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Effect of Adaptation Program about Sexual Dysfunction for Diabetic Women

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Abstract

Background: Sexual dysfunction is a chronic complication of diabetes mellitus. Sexual issue and sexuality are a taboo in Egypt. Educational programs about specific sexual issue help in improvement of sexual functioning of diabetic women. **Aim of the study:** Evaluate the effectiveness of adaptation program on sexual functioning for women with diabetes mellitus. **Subjects and methods** A quasi-experimental design was used. The study was conducted at diabetic outpatient clinic at Ain Shams University Hospitals, Cairo, Egypt. A purposive sample of 105 women with sexual dysfunction, **Tools:** Two tools were used by the researcher to collect data consisted of Arabic Structured interview questionnaire, and Female Sexual Function Index (FSFI). **Results:** FSFI total mean scores increased significantly after application of adaptation program. **Conclusion:** Adaptation program has a positive effective on sexual function improvement among women with diabetes. **Recommendations**: Increase awareness of diabetic women through classes, sessions, and educational programs to discuss sexual dysfunction related to diabetes mellitus.

Key words: Nursing, Sexual dysfunction, Diabetes mellitus, PLISSIT model

Introduction

Diabetes has been defined as "a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both" (American Diabetic Association (ADA), 2015). Nowadays, 246 million people in the world are affected by diabetes and it is expected to affect 380 million by 2025. Moreover, the largest increases in prevalence of diabetes will occur in developing countries by 2025 (Ziaei-Rad, Vahdaninia, and Montazeri, 2010). Egypt had been estimated to be the 9th country in the prevalence of diabetes, by the year 2025, more than 9 million Egyptians (13% of the population above 20 years old) will have diabetes (The World Diabetes Market Report, 2009).

Sexuality is a complex, multidimensional phenomenon that incorporates biological, psychological and behavioral part. Sexuality have feeling about one's body, the need for touch, interest in sexual activity and ability to engage in satisfying sexual activities (Centers for Disease Control, 2012).

Diabetes is known to cause multiple medical, psychological, and sexual dysfunctions. Previous reports have shown that diabetic men are at increased risk for sexual dysfunction with an incidence ranging from 20-85% (Owiredu, 2011). In recent studies, the prevalence of FSD in diabetic

women ranged between 27 to 75%. This wide ranges might be due to the small number of subjects in each study and the subjective nature in determining the presence or absence of sexual dysfunction among women (Maria Ida Maiorino, 2014).

The normal female sexual response needs the integrity of the sensory and autonomic nervous systems to respond to erotic stimuli, as well as of the vascular districts that supply blood to the external genitalia and vagina. Diabetes may affect these integrated systems, leading to sexual dysfunction. The mechanisms involved include vascular and neurological damage, hyperglycemia, infections, and hormonal disorders. Many women with diabetes experience sexual problems. A mixed pattern of dysfunctional symptoms has commonly been reported, such as reduction or loss of sexual interest or desire, arousal or lubrication difficulties, dyspareunia, and loss of the ability to reach orgasm (Bargiota, 2011).

Several sexual-counseling frameworks are available for health care providers to use as supportive and effective strategies to conduct sexual intervention in clinical practice. PLISSIT model is a modeling system used in the field of sexology to determine the different levels of intervention for individual clients. The model was created in 1976 by Jack S. Annon. The letters of the name refer to the four different levels of intervention that a sexologist can apply: permission (P), limited information (LI), specific suggestions (SS), and intensive therapy (IT) (Mansour, and Mohamed, H. E. 2015).

The PLISSIT model is a tool for both assessing and managing a patient's sexuality concerns. It is thought that an intervention plan prepared within the framework of the PLISSIT model will guide nurses in solving sexual problems of women and providing integrated care and help them to express their sexual problems (Nabila El- Sayed Saboula, Marwa Ahmed Shahin, 2015).

Nurses have important duties as counselor and guide in determining the factors affecting sexual functions of diabetic women, problems that may be experience in sexual matters, and providing help to these individuals to overcome these problems. Education about specific sexual behaviors and practices has not been included in primary health care services. Restricted sources of reliable information about sexuality and sexual issues have led to sexual concerns, problems, and frequent dissatisfaction in sexual relationships (Fatimah Rostamkhani, Fatemeh Jafari, Giti Ozgoli, Masomeh Shakeri, 2015)

Aim of the study:

This study aims to determine the effectiveness of adaptation program on sexual functioning for women with diabetes mellitus.

