



THE EFFECT OF KEGEL EXERCISES PROGRAM ON SEXUAL FUNCTION OF PATIENTS DIAGNOSED WITH CHRONIC PROSTATITIS

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ABSTRACT

Chronic prostatitis is a common urological diagnosis in men of all ages in Egypt. chronic prostatitis causes many men significant morbidity and the main four symptom domains of chronic prostatitis are urogenital pain, lower urinary tract symptoms, psychological issues and sexual dysfunction. The aim of the study: To study the effect of Kegel exercises on patients diagnosed with chronic prostatitis. A purposive sample was used for this study, 94 patients with chronic prostatitis. This study was conducted at the urology outpatient clinics at El-Fayoum University and General Hospitals at El-Fayoum City. Data were collected utilizing the following four tools: Tool (1): An interview questionnaire, it consists of four parts: Part I: Socio-demographic data of the clients. Part II: Past and present medical, surgical history. Part III: knowledge of patients regarding Kegel exercises. Part IV: patient's practices regarding Kegel exercises. **Tool II** - Sexual Health Inventory for Men. The present study revealed that slightly less than half of the studied samples were in age group of 41-55 years with mean age 56.28±12.29. Additionally, it was found that there is a highly statistically significant between total practices scores in pre, post and follow up test and the majority of the studied samples had an satisfactory practice in post test as well as the study showed that that there was a highly statistically significant of total practice with level of education and Social status. Based on the findings and research hypothesis, of the study it was concluded that the implementation of Kegel exercises program led to improvement in both knowledge and practices regarding chronic prostatitis and Kegel exercises. The improvement in knowledge is essential to improve practice.

Keywords: chronic prostatitis; kegel exercise; patients' knowledge; practice

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INTRODUCTION

The prostate is a fibromuscular gland which surrounds the prostatic urethra from the bladder base to the membranous urethra and surrounded by a thin but tough connective tissue capsule. Being somewhat pyramidal, it presents a base or vesical aspect superiorly, an apex inferiorly, as well as posterior, anterior and two inferolateral surfaces.¹ Prostatitis comprises of a group of syndromes that affect almost 50% of men at least once in their life time. It has been divided into four distinct categories by National Institutes of Health namely (1) acute bacterial prostatitis; (2) chronic bacterial prostatitis; (3) chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) which is further divided into inflammatory and non-inflammatory

CP/CPPS; and (4) asymptomatic inflammatory prostatitis². Chronic prostatitis is a common urological diagnosis in men of all ages. Category III CP/ CPPS is the most complex type and accounts for 90–95% of prostatitis diagnoses, which causes many men significant morbidity and has a detrimental effect on their quality of life. The main four symptom domains of CP are urogenital pain, lower urinary tract symptoms (LUTS), psychological issues and sexual dysfunction³. Kegel exercises primarily aid men with chronic prostatitis and urinary incontinence. Besides preventing embarrassing urine leakage, they also decrease the urge to void. Secondly, they have been shown to help male sexual health by allowing some men's erections to last longer when affected by sexual dysfunction and premature ejaculation. These benefits all equate to a better quality of life⁴. The Community Health Nurse (CHN) play an important role toward patients complain from chronic prostatitis through apply three levels of prevention as primary, secondary and tertiary levels of prevention. The CHN should provide appropriate physical and psychological health education and emotional support. The community health nurse has key roles in the areas of assessment, education and referral. Formal and informal culturally appropriate education programs need to be developed and implemented to disseminate chronic prostatitis information. The CHNs must take advantage of their leadership position to educate the public and identify patients at risk for chronic prostatitis disease, while working collaboratively between all healthcare disciplines⁵.

