

# Knowledge, attitude, and practices on exercise among pregnant females attending Al-Wazarat Health Center, Riyadh, Saudi Arabia

Ghadi M. Al-Youbi, Tarek Elsaid

Department of Family and Community Medicine, Prince Sultan Military Medical City, Riyadh, KSA

## ABSTRACT

**Background:** The consequences of physical inactivity during pregnancy are one of the major problems among pregnant women in Saudi. To explore the pattern of exercise and to know the beliefs and reasons for not doing physical activity (PA) emphasized the need for conducting this study. This study aimed to improve the level of knowledge and practice of PA among women during pregnancy. **Methods:** A cross-sectional study was performed using quota sampling. **Results:** 41.62% of pregnant women had high level of physical activity (PA) awareness and practice and 58.37% had a low level of awareness and practice. Statistical difference was found between the two groups in terms of parity, education level, work status, and family income. Pregnant women preferred walking as exercise. They are aware about PA benefits during pregnancy, but perceived that tiredness was the greatest barrier for physical activity. **Conclusion:** This study recommends conducting well-designed intervention sessions to promote PA awareness and practice among pregnant women, especially those with low education, low income, and low number of children.

**Keywords:** Exercise, KAP, pregnancy

## Introduction

Lifestyle changes with pregnancy. One of the important factor for obesity after pregnancy is lack of physical activity and excessive gestational weight gain, for that, all women of reproductive ages should start regular exercise to help them through the course of pregnancy and delivery.<sup>[1]</sup> This excessive gestational weight gain is considered as one of the major growing problem among pregnant women in Saudi and worldwide, which is associated with fetal-maternal complications like gestational diabetes, macrocosmic infant delivery, and preeclampsia.<sup>[2-4]</sup> 16.4% of pregnant women in Saudi were not doing any exercise and 9.1% had lack of knowledge

of its importance.<sup>[5]</sup> The lifestyle modification program on pregnant women had an impact of cost-effective risk reduction strategy in adverse pregnancy outcome.<sup>[6]</sup> Pregnant women become anxious and concern regarding the adverse effect of exercise on pregnancy due to the lack of knowledge about particular health risks during pregnancy. The need for educating women to acquire appropriate knowledge will help them to develop effective drive attitude about health during pregnancy.<sup>[5,7]</sup> To promote physical activity, one should understand that there is an influence of social and cultural beliefs on it and on the health outcomes consequently.<sup>[8]</sup> PA during pregnancy is influenced by time constraints or no time, lack of child care or feeling unwell during pregnancy, whereas the factor that encourages physical activity is family support for refreshment and to prevent health problems in future.<sup>[7,9]</sup> According to the review of the literature, the most common type of activities performed by pregnant women are walking, swimming, and home gymnastics.<sup>[5,7,10]</sup>

**Address for correspondence:** Ghadi M. Al-Youbi,  
Department of Family and Community Medicine, Prince Sultan  
Military Medical City, Riyadh, KSA.  
E-mail: dr.ghadi.m@gmail.com

Received: 17-02-2020

Revised: 19-03-2020

Accepted: 26-03-2020

Published: 25-08-2020

### Access this article online

#### Quick Response Code:



**Website:**  
www.jfmipc.com

**DOI:**  
10.4103/jfmipc.jfmipc\_276\_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Al-Youbi GM, Elsaid T. Knowledge, attitude, and practices on exercise among pregnant females attending Al-Wazarat Health Center, Riyadh, Saudi Arabia. J Family Med Prim Care 2020;9:3905-15.

The American College of Obstetricians and Gynecologists (ACOG) recommends in the absence of either medical or obstetric complications, pregnant women exercise at a moderate level; defined as an exercise of 3-4 metabolic equivalents (METs) or any activity that is equivalent in difficulty to brisk walking, for 30 minutes or more per day on most if not all the days of the week.<sup>[11]</sup> The Royal College of Obstetricians and Gynecologists (RCOG) suggests that all pregnant women should do aerobic and strength-conditioning exercise starting with 15 min of continuous exercise 3 times a week increasing gradually to 30 min 4 times a week and then daily. On the contrary to recommendations and regulations, statistics show that the great majority of pregnant women remain inactive or insufficiently active, they limit their physical activity during pregnancy.<sup>[12]</sup> For that, primary care providers play an influential role for promoting physical activity among pregnant women by advice and good counseling. Also, they have an important role to enhance the understanding of the factors that influence positively and negatively the women to do physical activity during pregnancy and the postpartum period.<sup>[12]</sup>

The family physicians are important providers of care that contributes to the health and wellbeing of women throughout the perinatal period and beyond. This paper focuses on the exploration of the pattern of exercise, reasons and beliefs about exercise and its safety among pregnant women.

## Aim

To improve the level of knowledge and practice of exercise among pregnant women.

## Research question

What is the pregnant women's knowledge regarding exercise practice?

How often pregnant women are doing regular exercise?

What are the barriers that pregnant women face for exercise?

## Objectives

- To assess the level of knowledge of exercise among pregnant women
- To determine the prevalence of exercise among pregnant women
- To identify the barriers for exercising.