Research hypothesis:

Adaptation program has a positive effect on patients' knowledge, attitude and practices towards different aspects of sexual issues among diabetic women.

Subjects and methods:

Research design: A quasi-experimental study design had been used.

Setting: The study was conducted at diabetic outpatient clinic at Ain Shams University Hospitals, Cairo, Egypt.

Sample type: Purposive sampling technique was used.

Sample criteria: The sample criteria were (educated women, with reproductive age group (18-48 years) diagnosed as diabetic patient, sexually active for at least the past

four weeks and reported to or has sexual dysfunction.

Sample size: The sample size was 105 women with sexual problem selected according to inclusion criteria, 5 women drop of the study due to sensitivity of topic.

Tools: Two types of tools were used which consisted of:

1. Arabic Structured interview questionnaire: The researcher designed Arabic questionnaire after reviewing the related literature. The questionnaire was in the form of multiple choices (MCQ), closed ended questions. It divided into 2 parts: The first part; included socio-demographic data about the women. The second part; included the past and present medical history.

2) The Female Sexual Function Index (FSFI) questionnaire: Female Sexual Function Index was developed by Rosen et al, (2000) and was translated into Arabic by Anis et al, (2011). The FSFI consists of 19 questions covering six domains - desire (two questions), arousal (four questions), lubrication (four questions), orgasm, satisfaction, and pain (three questions each).

Scoring System: Responses to each question relate to the previous month are scored either from 0 (no sexual activity) or 1 (suggestive of dysfunction) to 5 (suggestive of normal sexual activity). Individual domain scores are obtained by adding the scores of the individual questions that comprise the domain and multiplying the sum by the domain factor provided in the FSFI for each domain. The full-scale score is obtained by adding the six domain scores. The minimum score possible is 2 and the maximum is 36.

The researchers develop associated material is **diabetes guidelines booklet** in simple Arabic language. was disseminated to every participant women as a teaching aid regarding diabetes and self- care health practices. The purpose of this developed guidelines booklet was to help women with diabetes to have better dealing with their illness, to meet their needs, interests as well as to raise their awareness and so encourage them to change their health behavior from negative to positive one regarding diabetes. This booklet includes: definition, causes of sexual dysfunction related to diabetes. Also, this booklet offers woman with diabetes the ideal self-care practices according to their information backgrounds and at their levels of their understanding.

Ethical Consideration:

The aim of the study was explained to each participant before applying the tool to gain her confidence and trust. An oral consent was obtained from each woman to participate in the study, after ensuring that data collected will be treated confidentially. The study is harmless. Women were informed that they have the right to withdraw from the study at any time without given a reason.

Administrative Design:

An Official written approval to carry out this study was obtained from Scientific Research Ethical Committee. Also, official written letters clarify the title, purpose, and setting of the study was obtained from the dean of the Faculty of Nursing, Ain Shams University to the director of Ain Shams university hospitals to obtain his approval for data collection.

Data collection:

Preparatory phase: First step: review was done of the current and past local and international related literature about the various aspects of the problem using articles internet, magazines and books.

Second step: designing the program to be implemented through review of related literature and research results regarding the adaptation program. Also, study tools were

tested for content validity by a jury of 5 experts in Maternal and Gynecological nursing and Obstetrics and Gynecology medical fields were sought to ensure content comprehensiveness, clarity, relevance and applicability.

Pilot study:

A pilot study was conducted on (10) women those were included in the main study sample. It was conducted to test the feasibility and clarity of the used tools, to find the possible problems that might face the researcher and interfere with data collection, and to estimate the time needed to fill in the sheets.

Fieldwork: Data collection process had done through different phases:

Assessment Phase: Data collected during seven months started from July 2015 to February 2016. The researcher visited the Diabetes outpatient clinic from 9.00 a.m. to 1.00 p.m. for 3 days/week.

The researcher explained the aim of the study, scheduled times and frequency of counseling sessions to all selected women to assure adherence to selected interventions. Verbal approval of the women to participate in the study was obtained before history taking and after explaining the purpose of the study.