METHOD

This purposive study was conducted at the urology outpatient clinics in El-Fayoum University and general Hospitals in El-Fayoum City, from the end of December 2020 until June 2021. A total of 91 patients were included in the study of age ≥ 25 years were for in this study. A quasi-experimental research design was used in this study. The present study was conducted at the urology outpatient clinics in El-Fayoum University and general Hospitals in El-Fayoum City. Data collection for this study was carried out in the period from the end of December 2020 until June 2021. 94 patients. The sample size were consists of 94 patients diagnosed with chronic prostatitis that represent 10% from total annual patient admission (1000) in Urology outpatient clinics at El-Fayoum university Hospitals and General Hospitals at El-Fayoum City. The study population was drawn from chronic prostatitis patients who presented at the urology outpatient clinics in El-Fayoum University and general Hospitals in El-Fayoum City, from the end of December 2020 until June 2021. A total of 91 patients were included in the study of age ≥ 25 years were for in this study.

Inclusion criteria: the patient aged 25 years and more, Patients diagnosed with chronic prostatitis in urology outpatient clinics. Exclusion criteria: Patients diagnosed with any types other than chronic prostatitis. An agreement informed was obtained from Faculty of Nursing, Helwan University ethical committee to conduct the study. Permission has been obtained verbal and written from each patient to participate in the study before data collection, patients were informed about the aim of the study and what would be done with result. They were given an opportunity to refuse to participate in the study and they were notified that they could withdrawal at any stage of the research. Also, they were assured that the participation in the study is entirely voluntary; anonymity, privacy and confidentiality were assured through coding the data.

The data were collected through using the following tools:

Tool I: An Interview Questionnaire: Data for this study were collected by using a questionnaire sheet which designed by the researcher to gather the following data:

Part I: Socio-demographic data of the patients such as age, marital status, address, family number, number of children, room number, crowding index, level of education, occupation,

social class, marriage age, number of years of marriage and month income. This part composed of 11 items.

Part II: Assess the patient's Past and present medical, surgical history such as presence of any chronic disease as hypertension, diabetes and how discover the disease, signs, symptoms and complications. This part composed of 5 items.

Part III: This part related to knowledge of patients regarding kegel exercises were collected through pre, post and follow up program. It includes questions about meaning, benefits for patient diagnosis with chronic prostatitis, importance and precaution of Kegel exercises. This part composed of 15 items.

The scoring system regarding patient's knowledge will be as follow: patient who gave complete correct answers will give score 3. A patient who gave incomplete correct answers will give score 2 and didn't know answers will give score 1.

The total knowledge score level was categorized as follows: Good level of knowledge >75%. (37.5-45), Fair level of knowledge 50% - <75%. (22.5-37), Poor level of knowledge < 50%. (0- 22)

Part IV: This part related to patient's practices regarding kegel exercises as reported by patients through pre, post and follow up program. It included questions about: Reasons for practicing kegel exercises, the frequency of performing Kegel exercises and the benefit of using kegel exercises. This part composed of 14 items.

Practice scoring system

The scoring system regarding patient' reported practices regarding kegel exercises were as follow: - practices done will give (2) score. - practices not done or did not know will give (1) score. The total score level will be as follows:

- 1 - Satisfactory practices >60% (16-28)
- 2 - Unsatisfactory practices < 60% (0- 16)

Tool II- Sexual Health Inventory for Men (SHIM): Adopted from (Rosen et al., 1999). Used to assess sexual health of men through pre, post and follow kegel exercise program and it is based on the answers to five questions concerning erectile dysfunction (ED) such as how do you rate your confidence that you could keep an erection? , When you had erections with sexual stimulation, how often were your erections hard enough for penetration (entering your partner)?, During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?, During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse? and When you attempted sexual intercourse, how often was it satisfactory for you?. This part composed of 5 items.

Sexual Health Inventory for Men (SHIM) scoring system

The answers are assigned points from 1 to 5. If the patient's score is 21 or less, Erectile Dysfunction (ED) should be addressed. The SHIM score characterizes the severity of the patient's ED in the following manner: 22-25 never erectile dysfunctions, 17-21 Mild erectile dysfunctions, 12-16 Mild-to-moderate erectile dysfunctions, 8-11 Moderate erectile dysfunctions, 5-7 severe erectile dysfunctions.

