent to the Iraqi study conducted in Baghdad showed that more than half of the pregnant women (60.7%) were living in rural areas [(6)]. Regarding the occupation, the study finding also revealed that the most pregnant women were housewives. This result is similar to the study's results conducted in; Baghdad (64%) [(15)], Qatar (57.8) [(16)], Bangladesh (50 %) [(17)], found that the majority of the women were housewife. Contrarily to our study, the study conducted in Sri Lanka revealed that most of pregnant women were employed, (87%) [(18)]. This finding provides evidence that the nature of social customs and tradition that prefer women not to be committed jobs or work outside the home. Regarding to the type of housing of participants are live in a house of their own.

With regard to pre-pregnancy body mass index, the study findings show that most women had a normal weight, while those who had overweight and obesity were at a rate of (23%). It is consistent with the study conducted in Sri Lanka revealed that before pregnancy (48%) of women were normal weight (BMI below 25.0 kg/m^2), and (32%) of them were overweight (BMI 25.0-29.9 kg/m^2) [(18)]. As for the body mass index during pregnancy, the current study found that the almost half of the study sample increased their weight during pregnancy, while the percentage of the women who suffered from obesity were at a rate of (34%). Comparable to our finding, the study conducted in Sri Lanka revealed that (39%) of women during pregnancy suffered from overweight, (BMI 25-29.9 kg/m$^{2)}$, and (18%) of them BMI greater than 30 kg/m^2, experienced of obese [(18)].

This finding provides empirical evidence that pregnant women do not practice any form of physical activity, nor did they follow a healthy diet during pregnancy.

In relation to the physical activity during pregnancy, the study results indicated that the pregnant women spend less than the recommended amount of time of physical activity during pregnancy per day. This result is in agreement with the study conducted in Poland, found that 75% of the respondents did not perform any activities during pregnancy and 46% of non-active women did not exercise before the pregnancy either [(19)]. Also, is similar to the study conducted in Campinas city/Brazil shows that the prevalence of physical activity decreased with the condition of pregnancy. Half of the women stopped exercising due to pregnancy, as observed in this research, the reduction in physical activity level occurred not only in the level of exercise but also in daily activities, such as housework, childcare, transportation, and occupational activities [(20)]. Also, the result is in agreement with a study conducted in Canada found that less than one third (32%) of pregnant women reported engaging in at least 15-30 minutes of moderate exercise 3-4 (or more) times per week [(21)]. This indicated that almost half of pregnant women

are physically inactive, due to ignorance of advantages of physical activity, lack of enough time for exercise, a feeling of limitation and restriction due to pregnancy, and fear of harming the fetus.

The study depict that the results of the daily eating habits and behaviors indicated that the almost half of pregnant women consumed foods every day that are considered unhealthy, mainly; starchy roots (potato), cereals and cereal products (rice, bread), animal products (meats, egg, milk, dairy products), fats and oils, sugar sweetened beverages, eating fried food, This is due to most of the participants are housewives, that means they are more likely illiterate or ignorant of healthy foods, nutritional knowledge, also may be lack of adequate fruit and vegetable consumption and easy access to sweet foods. This finding is in agreement with study conducted in Palestine shows that higher intake of meat and carbohydrates was associated with protection from inadequate weigh gain, but may lead to excessive weight gain [22]. Similarly, over half reported consuming more milk and alternatives in one day since pregnancy began [21]. This result however in contrast to the study results conducted in Malawi showed that very few respondents were able to consume foods from milk and milk products, animal sources, vitamin "A" rich vegetables and fruits [23]. Also, this study is contradicted to the study findings from Canada revealed that sixty-two percent of women reported eating the same number of servings of vegetables and fruit during their pregnancy compared to their pregnant [21]. Also, quarter of the sample consumed sweetened beverages nearly daily or daily; a similar proportion ate fast food, deep-fried food and commercially baked products twice a week or more [21].

