

## Effect of Kegel's Exercises during Third Trimester of Pregnancy on Maternal Outcome

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### Abstract

**Background:** Antenatal Kegel's exercise as a type of conservative intervention is a safe and an effective technique that help the muscles control well during gestation. **Aim:** This study aimed to assess the effect of Kegel's exercises during third trimester of pregnancy on maternal outcome. **Design:** A quasi experimental research design was used. **Setting:** This study was conducted at antenatal clinic, intrapartum unit and postpartum ward of General KafrElSheikh Hospital. **Subjects:** A purposive sample of 110 pregnant women, assigned to intervention group (n=55) who received instructions to practice Kegel's exercises during third trimester and control group (n=55) who received a routine hospital antenatal care. **Tools:** Data were collected using three tools; structure interview schedule, maternal outcome assessment sheet and numerical analogue pain-rating scale. **Results:** There were statistical significant difference in favor of the intervention compared to control group regarding to the mean of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> duration of labor stages (10.08±2.27, 70.79±25.81 and 17.37±3.05 versus 11.25±4.09, 93.75±58.78 and 16.36±6.31 respectively), mode of delivery (2.10±0.22 versus 2.90±0.31), the degree of tears (1.50±0.71 versus 3.00±1.42) and degree of perineal pain before discharge (2.89±0.96 versus 6.2±1.98) (P=0.000\*). **Conclusion and recommendations:** Kegel's exercise during third trimester of pregnancy was positive effects on maternal outcome. Accordingly, Kegel's exercise should be an integral part of nursing care during third trimester for pregnant women to improve maternal outcome.

**Keywords:** Kegel's exercise, Labor Duration, Mode of delivery, Tears, Third trimester, Perineal pain.

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### I. Introduction

Pregnancy and delivery are physiologic methods, unique for all women, which usually progress normally. Also, Pregnancy period is a modest, merry and healthy time if not occur any complications for mother and fetal. So, the promoting of mother and child health is one of the most significant and primary roles of millennium development goals and public health agencies. Prenatal care is known preventive complications and management medicine regarding to pregnancy and birth and a set of interference that assists to manage and change biomedical behavioral and social risk of maternal health and gestation (Tuncalp et al., 2017 & Baghdari et al., 2016).

The pelvic floor is a system of muscles, connective tissues and ligaments that upholding the organs of the pelvis involving the uterus, vagina, bladder and bowel. The pelvic floor muscles act as assortment such as by permitting the assortment of the bladder to exit urine out while, simultaneously restful the muscles around the urethra to allow urine flow. Similar assortment muscle movements happen through evacuation, delivery, and sexual intercourse (Balaya et al., 2016).

Comprehensive scientific evidence has exhibited that exercise during pregnancy is a precondition for the suitable course of conception, growth of fetal, delivery, and the puerperium period. The American College of Obstetricians and Gynecologists in 2015, reported that, a breakthrough representation that inactivity during prenatal is a danger attitude. The health care providers should be encouraging mother to prenatal exercise under specialists in physical activity, better qualified related to international educational standards (Szumilewicz, 2018).

Kegel's exercise as a type of physical activity performing during pregnancy period. It is doing to strength pelvic floor muscles through pelvic floor muscles relaxation and contraction various times during the day with certain duration for any time. Kegel's exercise provides pelvic floor muscle strength which may extend during birth, helps in identifying and decreasing risks such as lower rate of prolonged second stage of labor, reduce episiotomy rate, the incidence of cesarean section, perineal tear and helping in decrease degree of postpartum pain (Elsehemy et al., 2019; Elsebeiy, 2018 & Farrag et al., 2016).

Maternity nurses are playing an integral role in saving women's health from negative experiences during childbearing. So, they should be applying several interventions during pregnancy period to reduce the risk of prolonged second stage of labor, reduce occurrence of perineal tears during delivery and decrease level of pain that result from episiotomy. These roles include antenatal education for pregnant women about the importance of antenatal kegel's exercise (Elsehemy et al., 2019; El-Shamy & Abd El Fatah, 2018).

#### **Significance of the study**

The goal of health people 2030 is decrease Cesarean section birth. In Egypt, the past decade has testified a severe rising in the incidence of Cesarean section with the most recent Egypt Demographic and Health Survey (EDHS) reported a Cesarean section rate of 52%, there are researchers found that, the kegel's exerciseduring pregnancy helping in decrease Cesarean section rate (Abdeltawab et al., 2018 and El-Shamy & Abd El Fatah, 2018).