The study tools were tested for content and face validity by jury test of five experts in the field of community health nursing to evaluate the individual items as well as the entire

instrument as being relevant and appropriate to test what they wanted to measure. The expertise recommended that there were three questions repeated anxiety rating scale and could be removed and content validity of all tool's study variables.. The face validity of the questionnaire was calculated based on experts' opinion after calculating content validity index (%) of its items and it was 94%. The experts were asked to evaluate the individual items on the study tools in relation to its relevance and appropriateness in terms of the construct and if the items adequately measure all dimensions of the construct. The experts were asked to evaluate individual items and rate items on a 4-point scale as follows; not relevant scored (1), Little relevant scored (2), relevant scored (3) and very relevant (4).

The study tools were subjected to assessment of internal consistency reliability using Spearman-Brown Prophecy Formula ($r^1=2(3)/1+r$), where r^1 estimated reliability of the entire test and r estimated correlation coefficient computed on the split halves, it was 0.896. A pilot study was carried out on 10% from the study subjects and was excluded from the total sample. To assess reliability, the study tool was tested by the pilot subjects at first session for calculating Cronbach's Alpha which was 0.927 for knowledge questionnaire, 0.985 for practices questionnaire, 0.914 for Hamilton anxiety and 0.925 for sexual dysfunction.

The operational design for this study includes the following: Preparatory phase: Tools were developed by investigator after reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles, internet periodicals and magazines. Pilot study: A pilot study was carried out on 10% from the study subjects and was excluded from the total sample. To assess reliability, the study tool was tested by the pilot subjects at first session for calculating Cronbach's Alpha which was 0.927 for knowledge questionnaire, 0.985 for practices questionnaire, 0.914 for Hamilton anxiety and 0.925 for sexual dysfunction

Data collection for this study was carried out in the period from the end of December 2020 until June 2021. The investigator collected data during the time of Urology Outpatient clinics, two day per week from 9am to 2pm., in which the investigator met every patient included in the study, was taken formal consent of each patient and explained purpose of the study, the components of the tools. patients were assured that the information collected would be treated confidentially and that it would be used only for the purpose of the study. This phase included the assessment of patient's past and present medical history, patient knowledge and practice about kegel exercise. Personal communication was done with patients to explain the purpose of the study to them.

The researchers select patients who fulfilled the study criteria, then explained the purpose of the study and obtained their consent. Then the researcher was conduct the assessment process sometimes individually and other time in groups. All patients in outpatient were interviewed to collect their socio-demographic data. The researcher used the tool I (structured interviewing questionnaire) to assessing socio-demographic characteristics such as; (age, residence, and occupation.....) the questionnaire sheet was designed in Arabic form to avoid misunderstanding, it consists of four parts: Socio-demographic data of the patients ,: Past and present medical, surgical history , knowledge of patients regarding kegel exercises and to patient's practices regarding kegel exercises. The researcher used tool II that consisted of 5 items. Used to assess sexual health of men, such as; (How do you rate your confidence that you could keep an erection, When you had erections with sexual stimulation, how often were your erections hard enough for penetration (entering your partner) (pretest).

Kegel exercise program general objective is to enhance Kegel exercise practice to relieve pain, remove anxiety, improve sexual function and improve patient's knowledge about kegel exercises. Based on the result of the pre-test questionnaire the researcher was utilized multiple sessions into fourth sessions include theory, practice. The researcher was explained the aim of the program and collect data concerning assessment before patients implement program sessions. Were an educational group aiming to orient the patient and raise their knowledge about kegel exercise program. The researcher was teach the patient how to perform kegel exercise practice. The researcher was evaluated the effectiveness of the kegel exercise program regarding chronic prostatitis after two weeks of implementing the program. Teaching methods used; group discussion, brainstorming, role play, demonstrations and re-demonstration, an additional power point presentation and handouts used. Two sessions were given to every group of patients (5-7) in each session. Every session consumed from 20-30 minutes to be finished. The implementation done in waiting room in outpatient clinic taking in to consideration using simple and clear posters and different teaching strategies were used according to patients level of understanding. The researchers were using laptop screen for data show. A brochure was distributed to all studied sample. Follow up; after three months, posttest was done after post intervention to assess progress of the patient manifestation and any problems raised.

