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Efeect of Kegel's Exercises on First Degree Pelvic Organ Prolapse Among Women

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Abstract
Background: Kegel's exercises are recommended to increase the strength and elasticity of the pelvic floor muscles and decrease the incidence of prolapse and stress urinary incontince. ***Aim:*** was to assess the effect of kegel's exercises on first degree pelvic organ prolapse among women. ***Design:*** quasi-experimental, non equivalent pre-post test research design was adopted. ***Setting:*** this research was carried out at gynecological clinic at El Galaa Obstetrics and Gynecology Teaching Hospital. ***Sample:*** Convenience sample, of 110 women were recruited for this study as one group to be measured before and after according to certain criteria. ***Tools:*** three tools were used for data collection: structured interview tool; assessment & follow up tool for clinical picture of prolapse and Prinometry to measure the strength of pelvic floor muscles. ***Result:*** revealed that, a statistically significantly differences were founded between before and after following of kegel's exercises in relation to sexual clinical picture P value was ≥ 0.05, urinary clinical picture was ($\chi 2 = 145.4$ and p value ≤ 0.001 and types of urinary problems. $\chi 2 = 167.4$ and p value≤ 0.001) . And bowel clinical picture was ($\chi 2 = 128.8$ & P.value ≤ 0.001). Regarding to perinometry reading, the results revealed that, highly statistically significant differences was found between the three reading of prinometry ($F=68.047$, $p \leq 0.001$). ***In Conclusion:*** practicing kegel's exercises lead to decrease in the clinical picture of prolapse and improve strength of pelvic floor muscles. ***Recommendation:*** based on the study findings, its recommended kegel's exercises should be followed during each development phases of women's life span, so it should form an essential part of sex education and the nurse should work as educator and counselor to teach women benefits and technique of kegel's exercises.
Keywords: kegel's exercises, prolapse, prinometry.

Introduction

The International Urogynecological Association (IUGA) (2011) define the pelvic organ prolapse (POP) as a condition refers to bulging or herniation of one or more pelvic organs' into or out of the vagina. Pelvic organ prolapse occurs when the muscles, ligaments and fascia a network of supporting tissue those hold these organs in their normal anatomical positions become weak. Pelvic organ prolapse is a common health problem for women. The exact number of affected women by pelvic organ prolapse is difficult to quantify because symptoms vary widely, and some women may be embarrassed to discuss it with their health care providers. According to report of the American college of obstetricians and gynaecologists 2012, the women undergoing routine examinations between 37% and 50% had stage II or III POP. The perivelance will increase nearly 50% by 2050. Over 200,000 women in USA have surgery every year to alleviate the symptoms of POP. The direct cost of prolapse surgery is greater than $1 billion per year (Elizabeth& David,2012).

Although various classification schemes have been propos the standard of measurement of POP is quantification scales, which described the prolapse of the three vaginal compartments in relation to vaginal hymen recently, validated and simplified version of the Pelvic Organ Prolapse Quantification (POPQ) have been proposed, which consist of four measurements and classifies prolapse into four stages in relation to hymen. Stage 1, Prolapse in which the given point remains at least 1 cm above the hymnal remnants; Stage 2, Prolapse in which the given point descends to an area extending from 1 cm above to 1 cm below the hymnal remnants; Stage 3, Prolapse in which the given point descends more than 1 cm past the hymnal remnants but does not represent complete vaginal vault eversion or complete procidentia uteri. It implies that, at least some portion of the vaginal mucosa is not everted; finally Stage 4, complete vaginal vault eversion or complete procidentia uterine. It implies that the vagina and/or uterus are maximally prolapse with essentially the entire extent of the vaginal mucosa averted (The International Urogynecological Association, 2011).

The most established risk factors for POP including vaginal childbirth, advancing age, and obesity. Several epidemiological studies have the similar finding with every additional delivery up to five delivers conferring and increase risk of prolapse among 1000 women who presented for annual gynecologic examination. Every additional 10 years of age conferred an increase risk of prolapse of 40%. Also the obesity has been shown in several epidemiological studies to be associated with increased risk of prolapse with overweight and obese.

Women body mass index more than 25 having a 50% higher chance to develop prolapse (Haneg, andStark, 2011).

According to Brækken, Majida, Engh &Bø K. (2010) the main symptom of the prolapse is the seeing or feeling of the bulge in the vagina. The presentation of symptom may be varying among individuals and it also depends on the severity of prolapse. The mild degree of prolapse may be asymptomatic. Common symptoms can be summarized as follows:1) vaginal symptoms; feeling of something bulging from the vagina , feeling of pressure over the perineal area.2) urinary symptoms; prolonged urine stream, feeling of incomplete voiding , need to change position to complete voiding, stress urinary incontince . 3) Bowel symptoms; constipation, feeling incomplete emptying, incontince of stool or flatus. 4) Sexual symptoms; pelvic pain, dyspareunia, bleeding after intercourse.

Management of POP includes. Surgery, mechanical devices and conservative management. Conservative management approaches, such as giving lifestyle advice and delivering Pelvic Floor Muscle Training (PFMT), are often used in cases of mild to moderate prolapse. This is an update of a Cochrane review first published in (2004), and previously updated in (2006) (John, & Sons, 2011).