Planning Phase: The program was conducted to determine effect of adaptation counseling program on sexual function among diabetic women with sexual dysfunction by using PLISSIT Model.

Implementation Phase: The researcher performed adaptation program using PLISSIT model technique. Only 100 women were agreeing to attend the educational program through multiple sessions and 5 cases were dropped due to sensitivity of topic.

Evaluation Phase: Evaluation of the program was completed using female sexual function index (FSFI) which measured; one time before program and twice after program implementation. Finally, the researcher compared between pre, post, and follow-up results of these women to evaluate the effect of the adaptation program on their outcome through assessment of improving sexual function after implementation of the program.

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software, version 16. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison between two groups and more was done using Chi-square test.

Results:

In table 1 shows that the age of the sampled women was ranged between 18-48 years, the mean age of women with diabetes was (34.420±9.388). Regarding education, half of studied women (50.0%) were primary educated. Regarding occupation, about two-third (63.0 %) of studied sample was housewives. Regarding duration of marriage, less than half of studied women (47.0%) were married from more than ten years. As regard parity, most women (90.0%) were having kids.

Table 2: shows present medical history of the studied women related to diabetes. Regarding duration of diabetes, more than three-fifths (61.0 %) of studied sample were suffer from diabetes from >10 years. Also, nearly to three-fifths (59.0%) of studied women were have type 1 diabetes. More than three-fifths (63.0%) of studied women were insulin-treated diabetic while more than one quarter (29.0%) of studied women was suffered from hyperglycemia.

Table 3: shows sexual dysfunction among diabetic women. It noticed that more than half (54%) of women were suffered from decreased desire, while orgasmic problems in half of women (50%), problems in lubrication in tow fifth of women (41%), (40%) had arousal problems, and (38%) had problems with satisfaction, finally (34%) of women had pain during intercourse.

Table 4: shows Female Sexual Function Index (FSFI) main domains scores of diabetic women through program application. It showed a highly statistically significant in all domains (desire, lubrication, arousal, orgasm, satisfaction, and pain) of (FSFI) $p<0.001$. The post program counseling main domains scores were higher than pre-and follow up program counseling mean scores.

Figure 1: displayed total Female Sexual Function Index (FSFI) of diabetic women through program application (pre – post and follow up). It showed a statistically significant difference in total (FSFI) over time (pre – post and follow up) program utilization ($P < 0.001$).

Table 5: illustrates significant positive correlations between sexual function and age, education, duration of marriage, and parity.

Table 6: shows the relation between FSFI total scores of studied sample and present medical history of diabetes. No significant difference was detected between sexual function and the types of diabetes, diabetes duration, and treatment methods. Regarding glucose control, it was found FSFI total scores of women with hyperglycemia were significantly higher than those without hyperglycemia.

Table (1): Distribution of studied sample according to sociodemographic characteristics

Sociodemographic data	N=100	
Age: in years	**No.**	**%**
18-27	32	32.0
28-37	23	23.0
38-48	45	45.0
Mean ±SD	34.420±9.388	
Educational level:		
Primary school	50	50.0
Secondary school	9	9.0
High education	41	41.0
Occupation:		
Employed	37	37.0
Housewife	63	63.0
Duration of marriage: in years		
1-5	34	34.0
<10	19	19.0
≥10	47	47.0
Parity:		
Yes	90	90.0
No	10	10.0

Table (2) Distribution of studied sample according to present medical history:

Present Medical history	N=100	
Duration of diabetes: in years	**No.**	**%**
< 5	24	24.0
5-10	15	15.0
>10	61	61.0
Type of diabetes:		
Type 1	59	59.0
Type 2	41	41.0
Treatment of diabetes:		
Injectable (Insulin)	63	63.0
Oral medications	26	26.0
Both of above	11	11.0
Glycemic control:		
Yes	29	29.0
No	71	71.0

Table (3) Distribution of studied sample according to Sexual dysfunction:

Female Sexual dysfunction among diabetic women		N=100	
		N	**%**
Desire dysfunction	No	46	46.00
	Yes	54	54.00
Arousal dysfunction	No	60	60.00
	Yes	40	40.00
Lubrication dysfunction	No	49	49.00
	Yes	41	41.00
Orgasm dysfunction	No	50	50.00
	Yes	50	50.00
Satisfaction dysfunction	No	62	62.00
	Yes	38	38.00
Pain dysfunction	No	66	66.00
	Yes	34	34.00

Female Sexual Function Index's (FSFI)

Table (4) Female Sexual Function Index (FSFI) main domains scores of diabetic women through program application:

(FSFI) main domains scores		Pre		Post		Follow up		Chi-Square	
		N	%	N	%	N	%	X^2	P-value
Desire	Unsatisfactory <4.28	54	54.00	14	14.00	13	13.00	156.550	<0.001*
	Satisfactory >4.28	46	46.00	86	86.00	87	87.00		
Arousal	Unsatisfactory <5.08	40	40.00	18	18.00	10	10.00	133.200	<0.001*
	Satisfactory >5.08	60	60.00	82	82.00	90	90.00		
lubrication	Unsatisfactory <5.45	41	41.00	20	20.00	35	35.00	92.899	<0.001*
	Satisfactory >5.45	49	49.00	80	80.00	65	65.00		
Orgasm	Unsatisfactory <5.05	50	50.00	27	27.00	8	8.00	169.120	<0.001*
	Satisfactory >5.05	50	50.00	73	73.00	92	92.00		
Satisfaction	Unsatisfactory <5.04	38	38.00	19	19.00	24	24.00	62.385	<0.001*
	Satisfactory >5.04	62	62.00	81	81.00	76	76.00		
Pain	Unsatisfactory <5.51	34	34.00	8	8.00	0	0.00	268.056	<0.001*
	Satisfactory >5.51	66	66.00	92	92.00	100	100.00		

Figure (1) Total Female Sexual Function Index (FSFI) of diabetic women through program application:

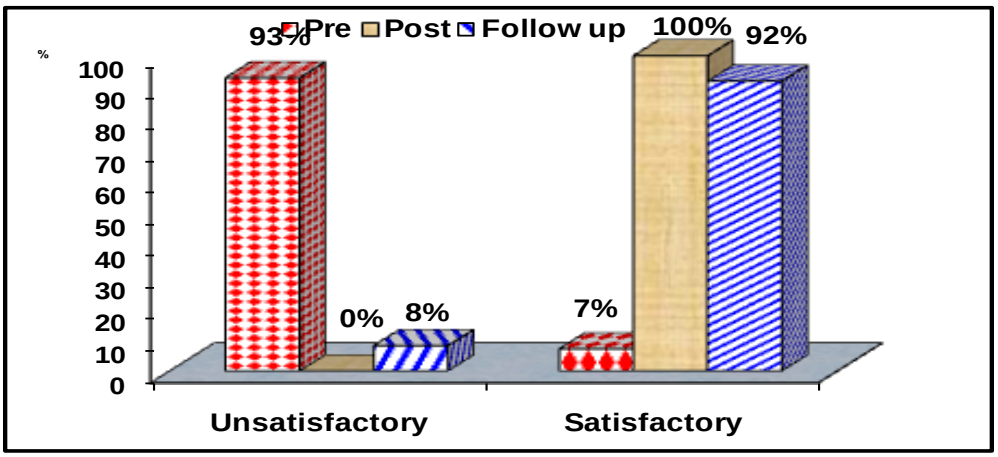

Table (5) Relation between FSFI total scores of studied sample and Sociodemographic characteristics:

Sociodemographic characteristics		Total FSFI's Scores				ANOVA or T-Test	
		N	Mean	±	SD	F or T	P-value
Age:(in years)	18-27	32	24.819	±	2.578	9.969	<0.001*
	28-37	23	23.657	±	1.622		
	38-48	45	22.520	±	2.235		
Education	Primary school	50	24.278	±	2.408	5.529	0.005*
	Secondary school	9	23.156	±	1.819		
	High education	41	22.668	±	2.306		
Duration of Marriage in years)	1-5	34	24.653	±	2.588	8.322	<0.001*
	<10	19	23.774	±	1.793		
	>10	47	22.591	±	2.181		
Parity	Yes	90	23.307	±	2.338	-2.680	0.009*
	No	10	25.410	±	2.509		