Permission was obtained by submission of an official letter issued from Dean of Faculty of Nursing Helwan University. Forward to the Manager of El-Fayoum University Hospital and El-Fayoum General Hospital. Including aim of the study to obtain the permission to visit each hospital and conduct the study. Each hospital manager was informed about the study, date and time of data collection. The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 19, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, comparison between two groups and more was done using Chi-Square test (χ^2). For comparison between means of two groups of non-parametric data of independent samples, Z value of Mann-Whitney test was used. Correlations between variables were evaluated using Pearson's Correlation Coefficient (r) for quantitative data and Spearman Rank correlation for qualitative or ranked data. Significance was adopted at $p < 0.05$ for interpretation of results of tests of significance.

RESULTS

Table (1) illustrated that socio-demographic characteristic of study subjects. It was found that 45.7% of the studied samples were in the age group of 41-55 years while 23.4% of them were in the age group of 25-40 years with mean age 41.57 ± 11.01 . Regarding level of education, it was found that 23.4% of them was higher education and 52.1% of the studied sample was unemployed. This table also showed 36.2% of them were married since $25 < 30$ years

Table 1.
Frequency distribution of the studied patients with chronic prostatitis regarding Socio-demographic Characteristics (n=94).

Items	f	%
Age:		
25-40	22	23.4
41-55	43	45.7
More than 55	29	30.9
Mean±SD	41.57±11.01	
Marital Status:		

Single	7	7.4
Married	77	81.9
Divorced	2	2.1
Widowed	8	8.5
Residence:		
Rural	60	63.8
Urban	34	36.2
Family member:		
1-3 members	1	1.1
4-6 members	44	46.8
7-9 members	33	35.1
More than 10	16	17
Number of children		
No children	7	7.4
1-3 children	30	31.9
4-6 children	37	39.4
7-9 children	18	19.1
>10 children	2	2.2
Number of house room		
2 rooms	39	41.5
3 rooms	45	47.9
4 rooms	10	10.6
crowding index		
2-3	60	63.8
4-5	25	26.6
>5	9	9.6

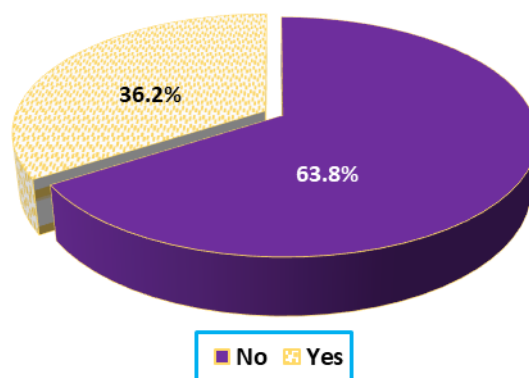


Figure 1. Frequency distribution of the studied patients with chronic prostatitis regarding Past medical history of chronic disease (n=94).

This figure found that 36.2% of the studied sample had history of chronic disease while 63.8% of the study sample had not a history of chronic disease. Follow up after 6 weeks. Table 2 showed present medical history of studying patients: As regards to symptoms of discovering disease, it was found that 80.9% of them were discovered by Pain in perineum, while 77.7% of the patient by Pain in pubic, 61.7% by premature ejaculation, dysuria 54.3% and increased urinary frequency, and 3.2% delay in ejaculation.

Table 2.
Frequency distribution of the studied patients with chronic prostatitis regarding Current medical data (n=94).