Arnold Kegel (1948), a gynecologist from the University of Southern California, was the first author to talk about the Pelvic Floor Muscles .Since 1950, pelvic floor muscles exercises have been recommended to compensate for pelvic floor dysfunction, and limit prolapse and urinary incontinence. Kegel also generated interest about the impact of anatomical conditions on pelvic floor function. In 1963, Jones suggested that, anatomic characteristics could influence the performance of pelvic floor muscles exercise with the introduction of biofeedback in 1984, the outcome of PFM training began to be evaluated and provided confirmation of the use of Kegel exercises in changing the pelvic floor muscles function.

There is a large body of evidence and broad consensus that health benefits are derived from higher levels of daily physical activity. In (2007), the Center for Disease Control and Prevention (CDCP), and the American College of Sports Medicine conducted a systematic review to provide comprehensive public health recommendations based on the available evidence of the benefits of physical activity. For the first time, the recommendations included the addition of muscle-strengthening activities. In 1990s, a series of randomized controlled trials assessed the effects of pelvic floor muscles training for the prevention and treatment of pelvic floor muscles dysfunction. At least 2 systematic reviews evaluated pelvic floor muscles training using biofeedback measurement. Although pelvic floor muscles training for urinary incontinence is considered Level 1 scientific evidence. The exercises are also often help to prevent prolapse of pelvic organs. A meta-analysis of randomized controlled trials by the Cochrane Collaboration concluded that there is some evidence indicating a positive effect of PFMT for prolapse symptoms and severity (John, & Sons, 2011)

Nurses also in their role as a health educator and counselor can minimize the complications that could occur to the women due to labor and delivery as well as long term complications such as urinary incontinence and pelvic floor organ prolapse by increasing woman awareness about the important and effectiveness of kegel exercises and its benefits on her health. (Hagen &Stark, 2008).

Significance

According to multicenter study Raeda & Al-qutab, (2003), that was carried in Giza; Egypt, the study showed that, the prevalence of POP in Egypt was 56.3% . Also according to American College of Obstetrics and Gynecologists (2005), by one estimate, the demand for health care services related to POP disorders will increase twice the rate of the population itself. The life time risk that a woman in the United States will have surgery for prolapse or urinary incontinence (UI), is 11% with up to one third of surgeries representing repeat procedures.

Although, the overall rate of prolapse surgery is greater than 1billion dollars, the National Center for Health& Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN), (2005), statics lists genital prolapse as the one of the most three common reason for hysterectomy more than 338,000 procedures for prolapse are performed annually in the united states.

In addition to (John, & Sons, 2011) the POP is life affecting and carry significant quality of life change. Pelvic floor disorders are not typically addressed by primary care physicians' parries to diagnose and treatment include miss understanding of the condition and commonly held beliefs that effective treatment are surgical so that an extensive evaluation before initiating treatment is needed .so, it is valuable to increase the women's awareness toward the importance of performing kegel exercises to minimize further complication of POP and its consequences.

There's scattered research in Egypt that assess the effect of kegel's exercises on pelvic organ prolapse, so the current study might provide an evidence and it will be add to the body of the nursing knowledge, also it will help in improving quality of life among women with first degree pelvic organ prolapse

Aim of the study

This study aims to assess the effect of kegel's exercises on the first degree of pelvic organ prolapse, among women.

Hypotheses

H1. Women with1st degree pelvic organ prolapse who follow kegel's exercises will show less signs and symptoms than before.

H2. Women with 1st degree pelvic organ prolapse who follow kegel's exercises will show improvement in the strength of pelvic floor muscles than before.

Subjects and Methods

Design

A Quasi experimental nonequivalent pre post-test was adopted to achieve the stated aim.

Setting

This study was carried out at the gynecological clinic in El Galaa Obstetrics and Gynecology Teaching Hospital. It is a teaching hospital providing free health care to maternity as well as gynecological clients. The total annually admission number to the gynecological clinic is 1154 women annually with various levels of socioeconomic status (statistical department, 2013).

Sample

A Convenience samples, a total of 110 POP women were recruited for this study according to the following criteria: complained from 1st degree of prolapse, multipara (more than one times), their age is ranged from 20- 40 years.

Exclusion criteria: 2nd and 3rd degree of prolapse, pregnant women, obese women, history of medical diseases such as hypertension and diabetes. The sample was one group pre and post test. Every woman who diagnosed as 1st degree pelvic organ prolapse, kegel's exercises will be followed to all of them.

Tools

Three tools were used for data collection,

I. Structured Interviewing. This tool was designed by the researcher; it included three sections; the first for personal data, second section for medical history, and third section for obstetric history; ***Section one (personal data).*** Which included data related to (years of marriage, age, educational level, occupation , type of work and duration of work , telephone number, applying exercises and type of exercises.) ***Section two (medical history).*** Which contained data related to medical history as genitourinary tract infection, pelvic inflammatory diseases and abdominal masses, chronic complain as constipation, chronic cough, urinary incontince, varicosities) ; ***Section three (obstetric history).*** which included data about obstetric history, such as parity, gravidity, height , weight , body mass index, mod of previous delivery ,previous labor since, any complication related to pervious pregnancy or delivery, such as tears, Postpartum hemorrhage, and gestational diabetes) **.**

II. Assessment & Follow up Tool for Clinical Picture of Prolapse. This tool was designed by the researcher, it included data related to signs and symptoms of pelvic organ prolapse such as 1) A feeling of vaginal fullness, heaviness; 2) feeling something was falling out of vagina ; 3) feel stretching in the groin area ; 4) feel lower back Pain ; 5) pain or discomfort during or after intercourse; 6) Loss of bladder control or Involuntary urination or inconsistent urinary stream; 7) Difficulty with bowel movements; 8)spotting or bleeding from the vagina ; 9) was standing , jumping ,and lifting worse the previous symptoms; 10)and was lying down relieve the previous symptoms . This section was used also for follow up visit.