The evidence based research recommended physical activity during pregnancy period for maintaining of physical and mental health of woman. It has many benefits like reducing the risk and preventing complications such as instrumental delivery, perineal tears, caesarean section, and lumbopelvic pain. (Canadian Guideline, 2019 and Davies & Artal, 2019 ).

The kegal's exercise training for women during third trimester of pregnancy period has very significant benefits in woman life such as; enhance the women to deliver through vaginal, reduce incidence of episiotomy, prolonged labor, occurrence of perineal tears, improves the adverse maternal outcome. (Elsehemy et al., 2019; Larios et al., 2017 & Abd-El Hamid et al., 2012). Kegel's exercise is very important to maintain women health but it isn't a vital part of nursing intervention and it isn't included in the hospital routine in Egypt. So this study was conducted to assess the effect of Kegel's exercises during third trimester of pregnancy on maternal outcome.

#### **Aim of the study**

The aim of current study was to assess the effect of Kegel's exercises during third trimester of pregnancy on maternal outcome.

#### **Study Hypothesis**

**Hypothesis 1:** "Pregnant women who perform Kegel's exercises during third trimester of pregnancy report shortening of the first and second stage of labor compared those who did not."

**Hypothesis 2:** "Pregnant women who perform Kegel's exercises during third trimester of pregnancy experience lower need for episiotomy and less perineal laceration or tear compared those who did not."

#### **Subjects and Method**

**Study Design:** A quasi experimental research design was followed to accomplish the aim of the present study.

**Study Setting:** It was accomplished at obstetric department (antenatal clinic, intrapartum unit and postpartum ward) which affiliated to General Kafrelsheikh Hospital, Kafrelsheikh city, Kafrelsheikh governorate, Egypt. General Kafrelsheikh Hospital is public hospital provides free services for all medical services such as, surgery, maternal, child health services, urology, and cardiology as well as outpatient clinics for all specialties. Obstetric department provides services daily to women during life cycle such as pregnancy, labor, postpartum, and family planning. The antenatal clinic is opened from Saturday to Thursday, from 9 am to 2 pm. The care was provided by three nurses and five obstetricians.

**Sample type:** A purposive sample was used.

**Study subjects:** The study included 110 pregnant women who were attending for antenatal clinic. The pregnant women would be chosen from the predetermined setting according to the following criteria:

#### **Inclusion criteria**

- Age 18 - 35 years
- Can read and write.
- Primipara and Gravida 2.
- Third trimester (gestational age 28-32 weeks).
- Previous normal vaginal delivery.
- Singleton pregnancy.
- Fetal in vertex presentation.

**Exclusion criteria**

- High risk pregnancy
- Pregnant women had indications for caesarean section.

**Sample size calculation**

The sample size of the present study was calculated based on reviewing the records of the antenatal clinic Kafrelsheikh Hospital for the admission number of the parturient women. The records revealed that approximately 116 women attended to antenatal clinic per year. Therefore, the recommended sample size for a population of 110, with a confidence level of 95% and a margin of error (degree of accuracy) of 5%. Accordingly, the total sample size was calculated as 110 of pregnant women, divided into two groups. **The interventional group (n=55)** who practice Kegel's exercises during 3<sup>rd</sup> trimester. **The control group (n=55)** who received a routine hospital antenatal care only.

**Data collection tools:**

**Tool I: A Structured Interview Schedule:**

This tool was developed by the researcher after reviewing the related literature to collect data for recruiting women before the implementation, it included two parts: **Part 1:** It covered the women general characteristics such as age, educational level, occupation and residence. **Part 2:** It covered the current obstetric data such as gestational age, number of gravida and para.

**Tool II: Maternal outcomes record:** It include, duration of first, second and third stage of labor; mode of delivery and degree of tears.

**Tool III: Numerical analogue pain-rating scale:** It was adopted from **McCaffery, (1999)**. It was completed by the researcher based on the respondent's answers of women for assessment of their perineal pain after delivery before discharge from hospital.

**Scoring system**

The women had the option to verbally rate their scale. It ranges from 0-10 points, where 0 indicates to «No pain» while 10 refers to « Worst possible pain » while score between one to two was a mild pain, score between three to five indicated moderate pain, six to seven score indicated severe pain and eight to nine score indicated to very severe pain.