Variables	The studied patients with chronic prostatitis (n=94)	
	f	%
Duration of the disease diagnosis:		
<1 Years	47	50.0
1-3 Years	34	36.2
>3 Years	13	13.8
Diagnostic symptoms of the disease:		
Pain in perineum	76	80.9
Pain in pubic	73	77.7
Premature ejaculation	58	61.7
Pain in groin	55	58.5
Pain in penis	60	63.8
Dysuria	51	54.3
Increased urination frequency	50	53.2
Pain in abdomen	48	51.0
Pain in anus	45	47.9
Pain in lower back	44	46.8
Pain in testis	43	45.7
Pain during ejaculation	43	45.7
Hemospermia	28	29.8
Inability to urinate	24	25.5
Decrease sexual activity	18	19.1
Fertility changes	4	4.3
Delay in ejaculation	3	3.2
Others:	0	0

Table 2 illustrated that chronic prostatitis urination symptom: reveals that there was highly statistical difference improvement of patient’s symptoms at post and follow up Kegel exercise program. It was found that (29.8%, 35.1% and 18.1%) of the studied samples of them usually had incomplete, emptying, frequency, urgency compared to (1.1%, 0% and 4.3%) and (1.1%, 1.1% and 2.1%) of them in posttest and follow up test respectively.

Table 3.
Response of the studied sample regarding sexuality practice with chronic prostatitis pre, immediate post and follow up post implementation of the program (n=94).

Items	Pre		Post		Follow up		Test of significance	
	f	%	f	%	f	%	p value	P& (η_p^2)
1 - Rate your confidence that you could keep an erection								
Not present	4	4.3	46	48.9	44	46.8	15.65	0.144
Mild	40	42.6	22	23.4	20	21.3		0.000
Moderate	29	30.9	12	12.8	16	17		
Severe	11	11.7	4	4.3	4	4.3		
Very severe	10	10.6	10	10.6	10	10.6		
2-erections hard enough for penetration with sexual stimulation								

Items	Pre		Post		Follow up		Test of significance	
	f	%	f	%	f	%	p value	P& (η_p^2)
Not present	5	5.3	48	51.1	41	43.6	22.35	0.194
Mild	40	42.6	26	27.7	28	29.8		
Moderate	31	33	11	11.7	14	14.9		
Severe	7	7.4	---	----	---	----		
Very severe	11	11.7	9	9.6	11	11.7		
3- ability to maintain erection after you had penetrated								
Not present	8	8.5	41	43.6	38	40.4	35.59	0.227
Mild	33	35.1	28	29.8	26	27.7		
Moderate	12	12.8	15	16	17	18.1		
Severe	20	21.3	1	1.1	4	4.3		
Very severe	21	22.3	9	9.6	9	9.6		
4- ability to not maintain your erection to completion of intercourse								
Not present	10	10.6	46	48.9	42	44.7	37.16	0.286
Mild	31	33	24	25.5	27	28.7		
Moderate	14	14.9	11	11.7	11	11.7		
Severe	17	18.1	4	4.3	5	5.3		
Very severe	22	23.4	9	9.6	9	9.6		
5- degree of satisfactory sexual intercourse								
Not present	6	6.4	48	51.1	40	42.6	12.93	0.122
Mild	41	43.6	19	20.2	22	23.4		
Moderate	28	29.8	15	16	18	19.1		
Severe	10	10.6	2	2.1	5	5.3		
Very severe	9	9.6	10	10.6	9	9.6		

Table 3: illustrated that sexuality practice with chronic prostatitis. Reveals that there was highly statistical significant difference between pre, post and follow test in patient’s symptoms. Also (22.3% 23.4%) of the studied samples had Very severe degree of ability to maintain erection after you had penetrated and ability to not maintain your erection to completion of intercourse in pre test respectively compared to (1.1 % and 9.6%) and (4.3 % and 9.6%) of them in posttest and follow up test respectively.

Table 4.

Total knowledge scores and level among the studied sample pre, immediate post and follow-up post implementation of thee program (n=94).