III. Prinometry. It is a small tool that consists of peritron and vaginal sensor which help to assess the strength of Pelvic Floor Muscles (PFM) through probe inserted in the vagina and instructed the women to contract on it to give a reading pressure of the muscles, this reading of prinometry will help to know the strength of the pelvic floor muscles. This tool was also used in the follow-up visit to assess the improvement in women's condition. The perineometery with vaginal sensor is very sensitive and captures even the smallest flickering of the contracting muscles. It measures and displays the contractions numerically in cm of water (cm/H2O).

Tools validity

Tools were submitted to a panel of five experts in field of physiotherapy, maternity nursing and obstetric medicine to test the content validity. Modification was carried out according to the panel judgment on clarity and appropriateness of content.

Ethical Consideration

A primary approval was obtained from the ethical research committee of faculty of nursing Cairo University to

approve the study in 2/7/2014. Also an approval from the ethical research committee, of the General Organization for Teaching Hospitals and Institutes in 24/11/2014, to conduct the study. Each woman was informed about the purpose of the study and it's important. In addition, informed written consent was obtained from women who were willing to participate in the study after explanation the aim of the study to them and ensuring their participation was voluntary; Confidentiality was assured through coding of data by the investigator. Every woman has the right to withdraw from the study at any time without giving reasons and their withdrawal would not affect the care they were receiving or their relationship with the researcher.

Procedure

An official permission was taken from the authoritative personnel in gynecological clinic at El-Galaa hospital, to conduct the study**.** The researcher was trained on how to assess pelvic floor muscles for a period of three weeks before implementing the research by a attending a training at the obstetric Department in the Faculty of Physiotherapy to master the technique. Data were collected through a period of one year from first of September 2014 to the end of Augest 2015. All woman who diagnosed as 1st degree pelvic organ prolapse by the gynecologist were included in the study, women confirmed as 1st degree prolapse received pelvic floor training program. After The researcher introduced herself to the woman and explained the purpose of the study in order to obtain their written acceptance to be recruited in this study as well as to gain their cooperation. Start to collect data through five phases included:1) Interviewing; 2) physical assessment;3) implementation;4) follow up and 5) evaluation phase. ***Interviewing phase,*** after women diagnosed as 1st degree prolapse by gynecologist the researcher met women recruited for the first time at Gynecological Clinic at El-galaa Teaching Hospital , all women were interviewed individually (structured interview) to collect data related to personal data, medical history, obstetric history and Assessment & follow up tool for clinical picture of prolapse. The interview consumed about 15-20min for each woman.

Physical assessment phase. In this phase, all women were examined physically by the researcher height, and weight were measured and body mass index was calculated through divided the weight in Kg, by height in meters squared (Wt/ Ht²m). If the women had BMI of ≥ 30kg/m² were excluded. Also the strength of pelvic floor muscles assessed by the researcher by prinometry report, asking woman to lying on the examination couch, put her on Crock lying position with slightly abducted legs to avoid substitution by hip adductors, and there is one stretched layers of clothes on the lower abdomen to allow observation, then instructed the women to put the prop in the vagina and asked her to contract on it for 10 counts and then relax for 10 counts muscle then take the reading. This assessment was repeated after 6 week from Appling kegel's exercises and at the end of 12th week in the subsequent visits except BMI. These assessments took about 15- 20minutes for each woman.

Implementation phase. The researcher provided the instructions to woman about Kegel's exercises all over 12 weeks; it contained two **educational sessions**, each session took about 15- 20 minutes; in the **first educational session,** This session included information about pelvic organ prolapse; anatomy of pelvic; physiology of prolapse; causes of prolapse; what are the pelvic floor muscles, its functions; advantages of pelvic floor muscle training as it increasing strength and elasticity of pelvic floor muscles, and prevent the occurrence of stress incontinence and prolapse. **Then 2nd session** about how to detect the right muscle group for applying Kegel's exercises, the researcher provided the instructions to women such as breath normally (not holding their breath) during the exercises; don't try to move her leg, buttock, or abdominal muscles during the exercises, also the researcher instructed the women to relax for a period equal to the period of holding. Also the contraction and increase the number of contractions and the duration of holding increase gradually from week to another. Contract and relax 5 times, repeat this 5 times per day (25 contractions each day), at first week then increase gradually then increase number of contraction and duration of holding from week to another gradually during the second week, contract and relax 10times, repeated to this exercises 5 times per day (50 contraction each day) and increase duration of holding to 6 second. During third week, contract 15 times, repeated this 5 times per day (75 contractions each day) and increase duration of holding to 9 seconds. During fourth week, contract and relax 20 times, repeated this 5 times per day (100 contractions each day) and increase duration of holding to 12 seconds. After that, the researcher instructed the women about how to try to stop the flow of urine while sitting on toilet, the women should experience a feeling of squeezing and lifting at the same time. If the women can perform this, that means using of the right muscles. Also each women in the study received booklet about pelvic organ prolapse and kegel's exercises to remind them the exercising the procedure at home.