## Materials and Methods

### Study site and population

The study participants were all healthy literate pregnant women who were of the child bearing age (15–49), attending antenatal clinic in Al-Wazarat Health Center at Riyadh, which is one of the primary health care centers in the Prince Sultan Military Medical City in Riyadh, Saudi Arabia. This center is considered one of the largest primary health centers in the Middle East

and it has about 30 clinics that provide health care to a large number of people.

### Study design

Cross-sectional study was done with quantitative approach through self-administered questionnaire to estimate the prevalence.

### Sample size and sampling technique

Since there are limited studies that have examined this topic in Saudi Arabia, the sample size was calculated based on the following criteria: the total number of people, margin of error ( $\sigma^2$ ),  $P$  value of 0.05, statistical power of 80%, and 95% confidence interval. Using the electronic calculator of Epi-info, the following formula can be used in order to measure the Sample size:

$$N = Z^2 \frac{P(1-P)}{e^2}$$

In the formula,  $N$  represents the sample size,  $Z$  represents the statistic for a level of confidence for 95% confidence,  $e$  represents the absolute precision  $>> \pm 3$ , and  $P$  represents the expected prevalence of insufficient level of awareness, which was estimated to be around 12.75 on an average between two references. Using the formula above,

Four hundred and seventy-two women were eligible for the study. Quota sampling was performed among pregnant women at an antenatal screening room who fitted the criteria.

### Exclusion criteria

- Illiterate
- Significant cardiac disease
- Restrictive lung disease
- Cervical insufficiency
- Multiple gestations
- Placental abruption
- Placenta previa
- Premature labor
- Ruptured fetal membranes
- Preeclampsia, gestational hypertension.

### Study variables

#### Study tool

The questionnaire was a structured self-administered based on the review of literature. The assessment of knowledge was based on the recommendation from the Royal college of Obstetricians and Gynecologists (RCOG); that suggests all pregnant women participate in aerobic and strength-conditioning exercise started by 15 min of continuous exercise 3 times a week, increasing gradually to 30 min sessions 4 times a week to daily. The questionnaire was used to measure the level of knowledge and practice of a pregnant woman in an ordinal scale with a possible range of 1–24. The more questions that a pregnant woman answers correctly, the higher the awareness she has about

physical activity. Pregnant women who scored in the range of 0–12 were considered to have a low level of awareness, whereas who scored in the range of 13–24 was considered to have a high level of awareness. Each question had the same score; the one answered correctly scored 1 point and those which were incorrect and unanswered scored 0.

The questionnaire had 3 main parts:

- Questions related to the socio-demographic characteristics
- Questions related to physical activity and exercise practice.
- Questions related to knowledge, benefits, and barriers of physical activity.

The questionnaire was first written in Arabic and then translated to English using a back-translation technique, a bilingual translator first translated the Arabic version of the questionnaire to English then a second bilingual translator back-translated it to Arabic language. Then, the questionnaire was reviewed by 3 expert consultants of family and community medicine and 1 statistician to evaluate its content and face validity; a content validity index was then created.

The reliability of the questionnaire then was examined using a test-retest technique by conducting a pilot study. Accordingly, it was given to 15 volunteers who were chosen by convenient sampling from Al-Wazarat health center (WHC) that involved doctors, nurses, and clerks. The questionnaire was re-administered after 10 days to the same target to assess its reliability.

## Data analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 12.0. Descriptive analysis was done by developing frequency distribution and charts, whereas analytical statistics was done using the Chi-square test for significant relationship between the awareness and practice of physical activity.

## Ethical consideration

Ethical approval to carry out the study was obtained from the research committee of Prince Sultan Military Medical City. Verbal consent was taken before participation, and filling of the questionnaire was considered as a written consent.

## Results

This study was conducted in WHC to describe the characteristics and to enhance maternal awareness regarding physical activity among pregnant women.

Out of a total of 472 participants, 30 were excluded from the analysis due to incomplete information.

Demographic data are presented in Table 1.

The majority of the pregnant women were multiparous (67.4%), of the age 20–29 years old (59.9%), university educated (48.2%),

**Table 1: Demographic Characteristics of Participants (n=442)**

Characteristics	No (442)	Percentage
Age		
15-19	14	3.2
20-24	112	25.3
25-29	153	34.6
30-34	108	24.4
35-39	46	10.4
40+	9	2.0
Gestational Age		
1-13	112	25.3
14-28	184	41.6
29-40	113	25.6
Don't Know	33	7.5
Number of Children		
First Pregnancy	144	32.6
1-3	224	50.7
4-6	66	14.9
>6	8	1.8
Educational Level		
Read and Write/Primary	33	7.5
Intermediate/Secondary	196	44.3
University & above	213	48.2
Occupation		
Health Care Worker	5	1.1
Teacher	63	14.3
Clerk	21	4.8
Housewife	332	75.1
Others	21	4.8
Do you have house-maid?		
No	400	90.5
Yes	42	9.5
Family income		
<5000	132	29.9
5000-10000	261	59.0
>10000	49	11.1

housewives (75.1%), had family income from 5,000 to 10,000 Saudi Riyals (59%), and had housemaid (9.5%).