Female Sexual Function Index's (FSFI)

Table (6) Relation between FSFI total scores of studied sample and present medical history:

Present History of diabetes		**Total FSF Scores**				**ANOVA or T-Test**	
		N	**Mean**	**±**	**SD**	**F or T**	**P-value**
Duration of Diabetes	< 5 years	24	22.996	±	2.571	1.078	0.344
	5-10 years	15	23.213	±	2.860		
	>10 years	61	23.797	±	2.250		
Type of Diabetes	Type 1	59	23.792	±	2.275	1.363	0.176
	Type 2	41	23.122	±	2.608		
Type of diabetes treatment	Insulin	63	23.840	±	2.254	1.759	0.178
	Oral medications	26	23.142	±	2.710		
	Both of above	11	22.555	±	2.530		
Glycemic control	Yes	29	22.614	±	2.068	-2.437	0.017*
	No	71	23.886	±	2.478		

Discussion

The present study showed that the total size of sample was (100) diabetic women. the age of the sampled women was ranged between 18-48 years, the higher percent of diseased women (45.0%) were had 38-48 years. These findings are agreement with the study results of (Whiting, Guariguata, Weil, & Shaw, J., 2011) who emphasized that most people with diabetes in low and middle income countries are between 40 and 60 years old for both sexes. Also (WHO, 2013) reported that the largest age group currently affected by diabetes is between 40-59 years. This came in line with (Van Dieren, Beulens, van der schouw, Grobbee & Neal, 2010) who mentioned that, middle and late adulthood populations are thought to be the major drivers of the increasing prevalence of diabetes in Egypt and Africa in general. While the current study results are not in the same line with (American Diabetes Association, 2009) who stated that, people who develop diabetes are usually under the age of 20.

Regarding educational level of the subjects, the current study results revealed that half of studied women were primary

educated while two-fifths of studied women were primary educated. This finding agreement with (Zhang, et al, 2010) who stated that, relatively high illiteracy level in Egypt (with the illiteracy rates among women in Upper Egypt reported to be 24%). Also, the prevalence rates of diagnosed diabetes are significantly lower among adults with higher levels of educational attainment (Connecticut, 2013).

Regarding the medical history of the studied women related to diabetes, it was found that nearly to three-fifths of studied women were have type 1 diabetes. more than three-fifths of studied sample were suffering from diabetes from >10 years. more than three-fifths of studied women were insulin-treated diabetic. it was found that more than one quarter of studied women were suffer from hyperglycemia.

As regard the female sexual dysfunction in diabetic women, the results of the present study in table (3) revealed that, all domains of sexual function were affected in diabetic women. In current study, sexual dysfunction among diabetic women it noticed that more than half of women were suffered from decreased desire, while orgasmic problems in half of women, problems in lubrication in tow fifth of women, tow fifth of women had arousal problems, finally (34%) of women had pain during intercourse. The present findings were in the same line with (Shabnam Omidvar, 2013) who revealed that 82% of women with diabetes were afflicted in the area of dysfunction in sexual desire, 78.3% had problems of arousal, 47.5% experienced dysfunction in orgasm, and 45.5% were not satisfied with sexual functioning. 39.4% experienced pain during intercourse, and 36.1% had disorders in vaginal lubrication.

This results were supported by (Nuriye Buyukkayaci Duman., 2014) who reported that according to the mean FSFI scores; the most affected sexual domains were generally arousal (20.5%), orgasm (19.5%), lubrication (18.8%) and satisfaction (17.5%). May be the small differences in the frequency of sexual dysfunction between present study and other studies due to differences in sample size and recruitment of the group (general practitioners versus outpatient gynecology clinic or endocrinology clinic) and the used methodology (questionnaire versus questionnaire combined with a semi-structured interview).

Diabetes may cause vascular and nerve dysfunction which can cause structural and functional changes in female genitalia and may impair sexual response. In addition, vascular changes or diabetic damage may change the local blood flow and inhibition of the clitoris engorgement and vaginal lubrication during arousal, resulting in dyspareunia or decreased arousal during sexual activity. Moreover, increased risk of vaginal infections and/or decreased vaginal lubrication has been postulated to be the cause of higher prevalence of dyspareunia among women with diabetes mellitus.