Follow up phase. It was done after 6 weeks from the first session, to recheck the strength of pelvic floor muscle by prinometry report to evaluate the effectiveness of kegel exercise after re-demonstration at home and check if women have any complains, this session was done by the researcher and taken about 15-20 min for each woman.

Evaluation phase. It was after 12 weeks from the 1st session for the purpose of evaluating the improvement of pelvic floor muscle and evaluates the study sample satisfaction and any complains with intervention by using assessment sheet for clinical picture of prolapse and prinometry report this session was done by the researcher and also was taken about 15-20 min for each woman.

RESULTS

Finding of this quasi- experimental research will be presented in three main parts : 1) description of the Sample : 2) description of clinical picture for pelvic organ prolapse among women before and after following of kegel's exercises and 3) Effect of kegel's exercises on strength of pelvic floor muscles by using The prinometry.

Section 1: Description of the Sample

This section includes three parts: a) demographic characteristics of the women as, Age, level of education, occupation, type of work, duration of work hours / day, total hours / week and applying exercises b) Medical history which contained: history of medical disease, types of medical disease , complain from chronic symptoms. c) Obstetrical profile as: body mass index (BMI), parity and gravidity, mode of pervious delivery, pervious labor and complications occurred in previous labor.

A. Demographic characteristics of the women :

The range of age among the women was 20 - 40 years with a mean of 29.35 ± 5.93. Thirty seven point seven percent of them fell in the age category of 25-29 years old, while 10% are 40 years old, in relation to Educational level, thirty six point four present of the women received preparatory education, 0.9 % of the women were postgraduates. Also in relation to occupation and duration of work; the result revealed that 80% of women were housewives, while, 20% of them women in the study sample were working (16.4% as professional work, 1.8 % as hard physical work and clerical work). Duration of working per day were 15.5% work 3-7 hours per day, while, 0.9% of women work more than 12hours, in addition to the total hours per week, 10% work 35 hours and .9% work 50 hours (Table 1).

Table 1
Frequency distribution of Demographic characteristics of Women in the Study sample(n=110)

Items	Study group	
	Frequency	%
Age class		
20-24	22	20
25-29	41	37.3
30-34	20	18.2
35-39	16	14.5
40	11	10
Mean±SD=29.35±5.93		
Level of Education		
1. Can't read& write	0	0
2. Primary School	17	15.5
3. Preparatory School	40	36.4
4. Secondary School	30	27.3
5. University	22	20
6. postgraduates education	1	0.9
Working		
1. Working	22	20
2. Housewives	88	80
Type of work		
1. Clerical works	2	1.8
2. Professional work	18	16.6
3. Hard physical work	2	1.8
Duration of work hours / day		
1. 3-7 hours	17	15.5
2. 3-12 hours	4	3.6
3. More than 12 hours	1	0.9
Total	110	100.0

Performing exercises and its type : eighty percent of the sample not performed any type of exercises , while 20%of the women performing exercises which divided to (17.3% are apply waking exercises , .9% exercise without machines , .9% exercises with machines and waking. (Figure 1) (Figure 2)

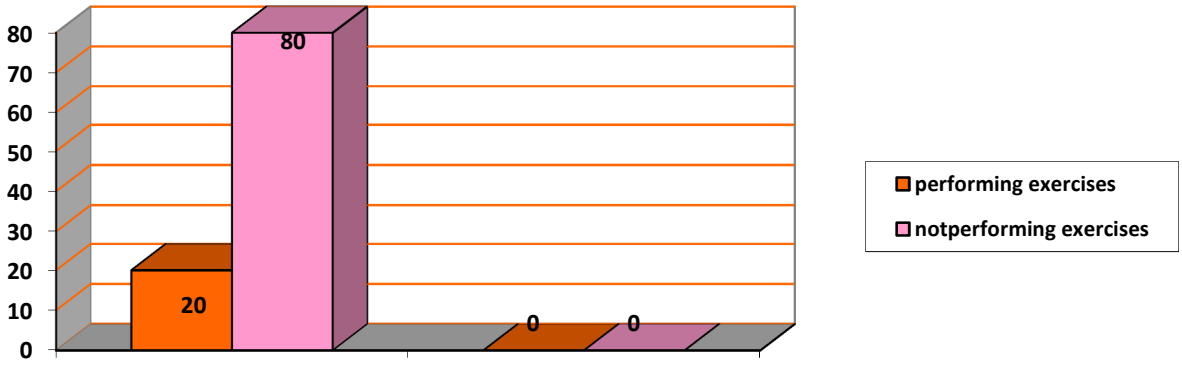

Figure 1. Percentage of women who perform exercises among the sample (n= 110).