Total knowledge scores(44)	The studied sample (n=60)						Test of significance	
	Pre		Immediate post		Follow up		P value	P& (η_p^2)
- Poor level	62	65.9	---	---	----	---	0.000*	
- average level	31	33	---	---	4	4.3		
- good level	1	1.1	94	100	90	95.7		
Range	(34-16)18		(43-35)18		(43-33)10			
Mean ± SD	20.84±4.06		40.14±3.199		39.98±2.49			
T-test	Pre Vs. Immediate post			Pre Vs. Follow-up				
	40.75			0.519				
P-Value	0.001*			0.605				

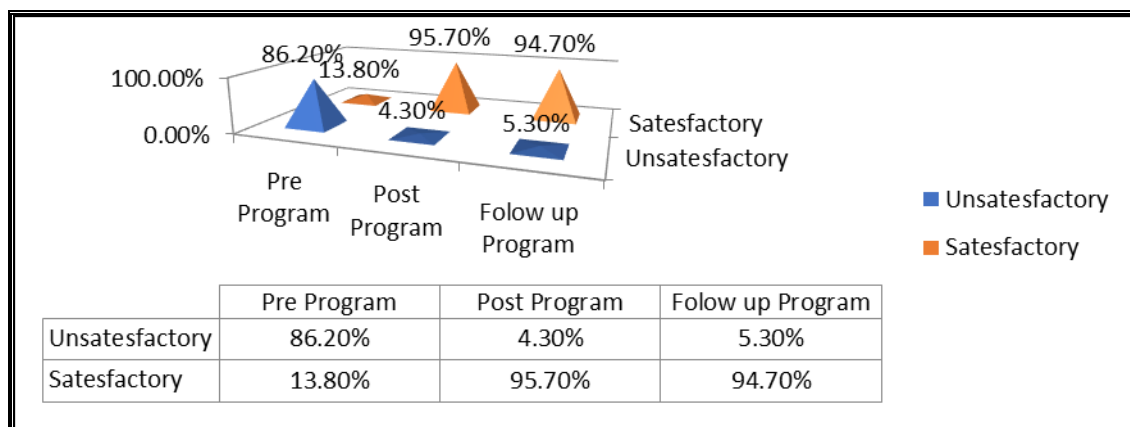


Figure 2. Total practices scores and level among the studied sample pre, immediate post and follow-up post implementation of thee program (n=94)

This figure shows that the majority of the studied samples had an unsatisfactory practice in pretest (86.2%). Meanwhile, these percentages changed to be satisfactory practice in the posttest and follow up test to (95.7%, 94.7%) respectively

DISCUSSION

Chronic prostatitis is a common urological diagnosis in men of all ages. Category III CP/ CPPS is the most complex type, which causes many men significant morbidity and The main four symptom domains of CP are urogenital pain, lower urinary tract symptoms (LUTS), psychological issues and sexual dysfunction (Šutulović et al., 2021). So, The current study aimed To study the effect of Kegel exercises on patients diagnosed with chronic prostatitis. Regarding age of studied subjects. It was found that slightly less than half of the studied samples were in age group of 41-55 years with mean age 56.28 ± 12.29 . This is in the same line with Sabea et al (2021) who reported in a published study entitled as" Effect of Coping Strategy Intervention for Patients Diagnosed with Chronic Prostatitis " conducted in Egypt, that 68.3% of them were in age group of 20-<40 years. Also this is in the same line with Mändar et al., (2020) who reported in a published study entitled as" Dramatically deteriorated quality of life in men with prostatitis-like symptoms " conducted in *United States of America* that the lowest proportion of men (18.4%) belonged to the age group of 20–29 years, followed by 23.2%, 29.0%, and 29.4% in the age groups of 30–39, 40–49, and 50–59 years, respectively.