Overall, 41.6% of pregnant women had high level of awareness (HLA) about knowledge and practice of physical activity during pregnancy and 58.4% of them had low level of awareness (LLA).

A statistical significant difference was found between pregnant women with high and low level of awareness and practice in terms of the number of children ( $\chi^2 = 4.19, P < 0.05$ ) most pregnant women were multiparous (LLA 63.6% and HLA 72.8%).

No significant difference was found between pregnant women with high and low level of awareness and practice in terms of age, gestational age, and presence of housemaid ( $P > 0.05$ ).

A statistical difference was additionally found between pregnant women with LLA and HLA in terms of their level of education ( $\chi^2 = 12.7, P < 0.05$ ). The high level of awareness and practice of physical activity were noticed in pregnant women who had high education level (LLA 41.9% and HLA 57.1%).

A statistical difference was found between pregnant women with LLA and HLA in terms of their work status ( $\chi^2 = 3.7, P < 0.05$ ), among the pregnant women who were not working (70.7% with HLA and 78.7% with LLA.) Another statistical difference was found between pregnant women with LLA and HLA in terms of their family income ( $\chi^2 = 12.97, P < 0.05$ ). Sixty-four percent of pregnant women with HLA and 55.4% of them with LLA had a monthly income from 5000 to 10000 SR. Twenty-one percent of pregnant women with HLA and 36% of them with LLA had monthly income less than 5000SR. [see Table 2].

### Level of knowledge about exercise in pregnant women

Overall, 49.32% of pregnant women had low level of knowledge about PA and 50.67% of pregnant women had high level of knowledge about PA.

A statistical difference was found in pregnant women with high and low level of knowledge in terms of their education level ( $\chi^2 = 16.673, P < 0.05$ ), the highest level of knowledge was notice in pregnant women with university degree (56.7% had high level of knowledge and 39.4% had low level of knowledge). Another statistical difference was found in pregnant women in terms of their work-status ( $\chi^2 = 3.739, P < 0.05$ ) 71.4% of pregnant women with high level of knowledge and 79.4% had low level of knowledge were not working

In addition, statistical difference was found in terms of their family income ( $\chi^2 = 13.595, P < 0.05$ ), 60.3% of pregnant women with high level of knowledge and 57.8% of pregnant women with low level of knowledge had a monthly income between 5000-10000SR [see Table 3].

Seventy-five percent of pregnant women reported walking as suitable exercise during pregnancy, 65.6% of pregnant women with low level of knowledge and 85.7% of pregnant women with high level of knowledge reported walking as a suitable exercise during pregnancy ( $\chi^2 = 24.37, P < 0.05$ ). Thirty-seven percent of pregnant women with low level of knowledge and 54% of pregnant women with high level of knowledge reported relaxation as suitable exercise during pregnancy with 45.7% ( $\chi^2 = 12.658, P < 0.05$ ). Another significant difference was found between two groups ( $\chi^2 = 62.664, P < 0.05$ ) in which 7.3% of pregnant women with low level of knowledge and 39.3% of pregnant women with high level of knowledge reported swimming as one of the safety physical exercise during pregnancy [Table 4].

### Level of awareness regarding benefits and risk of physical activity during pregnancy

Majority of pregnant women (69.9%) reported one of the benefits of physical activity was to reduce lower limb edema and attenuation of gestational diabetes, 68.3% reported limitation of pregnancy weight gain with PA. Similarly, 62.9 and 61.1 reported PA as attenuation of gestational hypertension and decrease medical interventions respectively, whereas 33.5% reported PA as risk for musculoskeletal injuries during pregnancy. Forty-four percent and 48.2% of pregnant women didn't know if the PA increase risk of hypoglycemia and preterm delivery or decrease, respectively. Almost thirty percent of pregnant women reported PA to had negative risk on fetal growth. Forty-five percent of pregnant women reported PA reduces varicose veins.

Overall, a significant difference was found between the two groups in their level of awareness about the benefits and risk of PA. Forty-three percent of pregnant women with LLA and 56.1% of pregnant women with HLA were aware about the benefits and risk of PA. Furthermore, 84% of pregnant women with low level of awareness about benefits and risk of PA were not working ( $\chi^2 = 14.025, P < 0.05$ ). Most of working pregnant women with high level of knowledge about PA benefits and risk were clerks. This was a statistically significant difference ( $\chi^2 = 18.324, P < 0.05$ ), [Tables 5 and 6].

### Level of exercise practice among pregnant women

The majority of pregnant women (84.2%) reported that they were not able to do any physical activity. Sixty percent of pregnant women with low physical activity (LPA) were primigravida, and 40% of them were multiparous, whereas 30.9% of them with high physical activity (HPA) were primigravida, and 69.1% were multiparous; with significant difference was found ( $\chi^2 = 9.071, P < 0.05$ ). Overall, no other significant difference was in exercise practice among pregnant women [Table 7].