The current study result is in agreement with study conducted in United Kingdome shows that there were positive associations between intake of dairy and fried foods and excessive weight gain and there was an inverse association between vegetarian diets and excessive GWG [24]. This finding is in contrast to study conduct in New Zealand shows that more than 90% of the participants did not consume enough vegetables, cereals and dairy products according to these guidelines. Also, approximately one-third of the participants either ate less one serving of bread a day or never ate bread, and only 13.1% of the participants ate less than one serving of the other cereals (e.g., rice and noodles) as a main cereal every day. Similarly, a Malaysian study showed that nearly all participants used oil more often than butter, and about half of the participants never used butter or margarine spreads [25]. In contrast with the current study findings, concerning foods high in fat, sugar and salt, a majority of the participants never or seldom consumed chips, confectionary, fruit juice/drinks, soft/energy/ drinks, and buttered/fried fish or shellfish, [25]. A study conducted in Netherlands showed that women with higher adherence to "nuts, high-fiber and soy" pattern had a more moderate increase in weight during pregnancy than women with low adherence to this dietary pattern [26].

The current study shows that the pregnant women were not adhere to healthy eating habits and healthy physical activity during pregnancy due to their own inability to do so and to prevailing incorrect social customs and traditions regarding the negative effects of physical activity, and healthy eating habits and behavior on the fetus and the pregnant woman during pregnancy.

Conclusion

The study concludes that most of pregnant women were overweight and obese during pregnancy due to their poor lifestyle patterns, in terms of physical activity, eating habits and behaviors.

Recommendations

The study recommends to develop an educational program to enhance pregnancy women physical activity, healthy eating and behavior, and the passive effects of overweight and obesity on the health of mothers and fetus during pregnancy, childbirth and postpartum period. This will increase their knowledge about healthy lifestyle and reduce of unhealthy behaviors and habits.

Conflicts of interest

The authors declare that there is no conflict of interests regarding the publication of this review article.

Ethical Approval

The authors state that their systematic literature review did not require ethical approval. This research is based on a doctoral dissertation, adhering to established protocols.

Funding

There is no external funding for this project.

Author contribution

YAM designed, conducted, and analyzed the study, and drafted the manuscript. MZJ supervised the research and provided critical review.

Data availability statement

The data that support the findings of this study are available from the authors, but restrictions apply to the availability of these data, which were used under license for the current study and are not publicly available. However, the data can be obtained from the authors upon reasonable request and with appropriate permissions.

References

1. Al-Rikabi ST, Khairi SH. Relationship between Third Trimester Vaginal Bleeding Medical Causes and pregnancy Outcomes of Pregnant Women Attending Bint Al-Huda Hospital in Al-Nasiriya City. Iraqi National Journal of Nursing Specialties 2016; 29 (1).75.
2. Abdolaliyan N, Shahnazi H, Kzemi A, Hasanzadeh A. Determinants of the self-efficacy of physical activity for maintaining weight during pregnancy: The application of the health belief model. Journal of Education and Health Promotion 2017; 6:93. 3-5.
3. Khalifa MF. Effect of Obesity and Socioeconomic Status on Adolescents' High School Students' Intelligence Quotient in Baghdad City. Iraqi National Journal of Nursing Specialties 2017; 30 (1). 10.
4. Saleh BB, Ma´ala EG. Impact of Fast Foods and Snacks upon Adolescents' BMI at Secondary Schools in Baghdad City. Iraqi National Journal of Nursing Specialties 2015; 28 (2). 2.
5. Ahmed MM, Naji AB. Efficacy of the Health Belief Model in Improving Weight Control beliefs among Employees in University of Mosul A Randomized Controlled Trial 2022; 45 (01). 4659-4660.
6. Khleel HA, Mohammed WK. Evaluation of Pregnancy-related Health Behaviors' Change during Pregnancy for Pregnant Women Attending Abo Ghareeb Primary Health Care Sector. Iraqi National Journal of Nursing Specialties 2021; 34 (1). 60-61.
7. Ghafel HH, Ali RM. Establish Growth Curve in Light of Body Mass Index for Infertile Women in Baghdad City. Iraqi National Journal of Nursing Specialties 2013; 26 (2). 90.
8. Omar HA. Assessment of the health behaviors patterns among women during pregnancy. Iraqi National Journal of Nursing Specialties 2019; 32 (1). 13-14.
9. Saadon MK, Neaama MA. Parents' Efficacy for Child Healthy Weight Behavior in Elementary Schools in Hilla City. Iraqi National Journal of Nursing Specialties 2020; 33 (1). 54-55.
10. Danok AS, Ma'ala EG. Prevalence of obesity among adolescents at secondary