**Validity of the tools**

The tools were submitted to experts (5) in field of obstetrics and maternal nursing to exam the validity of content. Alterations on clarity, appropriateness and completeness of the tools' were carried out according to expert's suggestions.

**Reliability of the tools**

Cronbach's alphas coefficient was calculated to assess the reliability of tool II, and tool III. It was showed that a strong significant correlation between the items of tools and results are shown in the following table:

Questionnaire Dimensions	Cronbach Alpha
tool II: Maternal outcomes	0.796
tool III: Numerical analogue pain-rating scale	0.926

**Pilot Study**

The designed women preparation classes, teaching exercise were applied on 10% of the study subjects (11 pregnant women), who met the inclusion criteria, were recruited for the pilot study. The study of pilot was carried out to exam the clarity of the questions tools, time needed for complete tools. Additionally, the pilot study was carried out to examine the applicability of the study tool, and to identify any difficulties that may arise and need to be handled before data collection. Pregnant women inclusive in study pilot were precluded from the sample study.

**Ethical Consideration**

- A primary approval was taken from the research Ethics Committee at the Faculty of Nursing, Mansoura University.
- An official permission was taken from the administrative personal at General Kafrelsheikh Hospital to conduct the study.
- An informed written consent was gained from each pregnant woman share in the research after explaining purpose of the study and its importance.
- The researcher underlined that the involvement in the study in fully volitional as well as any pregnant woman has the right to retreat from the study at any time.
- The researcher maintained singularity when data was collected and the results used as a component of the necessary research for doctoral study, as well as for future publications and education.

## II. Method

Data was combined through a period of ten months started from the November 2017 to August 2018 on a total number of 110 pregnant women. The study was collected through six phases: 1) preparation phase; 2) Interviewing phase; 3) Assessment phase; 4) Implementation phase and 5) Follow up 6) Evaluation phase.

- **Preparation phase:** An official permission was taken from the administrative personal at General KafrElSheikh Hospital to conduct the study, As well as, all health care providers were acquainted orally about the objective, importance and benefits of the research. Also, they were conscious while the investigator is a doctoral elect at the Faculty of Nursing; Mansoura University.

- **Interviewing phase:** The researcher met the potential woman who had inclusion criteria explained the nature, aim of the study, its importance, and its benefits. After that, the researcher welcomed them to share in study. Written consent was gained from each pregnant woman. Each one was assigned either to the control group or the intervention group. Groups' assignment based on their time on arrival, where the 1<sup>st</sup> 55 women were assigned to the intervention group, while the 2<sup>nd</sup> 55 women were assigned to the control group. Each pregnant woman who had inclusion criteria and willing to participate in the study was interviewed to coverage data related to personal information and current obstetric history then the researcher interviewed each pregnant woman individually, asked her questions in simple Arabic language and recorded each answer utilized the structured interview schedule. The interview took place at waiting room of antenatal care clinic. The interview lasted for about twenty to thirty minutes for each pregnant woman.

- **Assessment phase:** The researcher was done Leopold's maneuver for each woman to ensure the fetal singleton and vertex presentation or known by abdominal ultrasound which was done by physician and excluded women were hadn't inclusion criteria.

- **Implementation phase: The intervention group** received routine hospital antenatal care added instructions to practice Kegel's, the researchers began with the explanation of the advantages and how to be done of the Kegel's exercises based on the following: Before applying the exercise, the researcher taught the women how to be recognized the accurate muscle, where to imagine that trying to stop her from passing gas and trying to stop the flow of urine midstream at the same time. The researcher advised the women don't moved muscles in abdomen, thigh and buttocks and breathed normally during the exercise. The researcher tough the women to pulled up of the rectum and vagina during contraction. The researcher instructed women to relax for a period equal to the period of contraction regularly. The researcher understand the women can be able to hold contraction accurately for count of three (3 second) and relax for another 3 seconds then repeated this exercise five times daily (Twenty five contraction daily). Finally, the researcher instructed for the intervention group to follow this schedule.

Week	Frequency of Kegel's exercises that pregnant woman done in day	Duration (Seconds) of Kegel's exercises that pregnant woman done day	Total numbers for contraction in day
1 <sup>st</sup> week	5	3	25
2 <sup>nd</sup> week	10	6	50
3 <sup>rd</sup> week	15	9	75
4 <sup>th</sup> week	20	12	100 (Contained this number from this time to delivery time)

- **The control group** received a routine hospital antenatal care which consisted of measuring vital signs and ultrasound was done only.