### Reasons for physical inactivity among pregnant women

Eighty-three percent of pregnant women with low level of physical activity (LLPA) and 85.3% of pregnant women with high level of physical activity (HLPA) reported feeling tired as the first barrier, thus no significant difference was found between the two groups. About 89.6% of pregnant women who reported feeling tired had LLPA and 10.4% had HLPA were primigravida, with significant difference ( $\chi^2 = 4.37, P < 0.05$ ), 88.3% of pregnant women with LLPA and 11.7% of pregnant women with HLPA were high educated, with significant difference ( $\chi^2 = 6.584, P < 0.05$ ).

A significant difference was found between two groups ( $\chi^2 = 4.953, P < 0.05$ ) in which 41.5% of pregnant women with LLPA and 52.2% of pregnant women with HLPA reported no access for facilities (45.9%).

**Table 2: Overall awareness and practice vs Socio-demographic characteristics (n=442)**

Characteristics	No	Awareness and Practice				Chi square	P
		<50% (258)		50% + (184)			
		No	Percentage	No	Percentage		
Age							
15-19	14	10	3.9	4	2.2	4.818	0.439
20-24	112	73	28.3	39	21.2		
25-29	153	84	32.6	69	37.5		
30-34	108	61	23.6	47	25.5		
35-39	46	26	10.1	20	10.9		
40+	9	4	1.6	5	2.7		
Gestaional Age							
1-13	112	71	27.5	41	22.3	4.234	0.237
14-28	184	103	39.9	81	44.0		
29-40	113	61	23.6	52	28.3		
Don't Know	33	23	8.9	10	5.4		
Number of Children							
First Pregnancy	144	94	36.4	50	27.2	10.000	<b>0.015</b>
1-3	224	116	45.0	108	58.7		
4-6	66	41	15.9	25	13.6		
>6	8	7	2.7	1	0.5		
Educational Level							
Read and Write/Primary	33	26	10.1	7	3.8	12.746	<b>0.002</b>
Intermediate/Secondary	196	124	48.1	72	39.1		
University & above	213	108	41.9	105	57.1		
Occupation							
Health Care Worker	5	52	20.2	3	1.6	6.895	0.147
Teacher	63	28	10.9	35	19.0		
Clerk	21	13	5.0	8	4.3		
Housewife	332	203	78.7	129	70.1		
Others	21	12	4.7	9	4.9		
Do you have house-maid?							
No	400	237	91.9	163	88.6	1.338	0.247
Yes	42	21	8.1	21	11.4		
Family income							
<5000	132	93	36.0	39	21.2	12.970	<b>0.002</b>
5000-10000	261	143	<b>55.4</b>	118	<b>64.1</b>		
>10000	49	22	<b>8.5</b>	27	<b>14.7</b>		

Twenty-four percent of pregnant women who reported transportation problems as barrier had 20.5% had LLPA and 29.3% had HPLA, a significant difference was found ( $\chi^2 = 4.538$ ,  $P < 0.05$ ). Thirty-two percent of pregnant women had an income  $> 10000$ SR and 16.7% of them were under 5000SR ( $\chi^2 = 6.703$ ,  $P < 0.05$ ).

Moreover, time availability was one of the barriers (24.7%) in 23.6% of pregnant women with LLPA and 26.1% of pregnant women with HPLA with a significant difference ( $\chi^2 = 8.105$ ,  $P < 0.05$ ). 89.6% of pregnant women who reported feeling tired had LLPA and 10.4% had HPLA were primigravida, with significant difference ( $\chi^2 = 4.37$ ,  $P < 0.05$ ). Among the pregnant women who reported no time

Table 3: level of Knowledge vs demographic characteristics (n=442)

Characteristics	No	Knowledge				Chi square	P
		Low level (218)		High level (224)			
		No	Percentage	No	Percentage		
Age							
15-19	14	7	3.2	7	3.1	3.541	0.617
20-24	112	57	26.1	55	24.6		
25-29	153	67	30.7	86	38.4		
30-34	108	57	26.1	51	22.8		
35-39	46	26	11.9	20	8.9		
40+	9	4	1.8	5	2.2		
Gestaional Age							
1-13	112	63	28.9	49	21.9	3.724	0.293
14-28	184	85	39.0	99	44.2		
29-40	113	52	23.9	61	27.2		
Don't Know	33	18	8.3	15	6.7		
Number of Children							
Primigravida	144	68	31.2	76	33.9	0.376	0.539
Multiparous	298	150	68.8	148	66.1		
Educational Level							
Read and Write/Primary	33	24	11.0	9	4.0	16.673	0.000
Intermediate/Secondary	196	108	49.5	88	39.3		
University & above	213	86	39.4	127	56.7		
Working status							
Working	109	45	20.6	64	28.6	3.739	0.053
Not working	333	173	79.4	160	71.4		
Do you have house-maid?							
No	400	204	816.0	196	47.0	4.746	0.029
Yes	42	14	56.0	28	6.7		
Family income							
<5000	132	78	35.8	54	24.1	13.595	0.001
5000-10000	261	126	57.8	135	60.3		
>10000	49	14	6.4	35	15.6		

Table 4: level of knowledge about the type of exercise

Exercise	No	Opinion about exercise				Chi square	P
		<50% (218)		50% + (224)			
		No	Percentage	No	Percentage		
Walking	335	143	65.6	192	85.7	24.371	0.000
Swimming	104	16	7.3	88	39.3	62.664	0.000
Aerobic	6	2	0.9	4	1.8	0.621	0.686
Relaxation	202	81	37.2	121	54.0	12.658	0.000

65.14% of them were housewife and 34.86% were working, with significant difference ( $\chi^2 = 10.485$ ,  $P < 0.05$ ).