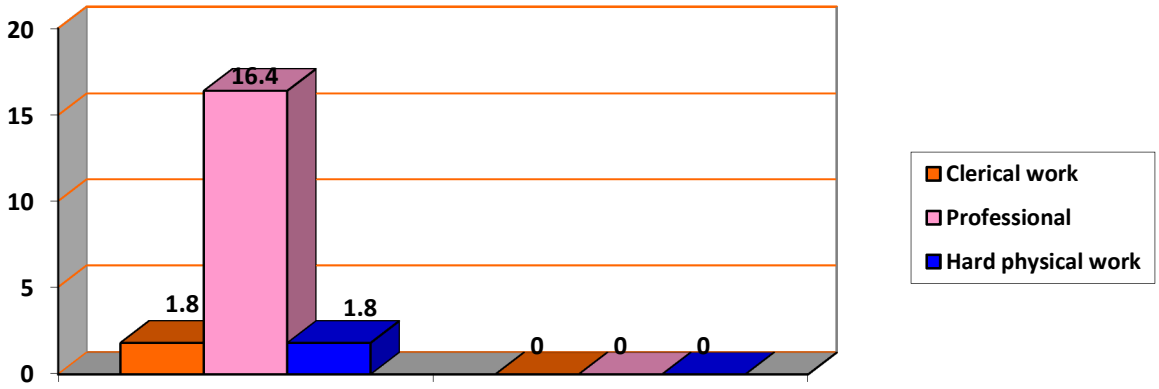

Figure 2. Percentage of type of exercises among the sample (n= 110).

b) Medical History:

History of medical disease, high percentage of the women 90% had medical history. Ninety point nine percent of them had genitourinary tract infection; and10.9% of women had pelvic inflammatory daises (PID) (Table 2).

Complain from chronic symptoms: 90.9% of the study samples were complained from chronic symptoms. The majority of the study sample 80 % complained from urinary incontince and 78.2% complained from constipation while the minorities 2.7% complain from varicosities (Table 2).

Table 2

Distribuation of Medical History of women in the Study sample (n=110)

Items	Study group Frequency	%
History of medical disease		
Yes	99	90
No	11	10
If yes		
1. GUTI	100	90.9
2. PID	12	10.9
3. Abdominal mass	0	0
Complain of chronic symptoms		
Yes	100	90.9
No	10	9.1
If yes		
1. Constipation	86	78.2
2. Chronic cough	0	0
3. Urinary incontince	88	80
4. Varicosities	3	2.7
Total	110	0.100

NB. Not mutually exclusive answer

c) Obstetric History:

Regarding to body mass index (BMI), 74.5% of the study sample were overweight, while 25.5% of the study sample were normal weight. With a mean BMI, Mean±SD=26.48±2.98. in relation to Gravidity and parity ; 93.6% of women were 2-4 gravida, 6.4% of them were grand multigravida, ninety five point five of women were 2- 4 Para while 4.5% of them were grand multipara. Regarding to Mood of pervious delivery and previous labor 63.6% of the sample had normal vaginal deliveries with episiotomy, while 0.9% of the study sample had normal vaginal deliveries (Tabel 3)

Table 3

Distribution of women according to Obstetric History in the Study sample (n=110) .

Items	Study group Frequency	%
BMI		
≥ 18 Underweight	0	0
18 ≥ 25 Normal weight	28	25.5
26 ≥ 29 Over weight	82	74.5
30 ≥ 35 Obese	0	0
Mean±SD=26.48±2.98		
Gravidity		
1. 2- 4 gravida	103	93.6
2. Grand multigravida	7	6.4
Parity		
1. 2- 4 Para	105	95.5
2. Grandmultipara	5	4.5
Mode of previous delivery		
1. Normal vaginal delivery	1	0.9
2. Normal vaginal delivery with episiotomy	70	63.6
3. Cesarean section	8	7.3
4. Trial of normal vaginal delivery after Cesarean section	31	28.2
5. Instrumental delivery	0	0
Total	110	100.0

Regarding to previous labor, the results indicated that 51.8 % of the women had their last delivers since more than 3 years, while 39.1% had previous delivery later 1-2 years and 9.1% had deliver since less than one year. Also, in relation to Complications occurred in previous pregnancy: the most common complications that occurred to the women in previous pregnancy, 56.4 % were vaginal tear and 20.9% were complained from preeclampsia, while only 0.9% 0f women complained from preterm labor and premature rupture of membrane (PRO) (Table 4).

Table 4

Distributon of the women according to their Previous labor and complication of previous pregnancy among women in the study (n=110)

Items	Study group Frequency	%
Previous labor since		
1. Less than one year	10	9.1
2. 1-2 year	43	39.1
3. More than one years	57	51.8
Complications of previous pregnancy		
1. Preeclampsia	23	20.9
2. Gestational diabetes	5	4.5
3. PROM	1	0.9
4. Ante partum hemorrhage	4	3.7
5. Post partum hemorrhage	10	9
6. Preterm labor	1	0.9
7. Post term labor	4	3.7
8. Vaginal or cervical tear	62	56.4
Total	110	100.0

II: descriptions of clinical picture for pelvic organ prolapse among women before and after following of kegel's exercises

This section includes distribution and comparison between clinical picture for pelvic organ prolapse among women before and after following of Kegel's exercises. These sections include three parts 1) clinical picture related to sexual symptoms, urinary symptoms and bowel symptoms.

Regarding to distribution of sexual clinical picture for 1st degree pelvic organ prolapse among women before and after following of kegel's exercises, there was statistical significant difference regarding to all item of sexual clinical picture as , Feel of pelvic pressure , feel of something falling out of vagina , feeling strength in groin area, feel pain during or after intercourse , have spotting or bleeding , feel of lower back pain, standing ,jumping and lifting worse previous symptoms and lying down relieve the previous symptoms'. P value was ≤ 0.05 (Table 5) .