- **Follow up phase: During the third trimester: For the interventional group,** the researcher measured weight, taken vital signs, and auscultated fetal heart sound. Also, the researcher followed the pregnant women to practice kegel's exercise and emphases on them to record the frequency and duration of kegel's exercise in each day. For **control group** the researcher measured weight, taken vital signs, and auscultated fetal heart sound.

- **Evaluation phase :** For both groups , the researcher was assessed duration of 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> stage of labor, mode of delivery, perineal tears and its degree, also, assess perineal pain after delivered before discharge of woman from hospital by using Numerical analogue pain-rating scale.

### Limitation of the study

The researcher faced some limitation during data collection as (5) pregnant women refused to be delivered through vaginal canal and (4) pregnant women delivered outside General KafrElShiekh hospital. So excluded from sample.

**Statistical Analysis**

Personal computer was used to store and analyze data. Statistical Package for the Social Science program version 20 was used for the statistical analysis of the data. Data gathered, coded and entered into computer, and then data were tested for coding and recording error. Descriptive as well as inferential statistics were used to analyze data relevant to study. Continuous variable was presented like mean ± SD (standard deviation) for parametric data. The two paired study groups were compared by using Student *t* test. Comparison of categorical variables was done using Chi-square test ( $\chi^2$ ). The statistical significant was pre-set at 0.05 level. A *p*-value < 0.05 indicates a significant result.

**III. Results**

**Table (1):** Frequency distribution of the intervention and control group related to their socio- demographic characteristics

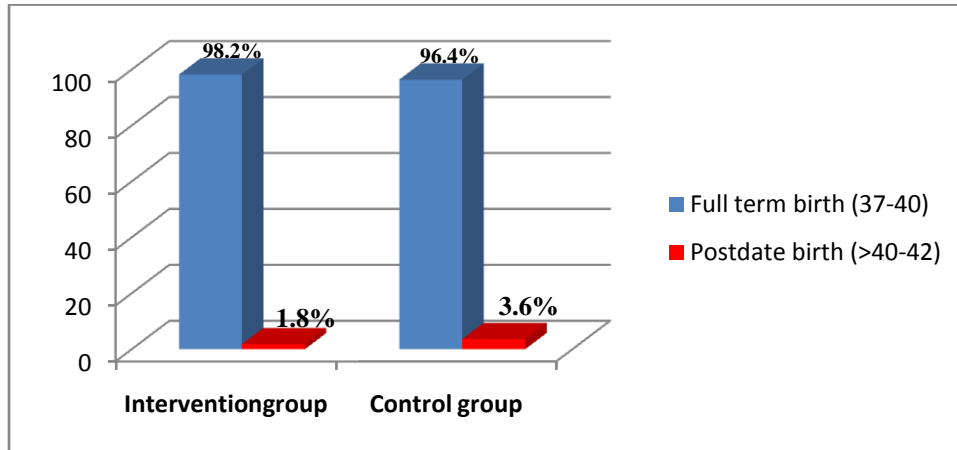
Variables	Intervention group (n=55)		Control group (n=55)		X <sup>2</sup>	p
	n	%	n	%		
<b>Age</b>						
18->21 years	19	34.5	28	50.9	3.726	0.293
21- >25 years	25	45.5	18	32.7		
25- >29 years	10	18.2	7	12.7		
29- 35 years	1	1.8	2	3.6		
M±SD	21.94±3.12		21.74±3.48			
<b>Education</b>						
Read and write	0	0.0	2	3.6	2.857	0.414
Preparatory school	2	3.6	4	7.3		
Secondary school	44	80.0	40	72.7		
University	9	16.4%	9	16.4		
<b>Occupation</b>						
Working	1	1.8	3	5.5	1.038	0.308
House wife	54	98.2	52	94.5		
<b>Residence</b>						
Rural	41	74.5	43	78.2	0.201	0.654
Urban	14	25.5	12	21.8		

**Table (1)** presents demographic characteristic of the intervention and the control group. It was showed that, the mean age of the intervention and control group almost identical (21.74±3.48, 21.94±3.12 years) respectively. Themajority of them (80.0%, 72.7%) were secondary education Also, themost of them (98.2%, 94.5%) were housewives and around three quadrants of them were from rural areas. There was no standard deviation between two group regarding socio- demographic characteristics.