Not knowing the importance was reported as one of the PA barriers in 20.4%, 25.2% of pregnant women with LLPALLPA and 13.6% with HLPAL reported not knowing the importance as one of the barrier. This was also statistically significant difference ( $\chi^2 = 8.923$ ,  $P < 0.05$ ).

Some pregnant women perceived that financial issues as barrier for PA 7.5% withLLPA and 8.8% with HLPAL

respectively, however, this was not a statistically significant difference [Table 8].

## Discussion

This study included 442 participants attending ANC at Wazarat health center. Main findings were, majority of them (84.2%) reported not performing PA during pregnancy, and most of those who performed PA were multiparous. Regarding the level of knowledge about PA, most participants in this study (50.67%) had high level of knowledge. No statistical significant relationship

**Table 5: Opinion regarding the benefits and risks of exercise**

Characteristics	No		Don't know		Yes	
	No	Percentage	No	Percentage	No	Percentage
Limit Pregnancy weight gain	68	15.4	72	16.3	302	68.3
Reduce Lower Limb edema	43	9.7	90	20.4	309	69.9
Attenuation of gestaional diabetes mellitus	37	8.4	96	21.7	309	69.9
Attenuation of gestaional hypertension	30	6.8	134	30.3	278	62.9
Reduce medical interventions during labor	44	10.0	128	29.0	270	61.1
Increase risk of musculoskeletal injury e.g. Acute strais and tears	119	26.9	175	39.6	148	33.5
Decrease risk of hypoglermia	43	9.7	198	44.8	201	45.5
Decrease risk of preterm delivery	93	21.0	213	48.2	136	30.8
Decrease risk of fetal growth	231	52.3	154	34.8	57	12.9
Decrease risk of varicose vein	48	10.9	193	43.7	201	45.5

**Table 6: Level of awareness regarding benefits and risk as per demographic characteristics (n=442)**

Characteristics	No	Opinion about Benefits				Chi square	P
		LLA (194)		HLA (248)			
		No	Percentage	No	Percentage		
Age							
15°19	14	9	4.6	5	2.0	17.232	<b>0.004</b>
20-24	112	64	33.0	48	19.4		
25-29	153	66	34.0	87	35.1		
30-34	108	36	18.6	72	29.0		
35-39	46	16	8.2	30	12.1		
40+	9	3	1.5	6	2.4		
Gestaional Age						2.679	0.444
1-13	112	47	24.2	65	26.2		
14-28	184	86	44.3	98	39.5		
29-40	113	44	22.7	69	27.8		
Don't Know	33	17	8.8	16	6.5		
Number of Children						1.932	0.165
Primigravida	144	70	36.1	74	29.8		
Multiparous	298	124	63.9	174	70.2		
Educational Level						10.007	<b>0.007</b>
Read and Write/Primary	33	17	8.8	16	3.8		
Intermediate/Secondary	196	100	51.5	96	23.0		
University & above	213	77	39.7	136	32.6		
Working status						14.025	<b>0.000</b>
Working	109	31	16.0	78	18.7		
Not working	333	163	84.0	170	40.8		
Do you have house-maid?						0.633	0.426
No	400	178	91.8	222	89.5		
Yes	42	16	8.2	26	10.5		
Family income						7.521	0.023
<5000	132	70	36.1	62	25.0		
5000-10000	261	101	52.1	160	64.5		
>10000	49	23	11.9	26	10.5		

between level of knowledge and level of practice was found. Factors such as number of children, level of education, work status, and family income were statistically related to the level of knowledge about PA. The main barriers to PA during pregnancy were feeling tired, lack of access, and no time.

Regular physical activity (PA) is a new attention for health care providers to maintain social, emotional, and physical health balance. Majority of adult are inactive at the recommended

level of PA guidelines.<sup>[13,14]</sup> Pregnant women in Saudi have high prevalence of excessive gestation weight gain. This is due to poor knowledge about this particular health risk during pregnancy.<sup>[5]</sup>

There have been few studies and this study is one of it, that is concern on PA during pregnancy among pregnant women in Saudi, assessment of their knowledge on the PA guidelines and to explore the reasons behind physical inactivity.<sup>[2,5,15]</sup>

Table 7: Practice as per Socio-demographic (n=442)