Regarding level of education, it was found that slightly less than half of the studied samples were illiterate and more than half of the studied sample was an employee This was because most of the sample was from rural. This finding is in agreement with Hao et al., (2018) who reported in a published study entitled as" Symptoms, sexual dysfunction and psychological burden in Chinese men with chronic prostatitis/chronic pelvic pain syndrome " conducted in China who found that most of patients were high education 25.7% , Primary school 41.88% and 81.25% of the studied sample was employee. In relation to marital status, the study result showed that, most of the subjects were married . This is in inconsistent with Zhang et al., (2019) Who reported in a published study entitled as" The lifetime risk and prognosis of chronic prostatitis/chronic pelvic pain syndrome in the middle-aged Chinese males " conducted in China reported that most of their studied subjects were married 92.7 % . sample number is 248subject.

Regarding to past health history of the patients, the study result revealed that more than three fourth of the study sample had not a history of previous surgery and more than one third of

the study sample had chronic disease. more than tenth of the study sample had diabetes, while less than tenth of the study sample had hypertension. This is in the same line with Zhang et al., (2019) Who reported in a published study entitled as" The lifetime risk and prognosis of chronic prostatitis/chronic pelvic pain syndrome in the middle-aged Chinese males " conducted in China reported that 93.9% of the study sample had not a history of previous of diabetes. Regarding present medical history of studied patients : it was found that more than half of the studied subjects by premature ejaculation and increased urination frequency, and less than one fifth had delay in ejaculation this is in the same line with Mändar et al., (2020) who reported in a published study entitled as" Dramatically deteriorated quality of life in men with prostatitis-like symptoms " conducted in United States of America that men with chronic prostatitis appear more likely to experience sexual dysfunction (up to 73%) including erectile dysfunction, premature ejaculation, painful ejaculation, and decreased sexual desire.

Concerning sexual dysfunction shows that there was highly statistically significant of total sexual dysfunction scores in pre ,post and follow up test with $p < 0.001$. This result agreement with Hatzimouratidis et al., (2018): who reported in a published study entitled as" Erectile Dysfunction, Premature Ejaculation, Penile Curvature and Priapism "conducted in Egypt reveals that there was highly statistically significant of total sexual dysfunction scores in pre and post test $p < 0.001$ After implementation Kegel exercise program. Regarding practice of studied subjects: It was found that more than three fourth of the study sample likely to experience sexual dysfunction. this is in the same line with Mändar et al., (2020) who reported in a published study entitled as" Dramatically deteriorated quality of life in men with prostatitis-like symptoms " conducted in United States of America that men with chronic prostatitis appear more likely to experience sexual dysfunction (up to 73%) including erectile dysfunction, premature ejaculation, painful ejaculation, and decreased sexual desire.

Regarding patient's knowledge about the mean of prostatic gland, causes of chronic prostatitis it was found more than half of them not know. Regarding patient's knowledge about mean of Kegel exercises, ,muscles are used in Kegel exercises and exercising your pelvic floor muscles, how should you breathe in pre test it was found that more than three fourth of the study sample had not knowledge,. This finding might be due to this study is one of the first studies to systematically analyses patient's information about what is prostatitis, the most sample were low education, most sample were live in rural area and low class. Also This finding supported with Sabea., et al(2021) reported that there was highly statistically significant improvement in patients' correct knowledge regarding chronic prostatitis. Regarding patient's practice: Reveals that there was highly statistical significant difference between pre, post and follow test in all answers regarding patient's practice This result was supported by Mohamed et al., (2018) who reported in a published study entitled as" effect of pelvic floor muscle strengthening-kegel's exercise on severity of stress urinary incontinence and quality of life" conducted in Egypt illustrated that the mean score of pelvic muscle strength had been increased to be 3.2 ± 0.8 , with statistically significantly different compared to before Kegel's training ($P=0.000$).

CONCLUSION

Based on the findings and research hypothesis, of the study it was concluded that The implementation of Kegel exercises program led to improvement in both knowledge and practices regarding chronic prostatitis and Kegel exercises. The improvement in knowledge is essential to improve practice.

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