schools in Kirkuk city. Iraqi National Journal of Nursing Specialties 2013; 26 (2). 70.
11. Idean AT, Wahid HS. Impact of Factors upon Children' Weight Status of age one to Five years old at Primary Health Care Centers in AL Samawah City. Iraqi National Journal of Nursing Specialties 2019; 32 (1). 70-71.
12. Meander L, Lindqvist M, Mogren I, Sandlund J, West CE, Domellöf M. Physical activity and sedentary time during pregnancy and associations with maternal and fetal health outcomes: an epidemiological study. BMC Pregnancy and Childbirth 2021; 2.
13. Carlsen OC, Gudmundsd_ottir HK, Bains KE, Bertelsen R, Carlsen KC, Carlsen K, Endre KM, Granum B, Haugen G, Hedlin G, Jonassen CM, Kreyberg I, Landrø L, M€agi CO, Nordlund B, Nordhagen LS, Pehrson K, Saunders CM, Sjøborg K, Skjerven HO, Staff AC, Svanes C, S€oderh€all C, Vettukattil R, Værnesbranden M, Wiik J, Rehbinder EM. Physical activity in pregnancy: A Norwegian-Swedish mother-child birth cohort study. Am J Obstet Gynecol Glob Rep 2021; 2.
14. Okafor UB, Goon DT. Physical activity and exercise during pregnancy in Africa: a review of the literature. BMC Pregnancy and Childbirth 2020; 2-3.
15. Omer HA. Assessment of the health behaviors patterns among women during pregnancy. Iraqi National Journal of Nursing Specialties, Vol. 32 (1), 2019; 18-19.
16. Al-Dahshan A, Kehyayan V, Al-Kubaisi N and Selim N. Utilization of the internet for physical activity and diet information and its influence on pregnant women's lifestyle habits in Qatar. *Front. Public Health* 11:1272109. doi: 10.3389/fpubh.2023.1272109. 2023; 4-6.
17. Kundu S, Jharna DE, Al Banna Md.H, Khan Md SI. Factors associated with dietary diversity and physical activity of pregnant women in Bangladesh: A cross-sectional study at an antenatal care setting. Lifestyle Med. 2021; 5-9.
18. Gunarathna KLCS, Pitawela PMW, Senishka HKH, Chandrasiri AGSS, Kalpani KAI, Samarasinghe HGAS, Sandakumari HHHS, Sewwandi KPA. Assessing Dietary and Physical Activity Patterns during Pregnancy among Antenatal Mothers in Sri Lanka: A Cross-Sectional Study at a Selected Medical Officer of Health Clinic. Biol. Life Sci. Forum. 2023; 3-7.
19. Kwiatkowska K, Kosi ´ nska-Kaczy ´ nska K, Walasik I, Osi ´ nska A, Szymusik I. Physical Activity Patterns of Women with a Twin Pregnancy-A Cross-Sectional Study. Int. J. Environ. Res. Public Health. Journal/ijerph18157724. 2021; 8-10.
20. Nascimento SL, Surita FG, Godoy AC, Kasawara KT, Morais SS. Physical Activity Patterns and Factors Related to Exercise during Pregnancy: A Cross Sectional Study. PLoS ONE 2015; 10(6). 9-12.
21. Blair B, Hutcheson J, Lamon M. Gestational Weight Gain Survey Final Report. Reproductive Health Program Family Health Service. simcoemuskokahealth.org 2012; 31-38.
22. Natour N, Al Tell M, Al Rob C. Factors associated with patterns of weight gain among pregnant women in northern west bank area of Nablus†. Palestinian Medical and Pharmaceutical Journal (PMPJ) 2021; 6(2): 107-116.
23. Bulirani ME. Influence of Nutrition Knowledge on Dietary Patterns and Nutritional status of Women of Reproductive Age in Dedza Destrict, Malawi. Dessertaton, Master Science. University of Nairobi. 2018.

24. Spraggan EJ. The association of maternal nutrient and dietary pattern intake and maternal health characteristics during pregnancy. Masters by Research thesis (MSc), Manchester Metropolitan University 2017; 90-96.
25. Ma J. Eating Habits and Nutrition Attitudes among Pregnant Chinese Women in New Zealand. Thesis, Master of Science. Palmerston North, New Zealand. 2014; 88-110.
26. Tielemans MJ, Erler NS, Leermakers ET, Broek M, Jaddoe VW, Steegers EP, Kiefte-de Jong JC, Franco OH. A Priori and a Posteriori Dietary Patterns during Pregnancy and Gestational Weight Gain: The Generation R Study. journal Nutrients 2015, 7, 9383–9399.