Table 5. Distribution of sexual clinical picture of 1st degree POP for women before and after following of kegel's exercises(n=110) .

Clinical picture	Pre clinical picture Frequency	%	Post clinical picture Frequency	%	χ2, P.value
1. Feel of pelvic pressure					
- never	1	.9	105	95.5	198.2
- sometimes	42	38.2	5	4.5	0.001*
- always	67	60.9	0	0.0	
2. Feel of something falling out of vagina					
- never	4	3.6	105	95.5	186.6
- sometimes	46	41.8	5	4.5	0.001*
- always	60	54.5	0	0.0	
3. Feeling strength in groin area					
- never	1	.9	105	95.5	198
- sometimes	44	40.0	5	4.5	0.001*
- always	65	59.1	0	0.0	
4. Feel pain during or after intercourse					
- never	4	3.6	106	96.4	190
- sometimes	45	40.9	4	3.6	0.001*
- always	61	55.5	0	0.0	
5. Have spotting or bleeding					
- never	48	43.6	107	97.3	76
- sometimes	61	55.5	3	2.7	0.001*
- always	1	.9	0	0.0	
6. Feel of lower back pain					
- never	0	0.0	105	95.5	202
- sometimes	43	39.1	5	5	0.001*
- always	67	60.9	0	0.0	
7. Standing, jumbing and lifting worse previous symptoms.	0	0.0	82	74.5	
- never	36	32.7	12	10.9	131.4
- sometimes	74	67.3	16	14.5	0.001*
- always					
8. Lying down relieve the previous symptoms'	0	0.0	0	0.0	13.8
- never	13	11.8	0	0.0	0.01*
- sometimes	97	88.2	110	100.0	
- Always.					
Total	110	100.0	110	100.0	

*significant ≤0.05

Table 6. Showed that more than half of the study sample were always complain from urinary problem; before following kegel's exercise, compared to 85.5% were never complain from urinary problem after following kegel's exercises. While 92.9% of the study sample were SUI before following kegel's exercise, compared to 86.8 not complain from SUI. This finding was found that there was a highly statistical significant differences regarding to have urinary problem and type of urinary problem before and after following kegel's exercises. ($\chi2 = 145.4$ and p value ≤ 0.001 and types of urinary problems. $\chi2 = 167.4$ and p value ≤ 0.001) .

Table 6 .
Distributions of urinary clinical picture for women with 1st degree POP before and after following of kegel's exercises(n=110)

Urinary clinical picture	Pre clinical picture Frequancy	%	post clinical picture Frequency	%	χ2, P.value
1. Have urinary problems.					
- never	5	4.5	94	85.5	145.4
- sometimes	43	39.1	16	14.5	0.001*
- always	62	56.4	0	0.00	
2. Types of urinary problems.					
- urinary incontince	102	92.7	14	12.7	167.4
- urge to urinate especially at night	5	4.5	1	.9	0.001*
- need to support the anterior vaginal wall to complete urination	3	2.7	0	0.00	
- Not complain from urinary problem.	0	00.0	95	86.4	
Total	110	100.0	110	100.0	

*significant ≤0.05

This part describes women in relation to bowel clinical picture for before and after following kegel's exercises. The study finding revealed that; 59% of the study group has always Problems in bowel movement before applying kegel's exercises, and75.5% of them never complain from Problems in bowel movement after following kegel's exercises. There was statistical significance difference was found between before and after following kegel's exercises. (χ2 =136.8& P.value = 0.000). Also in relation to type of bowel problem the study revealed that; 96.4% of them complain from constipation before following kegel's exercises but also we found that 73.6% of women not complain from bowel problem after following kegel's exercises. So we found there was statistical significance differences found between before and after following kegel's exercises. (χ2 =128.8 & P.value = 0.000). (Table 7)

Table 7 .
Distribution of bowel clinical picture fore women with1st degree POP before and after following of kegel's exercises (n= 110).

Bowel clinical picture	pre clinical picture frequency	%	Post clinical picture Frequency	%	χ2, P.value
1. Problems in bowel movement.					
-never	5	4.5	83	75.5	136.8
- sometimes	40	36.4	27	24.5	0.001*
-always	65	59.1	0	0.00	
2. Type of bowel symptoms.					
- constipation	106	96.4	29	26.4	128.8
- urge to defecate	1	.9	0	0.0	0.001*
- need to support posterior vaginal wall to defecate	3	2.7	0	0.0	
- not complain from bowel problem	0	0.00	81	73.6	
Total	110	100.0	110	100.0	

*significant ≤0.05

The main total of clinical pictures: for women with 1st degree pelvic organ prolapse was 27.23±4.03 and 19.84±1.71 for before and after following of Kegel's exercises. Study indicated that a highly significant statistical differences between total clinical picture in relation to before and after following of kegel exercises (t=16.79p=0.001) (Table 8).

Table 8
Mean score differences between total pre and post clinical picture for women with1st degre pelvic organ prolapse (n= 110).

Total clinical picture	Pre kegel's Application (n=110)	Post kegel's Application (n=110)	t	p value
	Mean± SD	Mean± SD		
1. Total pre &post clinical picture	27.23±4.03	19.84±1.71	16.79	0.001*

Section III: describes the effect of kegel's exercise before and after following, on improving strength of pelvic flower muscles (PFM) for 1st degree pelvic organ prolapse.