Characteristics	No	Practice				Chi square	P
		<50% (25)		50% + (417)			
		No	Percentage	No	Percentage		
Age							
15-19	14	0	0.0	14	3.4	1.534	0.909
20-24	112	7	28.0	105	25.2		
25-29	153	9	36.0	144	34.5		
30-34	108	6	24.0	102	24.5		
35-39	46	3	12.0	43	10.3		
40+	9	0	0.0	9	2.2		
Gestational Age							
1-13	112	7	28.0	105	25.2	1.455	0.693
14-28	184	8	32.0	176	42.2		
29-40	113	7	28.0	106	25.4		
Don't Know	33	3	12.0	30	7.2		
Number of Children							
First Pregnancy	144	15	60.0	129	30.9	9.437	<b>0.024</b>
1-3	224	7	28.0	217	52.0		
4-6	66	3	12.0	63	15.1		
>6	8	0	0.0	8	1.9		
Educational Level							
Read and Write/Primary	33	2	8.0	31	7.4	0.011	0.995
Intermediate/Secondary	196	11	44.0	185	44.4		
University & above	213	12	48.0	201	48.2		
Occupation							
Health Care Worker	5	0	<b>0.0</b>	5	<b>1.2</b>	4.312	0.365
Teacher	63	7	<b>28.0</b>	56	<b>13.4</b>		
Clerk	21	1	<b>4.0</b>	20	<b>4.8</b>		
Housewife	332	16	<b>64.0</b>	316	<b>75.8</b>		
Others	21	1	<b>4.0</b>	20	<b>4.8</b>		
Do you have house-maid?							
No	400	20	<b>80.0</b>	380	<b>91.1</b>	3.396	0.065
Yes	42	5	<b>20.0</b>	37	<b>8.9</b>		
Family income							
<5000	132	6	<b>24.0</b>	126	<b>30.2</b>	4.515	0.105
5000-10000	261	13	<b>52.0</b>	248	<b>59.5</b>		
>10000	49	6	<b>24.0</b>	43	<b>10.3</b>		

Pregnancy is an essential and critical period to regulate the body weight, for maternal and fetal health and could be the beginning of behavioral changes. Physical activity patterns change with pregnancy. Many studies recommend health care provider to inculcate among all pregnant women that PA is safe and beneficial for health purpose and weight control.

The present study showed that 58.4% of pregnant women had an overall low level of PA awareness and practice. Although 50.67% of pregnant women who had high level of knowledge about PA, only 15.8% of them were exercising well. Indeed, a study in the United States showed that 32% of pregnant women were to meet the level of physical activity guidelines during early pregnancy, and this number declined to 12% by late pregnancy.<sup>[16]</sup> However, most of the sample, pregnant women had high education levels. This LLPA reported in the gulf countries including Saudi Arabia, was more prominent in women as compared to men.<sup>[8]</sup> For that, the clinicians play a main role in

advising. To change a behavior is not easy, it is long and slow process and requires patience. LLPA in young and pregnant women is enhanced by sedentary life and changed behavior.<sup>[17]</sup> Almost half of the pregnant women in this study had a good level of knowledge about PA. This could be attributed to the study population being in an urban setting, and therefore have access to many forms of information. Furthermore, antenatal program in WHC provides integrated health care services to pregnant women to enhance their education and enrich their knowledge. This program is accessible and affordable. As shown in other studies, the health education develops effective drive attitudes.<sup>[5]</sup>

This gap in the knowledge is one of the most important determinants of physical inactivity status.<sup>[5,9,15]</sup> Therefore, health care provider should consider improving maternal awareness and enrich their knowledge by educating pregnant women about the benefits of PA. Besides the social norms and traditions pregnant



**Table 8: Barriers of not performing physical exercise (n=442)**

Barriers	No	Practice				Chi square	P
		<50% (258)		50% + (184)			
		No	Percentage	No	Percentage		
Feeling tired	373	216	83.7	157	85.3	0.210	0.647
Doesn't like	39	27	10.5	12	6.5	2.076	0.150
No time	109	61	23.6	48	26.1	0.345	0.557
Not knowing the importance	90	65	25.2	25	13.6	8.923	<b>0.003</b>
Transportation problems	107	53	20.5	54	29.3	4.538	0.033
Just do it in last month (9 <sup>th</sup> month) of pregnancy	106	68	26.4	35	19.0	1.917	0.166
No access for facilities (no near gym or garden)	203	107	41.5	96	52.2	4.953	<b>0.026</b>
Financial Issues	33	18	7.0	15	8.2	0.215	0.643

women in Saudi may inherit the culture of physical inactivity that is away from scientific base, incorrect information or insufficient and inadequate information is obtained from health providers regarding PA during pregnancy.<sup>[17]</sup>

The role of health care providers should be considered for promoting PA during pregnancy and post partum and improve their fitness by accurate information and by conducting sessions for PA during antenatal visits, at least once per trimester by a specialist, and to be updated to the appropriate PA in each phase of pregnancy and thus decrease the risk of injuries and metabolic disturbance. Personal advice, offering program choice for exercise and supervision are considered as successful support options to improve PA among pregnant women.<sup>[18]</sup> This is consistent with a study by Chan *et al.*,<sup>[19]</sup> implantation of PA intervention among pregnant women has a positive effect on maternal and fetal health.