Another finding in our study was considering the impact of age on sexual dysfunction. Strong correlation findings indicating the increased sexual dysfunction with age these findings were supported by regression model and age was found effective on sexual dysfunction. This was congruent with (Chedraui et al, 2009) who determined age as the most important risk factor for sexual dysfunction in women. Although a few studies reported the increase of sexual dysfunction with age and diabetes duration, they do not investigate the effect of diabetes duration independently from age (Fatemi, Taghavi, 2009). This study showed that age had an independent effect on sexual dysfunction while the effect of diabetes duration was dependent to age. These findings disagreed with (Narges Shams Alizadeh, et al, 2013) who found that there was no correlation between age and FSFI score.

As regard level of education, in our study, like some other studies (Owiredu, Amidu, Alidu, Sarpong, Gyasi-Sarpong, 2011) we found that sexual disorder was related to a lower level of education. Similarly, the study by (Saeed Shakeri, et al, 2012) showed that Educational level positively is associated with score of FSD in all of women. Unlike to our study result, the study of (DumanNB, Kodak, 2013) showed that educational level did not affect female sexual dysfunction. We believed the difference among the study findings resulted from the fact that these studies were carried out with women with different cultural features, different health histories and different age groups. Maybe higher educational level can be associated with better socioeconomic status and skillful partners. Educated patients express their problem and seeking treatment, so they have lower sexual dysfunction.

In literature, it is stated that type of diabetes is the most important factor that affects female SD. In our study, no significant relation was determined between types of diabetes and sexual dysfunction. Similarly, (Saeed Shakeri, et al, 2012) reported that no association was found between type of DM and FSF. Also, our results agree with those of (Wallner et al, 2010) who found no differences between diabetic women and controls.

Comparing our results with those of other researchers who have studied women with type 1 DM and type 2 DM, our findings disagree with those of (Nowosielski et al 2010) who reported that the prevalence of female sexual dysfunction is significantly higher in type 2 DM women. In a study conducted by (Enzlin et al., 2009) 27 and 22% of diabetic women and men with sexual dysfunctions were suffering from type 1 diabetes.

As regard duration of diabetes, the results of this study illustrated that no statistical associations were found between duration of diabetes and SD. Similarly, (Enzlin et al., 2009) from Belgium has reported also that SD in type 1 diabetic women did not correlate with duration of diabetes. The findings of the current study disagreed with (Jamshid Vafaeimanesh, 2014), who reported that the association between duration of diabetes and sexual dysfunction was observed (P = 0.71).

Effect of glycemic control on rates of sexual dysfunction is also controversial. Our results demonstrated that FSFI score was positively correlated with glycemic control. The poor control of diabetes and poor care can lead to further complication and then decrease healthy feeling in the patients. In the same line, some studies have shown that glycemic control has effect on the incidence of sexual dysfunction in women with diabetes (Ziaei-Rad, Vahdaninia, Montazeri, 2010). In contrast, some comments are opposite. (Jamshid Vafaeimanesh, Mehdi Raei, Fatemeh Hosseinzadeh, and Mahmoud Parham, 2014) have shown that no significant association between poor glycemic control and sexual dysfunction (P = 0.29). In the study, no significant relation was determined between treatment method and sexual dysfunction, which is like the findings of many studies as (Seyda Ozcan et al, 2011).

One of the most widely accepted screening sexual models that could be useful is the PLISSIT model created by (Annon, 1976) the present study showed an improvement of sexual functioning, after application of PLISST model. As regard Female Sexual Function Index (FSFI) result, the current study illustrated difference between pre, post, and follow up scores. All domains of sexual function were improved over time. These findings are in line with many researchers which have shown the efficacy of PLISSIT model for improving of sexual function. A study in Korea has evaluated the effectiveness of PLISSIT model on female sexual function in women with gynecologic cancer. Results showed

significant improvement in Female Sexual Function Index (FSFI) sub-domain scores, including sexual desire ($P = 0.048$), arousal ($P < 0.001$), lubrication ($P < 0.001$), orgasm ($P = 0.007$), and satisfaction ($P < 0.001$) (Chun N, 2011). The results indicated that the three-week PLISSIT model sexual program was effective in increasing sexual function for women with gynecologic cancer.