This part describes effect of Kegel's exercise on strength of pelvic floor muscles among 1st degree pelvic organ prolapse women. By using the perinometry at initial visit, 6 week and 12 weeks after application of kegel's exercises.

Regarding mean perinometry reading for women with 1stdegree of pelvic organ prolapse, the results revealed that the mean reading at initial visit among women in the study was16.48±3.89, while the mean reading after 6 weeks was 25.94± 3.91, moreover the results revealed that mean reading of perineometery after 12 weeks was 40.22±5.186 with highly statistically significant differences found between the three reading of prinometry (F=68.04 , p≤0.001) (Table 9) .

Table 12.
Mean perinometry reading for women with 1st pelvic organ prolapse (n= 110).

	Initial visit reading	After 6 week From applying exercises	After 12 week From applying exercises	F	P value
Mean± SD	16.48±3.89	25.94± 3.91	40.22±5.18	68.04	0.001*

*significant ≤0.05

Discussion

The aim of this study was to assess the effect of kegel's exercises on the first degree pelvic organ prolapse among women. findings of this study discussed to accepted the research hypotheses; H1: women with 1st degree pelvic organ prolapse who follow kegel's exercises will show less signs and symptoms than before, H2: women with 1st degree pelvic organ prolapse who follow kegel's exercises will show improvement in the strength of pelvic floor muscles than before.

The findings of the current study will be discussed in the following three sections: Section I: demographic charctristes of women with 1st degree pelvic organ prolapse, Section II: Effect of kegel's exercise on improvement of signs and symptoms of 1st degree pelvic organ prolapse among women, and Section III: Effect of kegel's exercises on strength of pelvic floor muscles by using the prinometry.

Section I: Demographic charctristes of women with 1st degree prolapse

This section includes demographics charctristes, medical history and obstetric history of women in the study with 1st degree pelvic organ prolapse.

Finding of this study indicated that, age range of the women was 20-40 years old with mean age of 29.44±5.929 years. This finding disagreed with those of Bruno,et al., (2012) who studied randomized controlled trial on Efficacy of pelvic floor muscle training for treating pelvic organ prolapse in women, the women who had POP their age was more than 40 years. While, Maher, et al (2013) added that the incidence of prolapse affected by age was 31% of cases with age 30-39 years but the most common age was 40-60 years old 60% . In the same context, Glazener ,et al (2014) who exploring when to follow up women with Pelvic Organ Prolapse (POP) for twelve years ,they found that the mean age of women was 52.19 years, the POP increased by age .

In relation to medical history and chronic symptoms, findings of this study found that, the majority of the 1st degree POP women had medical history such as genitourinary infection, hypertension and diabetes, while, the majority of the study sample were complaints of chronic symptoms such as urinary incontinence and constipation.

This findings agreed with those of Toozs-Hobson, Hagen, Glazener, Cook , Herbison (2013) who found that, medical history and chronic symptoms as constipation, cough, hypertension and diabetes lead to increase the incidence of POP. In addition, the study done by Mant, Painter and Vessey (2012) found that, urinary incontince and history for diabetes and hypertension increase pelvic floor dysfunction which lead to POP .

Three quarter of the women in the current study were overweight and high percentage of them were 2-4 parity, while 63.6% had normal vaginal deliveries with episiotomy and the most common complications of

pervious pregnancy was vaginal or cervical tears and preeclampsia. These findins agreed with Hassan , Osman and Fayez (2015) who approved that 98% of women in their study to assess the effectiveness of nursing intervention package on management of POP among women had normal vaginal delivers and complained of perineal tears while 72% of women in this study had obesity. Hagen and Stark (2008) reported that, the risk factors for prolapse included increase BMI, parity, and vaginal delivers.

Section II: Effect of kegel's exercise on improvement of signs and symptoms of 1st degree pelvic organ prolapse

Results of this study accepted the first research hypothesis which is women with 1st degree pelvic organ prolapse who follow kegel's exercises will show less signs and symptoms than before. Which contain sexual, urinary, and bowel signs and symptoms.

Results of this study found that, there was statistically significant difference between sexual clinical picture in relation to before and after following of kegel's exercises, and better feeling of pelvic pressure, feeling something falling out of vagina, feeling of strength in groin, feeling pain during and after intercourse, had spotting or bleeding, feeling of lower back pain, standing, jumping and lifting worse previous symptoms or lying down relive the previous symptoms. A statistically significant difference was found between before and after performing of kegel's exercises respectively.

Naqaish, Rizvi and Ambreen (2013), on their study, of the efficacy of kegel exercises on lower back pain in 1st degree prolapse after 3 months. They found that, kegel's exercises had a positive impact on back pain (p=0.001) while, in the same study 34% of women had slightly pelvic heaviness after kegel's exercises are to some extent in accordance also, Braekken, Majida, Engh and Bø (2010) who investigated the efficacy of PFME in improvement of first, second and third degree of prolapse. This study approved that PFME can be used as a treatment for 1st degree of POP but only decrease symptoms in 2nd degreed. In the sam line a Cochran review published in 2011 revealed that, application of kegel's exercises increase the chance of improvement in prolapse stage by 17% compare to no kegel's exercises application. Also after application of kegel's exercises for 6 months women reported that, their complains improved by 37% and 14% of women who had first degree of POP were cured.