But most of the time, women will be guided by their own beliefs and reasons to do something. Women feel that healthy eating is more important than being physically active during pregnancy.<sup>[20]</sup> For pregnant women, the present study showed to have good awareness about PA benefits during pregnancy and the appropriate practice of PA. Also, beliefs about baby's harm from PA existed. About 43.9% of pregnant women had LLA and 56.1% of pregnant women had HLA about benefits and risk of PA. Different beliefs of pregnant women are mostly due to education level.<sup>[7,20,21]</sup> These are consistent with the study's finding that 32.6% of pregnant women with high level of knowledge about benefits of PA and 39.7% of pregnant women with low level of knowledge about benefits of PA had high education level.

In another way, 54.8% of pregnant women who had high level of knowledge were highly educated. Also, 84% of pregnant women with low level of knowledge about benefits of PA and risk were not working, whereas 16% of them were working. Unfortunately no previous study was conducted in the same field for comparison.

The result showed that among 442 participants only 15.8% of pregnant women in Saudi were exercising. One of the beliefs for being physically active during pregnancy was to minimize gestational weight gain and facilitate return back to pre pregnancy body weight.<sup>[23]</sup>

However, there is statistically significant decrease in PA during pregnancy.<sup>[20]</sup> Most of women worldwide stop exercising after discovering that they are pregnant and only a few begin to exercise during pregnancy.<sup>[21,22]</sup>

Most of the reasons given by participants showed that feeling tired by 84.4%. Although most of pregnant women knew the importance of PA, about 83.7% of pregnant women with LLPA and 85.3% of pregnant women with HLPAs considered feeling tired as the first barrier (89.6% of pregnant women who had LLPA and 10.4% had HLPAs were primigravida).

Some other factors were reducing PA among pregnant women. About 45.9% of pregnant women reported no access for facilities (41.5% of pregnant women with LLPA and 52.2% of pregnant women with HLPAs). About 24.2% of pregnant women who reported transportation problems as barrier had 20.5% LLPA and 29.3% HLPAs. As women in Saudi can't drive own car as Saudi community is male dominant. The lack of time was one of the barriers (24.7%) in 23.6% of pregnant women with LLPA and 26.1% of pregnant women with HLPAs. Pregnant women who reported no time 65.14% of them were housewives, and had role of care giving and 34.86% were working. Not knowing the importance was reported to be one of the PA barriers in 20.4%, 25.2% of pregnant women had LLPA and 13.6% had HLPAs. However, the results of the study are not different from the previous studies about the reasons for LLPA among pregnant women in Saudi.<sup>[5]</sup> Just as other study, internal barriers to PA among pregnant women were lack of energy and feeling uncomfortable due to size, and the most common personal health problems were associated with physical inactivity. Whereas, working was the most external barrier to PA.<sup>[23]</sup>

Generally, women in Saudi Arabia had limited opportunities to attend health centers including lack of motivation for PA, low income, work-load at home and care giving role.<sup>[8,13]</sup> In addition, lack of facilities and the distance was the greatest barrier for PA.<sup>[8]</sup>

In developed countries, PA is more often recorded among pregnant women who are younger than 35 year old, have low level of education, multiparity, and low level of pre-pregnancy exercise.<sup>[24]</sup> The presence of housemaid contributes to LLPA.<sup>[8]</sup>

Furthermore, demographic factors such age, education level, family income, beliefs and knowledge about PA have been documented as determinants of individual activity.

### Limitations

The sample frame which involved all pregnant women who were attending WHC-Riyadh limits the generalization of the finding. The method of data collection is less costly and effective in recruiting a large number of participants; it increases the threat of validity. In addition, there was insufficient explanation about different women's beliefs about PA.

### Conclusion

In conclusion, this study provides a baseline for pregnant physical activity. This study shows that there is no correlation between the awareness of PA during pregnancy and practice. The appearance of sufficient knowledge among pregnant women doesn't reflect well practice of exercise. Therefore, feeling tired or lack of facilities is the major barriers to PA. It is important to understand the factors and beliefs that affect PA. For that, antenatal program care should restructure and design specific strategies to promote PA among pregnant women.

More studies are required for determining the best available interventions to enhance PA during pregnancy and to clarify the reasons behind the women's disbeliefs about PA and to overcome the barriers.