**Table (2):** Frequency distribution of the intervention group and control group according to their current obstetric data.

Variables	Intervention group (n=55)		Control group (n=55)		X <sup>2</sup>	p
	n	%	n	%		
<b>Gravida</b>						
Once	45	81.8	47	85.5	0.266	0.606
Twice	10	18.2	8	14.5		
<b>Para</b>						
None	45	81.8	48	87.3	0.626	0.429
Once	10	18.2	7	12.7		

**Table (2)** shows that high percentages of the intervention and control group (81.8% and 85.5% respectively) were primigravida. Also, primipara women were the highly percentage in both groups (81.8% and 87.3% respectively).



**Figure (1)** Distribution of pregnant women in the intervention group and control group according to gestational

As shown in **Figure (1)**, there were no statistical significant differences regarding to gestational age between intervention and control group.

**Table (3):** Frequency distribution of the intervention group and control group related to duration of labor stages.

Variables	Intervention group		Control group		X <sup>2</sup>	P
	n(=43)	%	n(=10)	%		
<b>Duration of 1<sup>st</sup> Stage of labor</b>						
6-8 hrs	8	18.6	5	50.0	11.961	0.003*
9-12 hrs	28	65.11	0	0.0		
13-16 hrs	7	16.27	5	50.0		
<b>Mean ± SD</b>	10.08 ±2.27		11.25±4.09			
<b>Duration of 2<sup>nd</sup> Stage of labor</b>						
10-30 min	7	16.28	4	40.0	14.551	0.001*
1-2 hrs	36	83.72	4	40.0		
>2 hrs	0	0.0	2	20.0		
<b>Mean ± SD</b>	70.79±25.81		93.75±58.78			
<b>Duration of 3<sup>rd</sup> Stage of labor</b>						
10-20 min	43	100.0	7	70.0	11.440	0.001*
>20 min	0	0.0	3	30.0		
<b>Mean ± SD</b>	17.37±3.05		16.36±6.31			

\*= significant

As shown in table (3), there were a highly statistical significant differences regarding duration of labor stages between intervention and control group. The mean of the duration of labor in the intervention group was (10.08 ±2.27 hours, 70.79±25.81 minutes and 17.37±3.05 minutes) for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> stage of labor respectively compared to the mean of the duration of labor in control group was (11.25±4.09 hours, 93.75±58.78 minutes and 16.36±6.31 minutes for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> stage of labor respectively).

**Table (4):** Frequency distribution of the intervention group and control group related to mode of delivery

Mode of delivery	Intervention group		Control group		X <sup>2</sup>	P
	n(=55)	%	n(=55)	%		
Normal vaginal delivery	5	9.1	0	0.0	40.439	0.000*
Vaginal delivery with episiotomy	38	69.1	10	18.2		
Cesarean section	12	21.8	45	81.8		

**Table (4)** shows mode of current deliveries in the intervention group and control group. It was found that there was a highly statistical significant differences regarding mode of delivery between the intervention and control group (P=0.000\*). The women in intervention group delivered by normal vaginal delivery, vaginal delivery

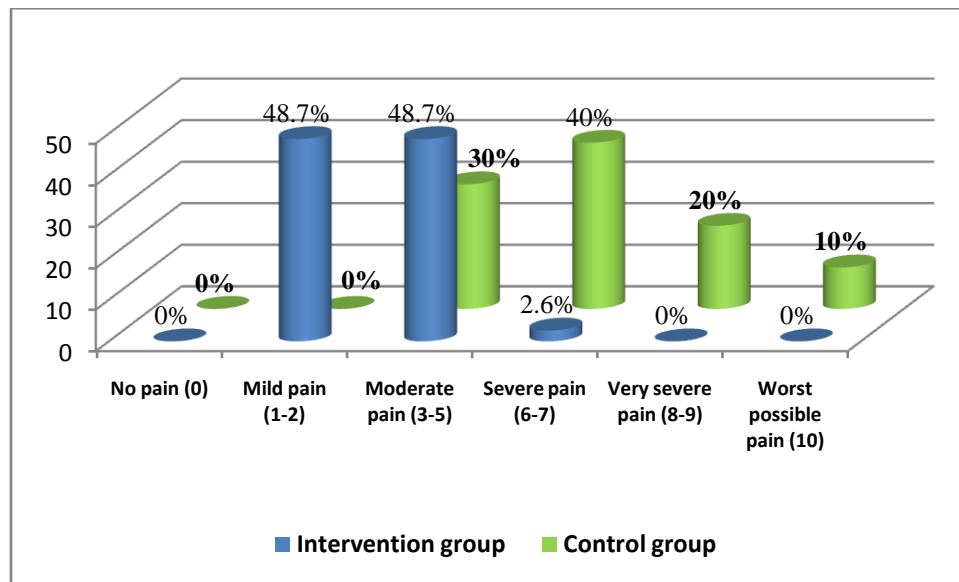
with episiotomy and cesarean section (9.1%, 69.1% and 21.8% respectively) compared to the women in control group delivered by normal vaginal delivery, vaginal delivery with episiotomy and cesarean section (0.0%, 18.18% and 81.81% respectively).