Moreover, the findings of this study in relation to the total clinical pictures of POP, founded that, there were a highly statistical difference before and after application of kegel's exercises and the total mean score was reduce from 27.23 to 19.84. in accordance with this finding , Priyanka, Kaur, Singh and,Aggrawal, (2015) reported that, the intensity of symptoms reduced to1.3 to 0.7 after 4 months of intervention ,also the total mean score decreased to 19.70 to 11.2 at 6 week and 6.22at 4 months to show the effectiveness of kegel's exercise on managing POP .

A randomized control trial done by Braekken, Majida, Engh and Bø, (2010). who examined the effect of PFME in the treatment of pelvic organ prolapse. They found that, application of PFMT for 16 weeks to 6 months was effective for the improvement of prolapse symptoms in the study group compared to the control group, with statistically significant difference in the study.

While these findings disagreed with my study Stüpp, et al., (2011) published randomized controlled trial who studied the kegel's exercises on POP. Results showed that, there was no difference between the training group and control group regarding to treatment of pelvic organ prolapse.

Also the findings of this study disagreed with McClurg, et al., (2014) who examined the combination of PFMT with surgery or insertion of vaginal pessary. The study founded that application of PFME only not improve POP symptoms.

From investigator opinions this discrimination may be due to the sample in the present study age between 20-40 years old , and all women in the study have 1st degree pelvic organ prolapse , all this factors may be affect the effect of kegel's exercises on clinical picture of POP.

Section III: Effect of kegel's exercises on strength of pelvic floor muscles by using The prinometry

Findings of this study accepted the second research hypothesis which is women with 1st degree pelvic organ prolapse who follow kegel's exercises will show improvement in the strength of pelvic floor muscles than before.

Results of the study revealed highly statistical significant differences between the three reading of prinometry initial, after 6 weeks and after 12 weeks. Findings of this study agreed with Clinical research published in the British Medical Journal Kudish,,etal (2013) compared pelvic floor exercises, vaginal weights and electro-stimulation in a randomized control trial. This research recommended that, pelvic floor exercise should be the first choice of treatment for genuine stress incontinence and prolapse, because it was simple exercises proved to be far more effective than electro-stimulation or vaginal cones.

Also, Frawley, Sherburn, ,Hagen, &Galea (2010) mentioned that PFME for pelvic organ prolapse for

Ausralian women by measure strength of PFM by prinometry; were to be more effective and cost effective implementation and reduce need for expensive surgery. while Clinical trials Gleason et al., 2012 for kegel's exerciser concluded that the device was as effective as supervised pelvic floor muscle training, the standard treatment for women are referred to a specialist advisor for one on one training over a three-month period. The report also noted that the device can help overcome the fundamental weaknesses associated with pelvic floor muscle exercises (PFME), i.e. poor training, lack of patient confidence and poor compliance with the exercise recommendations.

Moreover Pal, (2014) suggested that, pelvic floor exercises help to improve a mild prolapse and related symptoms. Pelvic floor muscle training resulted in significant anatomic improvement of anterior and posterior vaginal wall prolapse and better muscle strength, by using prinometry & electromyography parameters. Also recommended kegel's r exercises as one of the non-surgical treatment modality for the pelvic organ prolapse. The women doing these muscle training were significantly more likely to had an improved prolapse stage and were significantly more likely to say their prolapse was better than the control. Cochrane database review 2011 revealed that PFMT increases the chance of an improvement in prolapse stage by 17% compared to no PFMT. In present study 73% POP patients had a subjective feeling of improvement and clinically stage I POP became stage 0 in 14% cases. for at least from3 month to 6 month .

While the finding of this study disagreed with published in a comprehensive review of the treatment of stress incontinence not found evidence or rare about POP published in the British Journal of Urology International in 2010. The report that electrical stimulation devices and weighted vaginal cones are not recommended by the UK National Institute for Clinical Excellence (NICE) and "are not universally advocated by clinicians as they have yet to produce sufficient evidence of efficacy".

From the researcher point of view this result may be due the kegel's exercise helpful to increase strength of PFM that lead to decrease signs and symptoms of POP and this feedback by prinometry very helpful to women that help to know the correct muscles and encourage the women to be better.

In Conclusion, The findings of this research supported the research hypothesis that, the women with 1st degree pelvic organ prolapse who follow the Kegel's exercise had less signs and symptoms of prolapse than before. Moreover women with 1st degree pelvic organ prolapse who follow the Kegel's exercises had improvement in the strength of pelvic floor muscles compared to before. Moreover kegel's exercise was associated with better enhance in strength of pelvic floor muscles with significance differences was found by perineometery reading. and there were a highly statistical significant differences between clinical picture in relation to before and after following of kegel's exercises.

Recommendations

Based on the finding of the present research the following recommendation are suggested

1. Counseling center and POP hotlines should be available for women complaining from pelvic organ prolapse.
2. The nurse should be an educator and counselor for women during prenatal, antenatal and postnatal about the importance of kegel's exercises.
3. Collaboration should exist between the medical and the nursing staff in order to facilitate the utilization of kegel's exercise at women's health clinic and centers.
4. Kegel's exercises should be recommended during each development phases of women's life span, so it should form an essential part of sex education.
5. Repetition of the study by using qualitative approach to assess the experience of women with POP

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