Another study in Egypt found the efficacy of PLISSIT model in women with dyspareunia. There was statistically significant difference between pre- and post-intervention FSFI scores in the domains of desire ($P < 0.001$), arousal ($P < 0.001$), orgasm ($P = 0.002$), satisfaction ($P < 0.001$), and pain ($P < 0.001$) (Mansour SE, Shebl AM, Waheda SM, 2014). also, Ayaz and Kubilay applied PLISSIT model in Turkey for solving the sexual problems of patients with stoma. They found significant improvement in the mean scores of Golombok Rust Inventory of Sexual Satisfaction and sub-groups (Ayaz, Kubilay, 2009). Another study demonstrated that PLISSIT model can meet the sexual health needs of clients in a primary health care setting and can be used easily by health workers in this setting for addressing sexual complaints and dysfunctions (Fatemeh Rostamkhani, Fatemeh Jafari, Giti Ozgoli, Masomeh Shakeri, 2015).

Based on the previously discussed findings it could be said that, healthy citizens are the key to any healthy community, and the key for healthy citizens is to promote health of its different age groups and no doubt that the adult age group is considered a very important as adults as they are the builders of their communities. To promote adult group's health, we should promote their health awareness, attitudes and health practices regarding health and illness in general and regarding chronic diseases as the latter forms dangerous health problems for this age-group (Sahar Mahmoud Zaki and Inshrah Roshdy Mohamed, 2014).

Central to chronic diseases is diabetes mellitus which is common health problem in Egypt and Northern Africa (Bos & Agyemang, 2013). Diabetes complications are debilitating, costly, and sometimes deadly, they tend to be more severe among people whose diabetes is poorly controlled. Diabetes control, achieved through diabetes care and management and clinical preventive care practices, keeps people with diabetes healthy and can improve health outcomes (Al-dsani, Moussa, Al-Jasem et al, 2009). Additionally, the complexity of the treatment of diabetes in a daily routine seeks to achieve normal levels of blood glucose to avoid acute complications and to have a satisfactory adaptation of lifestyle, which requires the multi-professional health team to be qualified to meet the nursing goal of implementing an integrated approach to all the body systems (Carla Regina de Souza Teixeira et al, 2011).

Diabetes in Egypt needs advancement in the way of counseling and treatment; the future of diabetic care in Egypt rests on the public education, expertise diagnostic, preventive and treatment strategies, and resources of research funding. With these assets, we can progress strategically towards overcoming this problem by means as developing educational programs focused on the prevention and delay of diabetes and its complications via behavior modification, exercise, diet, and weight management in children and adults (Soliman ,2013)

The information gained from this study may be useful to highlight educational needs and practice suggestions for better integration of client sexuality concerns with holistic care. Unfortunately, the current nursing curriculum in Egypt rarely includes information related to human sexuality. This deficit should be addressed and new teaching strategies should be integrated helps nurses to integrate sexuality care in their clinical practice. Also, this study will contribute to improve the nursing practice especially in relation to women follow-up and monitor for early detection of any problems that may

predispose to female sexual dysfunction since nurses are considered a member in health care team and work in a variety of settings, they have unique opportunities to address client sexuality during a routine health care that might help the women to understand how sexual feelings may be affected by illness, child-birth, and some treatments.

Conclusion:

Based on the findings revealed by the present study, it can be concluded that sexual dysfunction in diabetic women were statistically significant with age, education, duration of marriage, and glucose control. FSFI total mean scores increased significantly at post counseling stage and follow up counseling stage. It showed a statistically significant difference in total (FSFI) through program utilization (pre – post and follow up) ($P < 0.001$).

Recommendations:

- Increase awareness of diabetic women through educational sessions and programs to discuss sexual dysfunction related to diabetes mellitus.
- Integrate and enhance role of nurses in outpatient clinics as a health educator through periodic training program to help in early detection of sexual dysfunction and prevention through health teaching. In addition, prepare a secure environment in the hospital to discuss sexual problems with women freely.
- Further studies must be done in large sample in different hospitals to better understand the relationship between diabetes and sexual dysfunction.

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