**Table (5):** Frequency distribution of the intervention group and control group according to degree of tears.

Variables	Intervention group		Control group		X <sup>2</sup>	P
	n=43	%	n=10	%		
<b>Tears</b>						
Yes	5	11.6	10	100.0	31.225	0.000*
No	38	88.4	0	0.0		
<b>Degree of Tears</b>						
First	4	80.0	0	0.0	11.250	0.010*
Second	1	20.0	5	50.0		
Third	0	0.0	4	40.0		
Fourth	0	0.0	1	10.0		

\*= significant

**Table (5)** shows the degree of tears in both groups. It was found that there was a highly statistical significant differences regarding degree of tears between intervention group and control group (P=0.000\*). All women in control group delivered through vaginal canal had tear with degree (2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>) (50.0%, 40.0% and 10.0% respectively) compared to (11.6%) of women in intervention group delivered through vaginal canal had tear with first and second degree (80.0% and 20% respectively).



**Figure (2):** Distribution of the intervention group and control group according to degree of pain. As shown in **Figure (2)**, there were highly statistical significant differences between intervention and control group regard to perineal pain after delivery at discharge (P=0.000).

#### IV. Discussion

The aim of this study was to assess the effect of kegel's exercises during third trimester of pregnancy on maternal outcomes. The present study finding revealed that, there were a highly statistical significant differences regarding duration of labor stages, mode of delivery, the degree of tears and degree of perineal pain after delivery between intervention and control group. So, the study hypothesis was achieved.

Regarding effect of kegel's exercise during third trimester on duration of labor stages that reply the 1<sup>st</sup> research hypothesis. The current study found that, the mean duration of labor stages (1st, 2nd and 3rd) were shorter in the intervention group as compared with the control group. There was statistically significant difference was observed between two groups. This is may be due to the muscles are strengthened by kegel's exercise. This lead to the muscles has ability to do internal rotation during the 2nd stage of labor.

This result was congruent **Elsehemy et al., (2019)**, who studied the effect of structured pelvic floor exercise protocol during pregnancy on labor progress, they mentioned that, there were statistically differences between the study and monitoring group regarding the first, second and third stages of labor. In the same line, this result agreed with **El Sebeiy, (2018)**, who compare the effects of prenatal perineal massage versus kegel's exercise on labor outcomes, reported that, the mean of the first, second and third duration of labor stages were shorter in the intervention group as compared with the control group. There was statistically significant difference was observed between two groups. Also, these findings okay with **Du et al., (2015)**, who studied the effect of antenatal pelvic floor muscle training on labor and delivery outcomes: a systematic review with meta-analysis, they mentioned that, pelvic floor muscles training might be dynamic at lessening the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> duration of labor progress in the primigravida. Furthermore with **Goda et al., (2015)**, who studied the effect of kegel's exercise training protocol for pregnant woman during third trimester on labor duration, who reported that, there were statistically significant differences were found between study and control group. While the current study results were disagreement with **Donmez&Kavlak, (2015)**, who studied the effects of prenatal perineal massage and kegel's exercises on the integrity of postnatal perineal health. They reported that, there was no difference between the training group on kegel's exercise and control group regarding to duration of labor stages. Also, the current study discrepancy with **Dias et al., (2011)**, who studied the effect of pelvic floor muscle training on labor and newborn outcomes: a randomized controlled trial. They reported that, there were no statistically differences between the study and traditional group regarding the first, second and third stages of labor. The difference results may be due to small sample size in these studies.