### Recommendation

The first step to improve the level of PA awareness and practice among pregnant women is by establishing maternity PA sessions for education and intervention.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### References

- 1 Wojtyła A, Kapka-Skrzypczak L, Bilinski P, Paprzycki P. Physical activity among women at reproductive age and during pregnancy (Youth Behavioural Polish Survey-YBPS and Pregnancy-related Assessment Monitoring Survey-PrAMS)-epidemiological population studies in Poland during the period 2010-2011. *AnnAgric Environ Med* 2011;18:365-74.
- 2 Aslam M, Ahmed SR, Rajab M, Kattea L. Impact of Obesity on Fetomaternal Outcome in Pregnant Saudi. *J Health Sci* 2009;3:187-95.
- 3 Barakat R, Pelaez M, Cordero Y, Perales M, Lopez C, Coteron J, *et al*. Exercise during pregnancy protects against hypertension and macrosomia: Randomized clinical trial. *Am J ObstetrGynecol* 2016;214:649.e1-8.
- 4 Clapp JF III. Exercise during pregnancy: A clinical update. *Clin Sports Med* 2000;19:273-86.
- 5 Rasheed P, Al-Sowielem LS. Health education needs for pregnancy: A study among women attending primary health centers. *J Family Community Med* 2003;10:31-8.
- 6 Shirazian T, Faris BS, Fox NS, Friedman F Jr, Rebarber A. The lifestyle modification project: Limiting pregnancy weight gain in obese women. *J MaterFetal Neonatal Med* 2014:1-5.
- 7 Walasik I, Kwiatkowska K, KosińskaKaczyńska K, Szymusik I. Physical activity patterns among 9000 pregnant women in Poland: A cross-sectional study. *Int J Environ Res Public Health* 2020;17:E1771. doi: 10.3390/ijerph17051771.
- 8 Al-Eisa ES, Al-Sobayel HI. Physical activity and health beliefs among saudi women. *J NutrMetab* 2012;2012:642187.
- 9 Doran F, Davis K. Factors that influence physical activity for pregnant and postpartum women and implications for primary care. *Aust JPrim Health* 2011;17:79-85.
- 10 Coll CV, Domingues MR, Hallal PC, da Silva IC, Bassani DG, Matijasevich A, *et al*. Changes in leisure-time physical activity among Brazilian pregnant women: Comparison between two birth cohort studies (2004-2015). *BMC Public Health* 2017;17:119.
- 11 Robledo-Colonia AF, Sandoval-Restrepo N, Mosquera-Valderrama YF, Escobar-Hurtado C, Ramirez-Vélez R. Aerobic exercise training during pregnancy reduces depressive symptoms in nulliparous women: A randomised trial. *JPhysiother* 2012;58:9-15.
- 12 Szumilewicz A, Wojtyła A, Zarebska A, Drobnik-Kozakiewicz I, Sawczyn M, Kwitniewska A. Influence of prenatal physical activity on the course of labour and delivery according to the new Polish standard for perinatal care. *AnnAgric Environ Med* 2013;20:380-9.
- 13 Musaiger AO, Al-Mannai M, Tayyem R, Al-Lalla O, Ali EY, Kalam F, *et al*. Perceived barriers to healthy eating and physical activity among adolescents in seven Arab countries: A cross-cultural study. *ScientificWorldJournal* 2013;2013:232164.
- 14 Richards J, Hillsdon M, Thorogood M, Foster C. Face-to-face interventions for promoting physical activity. *Cochrane Database Syst Rev* 2013:CD010392. doi: 10.1002/14651858.CD010392.pub2.
- 15 Pearce EE, Evenson KR, Downs DS, Steckler A. Strategies to promote physical activity during pregnancy. *Am J Lifestyle Med* 2013;7:38-50.
- 16 Ruifrok AE, Althuisen E, Oostdam N, van Mechelen W, Mol BW, de Groot CJ, *et al*. The relationship of objectively measured physical activity and sedentary behaviour with gestational weight gain and birth weight. *J Pregnancy* 2014;2014:567379.
- 17 Stengel MR, Kraschnewski JL, Hwang SW, Kjerulff KH, Chuang CH. "What my doctor didn't tell me": Examining health care provider advice to overweight and obese pregnant women on gestational weight gain and physical activity. *Womens Health Issues* 2012;22:e535-40.

- 18 Liu N, Gou WH, Wang J, Chen DD, Sun WJ, Guo PP, *et al*. Effects of exercise on pregnant women's quality of life: A systematic review. *Eur J Obstet Gynecol Reprod Biol* 2019;242:170-7.
- 19 Chan CWH, Au Yeung E, Law BMH. Effectiveness of physical activity interventions on pregnancy-related outcomes among pregnant women: A systematic review. *Int J Environ Res Public Health* 2019;16:E1840.
- 20 Evenson K, Bradley C. Beliefs about exercise and physical activity among pregnant women. *Patient Educ Couns* 2010;79:124-9.
- 21 Gebregziabher D, Berhe H, Kassa M, Berhanie E. Level of physical activity and associated factors during pregnancy among women who gave birth in Public Zonal Hospitals of Tigray. *BMC Res Notes* 2019;12:454.
- 22 Melzer K, Schutz Y, Boulvain M, Kayser B. Physical activity and pregnancy: Cardiovascular adaptations, recommendations and pregnancy outcomes. *Sports Med* 2010;40:493-507.
- 23 Weir Z, Bush J, Robson SC, McParlin C, Rankin J, Bell R. Physical activity in pregnancy: A qualitative study of the beliefs of overweight and obese pregnant women. *BMC Pregnancy Childbirth* 2010;10:18.
- 24 Fell DB, Joseph KS, Armson BA, Dodds L. The impact of pregnancy on physical activity level. *Matern Child Health J* 2009;13:597-603.