Concerning, the effect of kegel's exercise during third trimester on mode of delivery. That replies the 2<sup>nd</sup> research hypothesis. The current study found that, there were statistically significant differences between intervention and control group. More than two thirds of the women in intervention group delivered by vaginal delivery with episiotomy compared to the majority of the women in control group delivered by cesarean section. This may be due to the pelvic floor muscles became more elasticity, facilitate the fetus to delivered through birth canal, in addition reduce incidence of cesarean section. Similarly, these findings with **El Sehemy et al., (2019)**, they observed that the majority of the intervention group underwent spontaneous vaginal delivery rather than vaginal delivery with episiotomy. These results are identical with the study of **El-Shamy&Abd El Fatah (2018)**, who studied about the effect of antenatal pelvic floor muscle exercise on mode of delivery, the study results revealed that, there was a highly statistical significant difference between study group and monitoring group. While the current study results was contention with **Wang et al., (2014)**, who studied the pelvic floor muscle training as a persistent nursing intervention: effect on delivery outcome and pelvic floor myodynamia. They found that, there were women allocated to PFMT were underwent CS more than woman in the control. So, who reported that were no statistically differences between the study and control regarding to the mode of delivery. The difference in studies results may be due to small sample size.

In relation to the effect of kegel's exercise during third trimester on degree of tears after delivery through vaginal canal; that reply the 2<sup>nd</sup> research hypothesis. The current study found that, there were highly statistical significant differences between intervention and control group. This is due to kegel's exercise improve strength of pelvic floor muscles that reduce the incidence of tears. These results agreed with those of **El Sebeiy et al., (2018)** they reported that there was a highly statistical significant difference between study group who training on kegel's exercise and control group. Similarity, this study with **Larios, et al., (2017)**, who studied the influence of a pelvic floor training programme to prevent perineal trauma: A quasi randomised controlled trial, they mentioned that, PFMT prevent perianal tears. Likeness with **Donmez&Kavlak, (2015)**, they found that, there was a highly statistical significant difference between study group who training on kegel's exercise and control group regarding degree of postpartum tears. In contrast with the current study result **Okido et al., (2015)**, who conducted assessment of fetal well-being in pregnant women subjected to pelvic floor muscle training through a controlled randomized study and they reported that no significant difference in the prevalence of perineal laceration between training group and control. Also, the current study results were difference with **Wang et al., (2014)**, they reported that were no statistically differences between the study and control group regarding to perineal laceration.

Concerning, the effect of kegel's exercise during third trimester of pregnancy on degree of perineal pain; the results of the current study found that, a highly statistical significant differences between intervention and control group. This is may be due to the kegel's exercise improve blood supply to perianal area; reduce edema and this helping in decrease degree of pain. These results agreed with **El Sebeiy et al., (2018)**, they reported that, there was a highly statistical significant difference between study group who training on kegel's exercise and control group. This result identical with **Larios et al., (2017)**, they mentioned that, woman practice PFMT during antenatal had less perineal pain in postpartum than control group. As well Likeness with **Farraget al., (2016)** who studied the effect of postnatal kegel exercises on episiotomy pain and wound healing among primiparous women, they reported that kegel's exercise had a highly significant impact in reducing perineal pain. Also, these results in the same line **Abd El Fttah, (2015)**, who study the effects of



prenatal perineal massage and kegel exercise on the episiotomy rate, they found that, a highly statistical significant difference between intervention and control group. Similarity, the present study with **Donmez&Kavlak, (2015)**, who found that, there was a highly statistical significant difference between study group who training on kegel's exercise and control group related to degree of postpartum perianal pain

## V. Conclusion

Based on the study findings, kegel's exercise during third trimester of pregnancy were associated with benefits on maternal outcome such as; shortage duration of labor stages, enhancing vaginal delivery among pregnant women, decrease incidence of delivery by cesarean section, incidence to needs of episiotomy, degree of tears during delivery and degree of perineal pain. Finally, Kegel's exercise should be integral part of nursing care at antenatal care during third trimester of pregnancy.

## RECOMMENDATION

- Integration of kegel's exercise as a routine antenatal care to improve maternal outcomes.
- Integrate kegel's exercise during third trimester of pregnancy in the undergraduate curriculum in the faculty of the Nursing Mansoura
- Raise pregnant women awareness regarding to benefits of kegel's exercise training during pregnancy period.
- Further research: Replicate the present study in another setting

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## CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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