The Effect of an Instructional System Design Model on Knowledge and Attitude Regarding Sexual Transmitted Diseases among Primigravida Women

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Abstract

Background: Health education plays a crucial role in enhancing knowledge and shaping positive attitudes toward sexually transmitted diseases, especially among primigravida women. Achieving this requires an effective instructional system design model tailored to the needs of the target group. **Aim of the research:** Was to evaluate the effect of an instructional system design model on knowledge and attitude regarding sexual transmitted disease among primigravida women. **Research design:** A quasi-experimental design was used to conduct this study. **Research Setting:** Primary health care unit at Sendbes in El-Qanater Al-Khairiya, Qalyubia Governorate. **Sampling:** A purposive sample of 115 primigravida women who fulfill inclusion criteria were included in the study. **Tools of data collection:** Three tools were used for data collection; I) Structured interviewing questionnaire, II) Knowledge assessment questionnaire and III) Pregnant women attitude questionnaires**. Results:** Showed highly statistically significant improvements in all items of knowledge post implementation of instructional system design model (P<0.001) in compare to pre intervention. Also results denoted that, there were highly statistically significant positive correlations between the studied women's total knowledge and total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model at P<0.001. **Conclusion:** There were significant improvements of total knowledge and total attitude of primigravida women regarding sexual transmitted diseases. **Recommendation:** Continuous health education for all primigravida women about Sexual Transmitted Diseases to encourage primigravida women to seek treatment and maintain sexual health.

Keywords: Instructional system design model, Primigravida women, Sexual transmitted diseases.

Introduction:

Sexually Transmitted Disease (STDs) refers to infection with a pathogen that is transmitted through blood, semen, vaginal fluids, or other body fluids during oral, anal, or genital sex with an infected partner. Sometimes STDs infections can't be transmitted sexually, such as from mother to their fetus pregnancy or childbirth, or through blood transfusions or shared needles **(Sheldon, 2023).**

Worldwide, sexually transmitted infections are the most important public health diseases because of their magnitude, potential complications, and interaction with HIV/AIDS. The World Health Organization estimates that each year, more than 340 million new curable STIs occur in reproductive-aged men and women. STDs other than HIV resulted in 142,000 deaths and were higher in the sub-Saharan Africa region. Every year in Africa, approximately one million babies are stillbirth, and one million babies die in their first month of life **(Wolie et al., 2022).**

Sometimes, STDs have no symptoms. If symptoms are present might include, Bumps,

sores, or warts near the mouth, anus, penis or vagina, swelling or redness near the penis or vagina, skin rash, painful urination, weight loss, loose stools, night sweats, aches, pains, fever and chills, jaundice, discharge from the penis or vagina that might have an odor, bleeding from the vagina other than during a monthly period, painful sex and severe itching near the penis or vagina **(Balingit, 2022).**

Hence, educational intervention is one of the most effective strategies for behavior change. The educational approach's goal is to provide primigravida women with the knowledge, information, and skills needed to adopt healthy behaviors. Also, behavioral approaches use preventive strategies to encourage primigravida women to adhere healthy behaviors. Globally, the prevention of high-risk behavior and unprotected sex, as well as the promotion of healthy behavior has been identified as the most effective solutions for STDs prevention. The timely and rapid diagnosis of disease, complete and effective treatment, education on prevention and risk reduction, and encouraging the use of condoms are some of the principles that can control and cure STDs (**Karami et al., 2022).**

Instructional design is the systematic process by which education and training programs are designed, developed, and delivered in a consistent and reliable fashion. The terms instructional design, instructional technology, educational technology, curriculum design, and instructional systems design (ISD), are often used interchangeably. The systems view or approach to instruction implies an analysis of how its components interact with each other and requires coordination of all activities. The systems approach ties instruction to what the primigravida women will be able to do after instruction that they could not do before. Instructional System Design may be also be defined as the systematic and iterative method for creating learning experience that develop and enhance skills and knowledge **(Nehru, 2018).**

Maternity nurse provides the primigravida women proper education and counseling about sexual transmitted diseases to update women knowledge and avoid exposure of sexual transmitted diseases to stress reduction, confidence building, and skill building for disclosure to partners. Supportive behavior provided by nurses is described **(Glockner et al., 2022).**

Significance of the study

Sexually transmitted diseases during pregnancy have been associated with several adverse pregnancy and birth outcomes, as miscarriage, stillbirth, prematurity, low birth weight and several secondary life-threatening conditions in surviving neonate. However, there is limited consensus on the benefit of diagnosis and treatment of STDs, outside of syphilis, during pregnancy and reducing adverse pregnancy outcomes. In pregnant women, untreated syphilis infection has been associated with adverse obstetrics outcomes such as fetal loss, premature rupture of membranes, preterm labor and preterm delivery **(Dorothy et al., 2022).**

In Egypt, STDs are main health, social, and economic load. Diagnosis is basically etiologic and healthcare based on clinical cure. STDs prevalence among rural women is high and constitute 3.0% of females using family planning unite, 4.0% of females using ante-natal care unites, and 5.4% of substance-use had minimally one STD. STDs prevalence in Egypt is up to 3.0% among 15-49years married females (**El-Moselhy et al., 2020).**

Sexual transmitted diseases (STDs) are common and preventable causes of morbidity and serious complications; thus, primary prevention of STDs needs to be given high

priority. Through an early suspected practical nurse for proper screening for STDs infected cases This study will highlight the importance of improving STD knowledge and preventive behavior among a sample of Egyptian population and has identified issues that need to be prioritized to promote STDs awareness and preventive behavior. Hence, this study will be conducted to evaluate the effect of application of an instructional system design model on preventive behaviors regarding sexual transmitted disease among pregnant women.

Aim of the research

This study aimed to evaluate the effect of application of an instructional system design model regarding sexual transmitted disease among primigravida women.

Research hypotheses:

H_1-Primigravida women's knowledge regarding sexual transmitted diseases will be improved after the application of an instructional system design model than before applying it.

H_2-Primigravida women's attitude will be improved after application of preventive behavior than before applying it.

Subject and Methods

Research design:

A quasi-experimental study design (pre/posttest-one groups) followed to fulfill the aim of this study.

Research Setting:

This study conducted at primary health care unites at Sandabes Al-Qanater Al-Khairiya, Qalyubia Governorate, it's served about three villages they don't have any primary health care unites, the average attendance at this sitting is approximately 30-40 primigravida women per month. This sitting was chosen due to the presence of Presidential Initiatives for maternal and fetal health for analyzing the diagnostic test for sexual transmitted disease (HIV-HBV and TP) because this investigation available free for the primigravida women and the rate of attendance of primigravida women. the Presidential Initiatives for maternal and fetal health has begun in October 2019 the official setting aimed to improve healthcare for mother and her fetal by providing integrated medical and nursing services and tailored to each primigravida women specific needs.

Sampling:

Sample type: A purposive sample used in this study.

Inclusion Criteria:

-Age 18-≤35 years**.**

-Primi gravidas women at the first or second trimester.

-Can Read and write.

Exclusion Criteria:

-Free from any medical or obstetrical complications

Sample size: This study included all primigravida women who attended the primary health care unit at Sandabes El-Qanater Al-Khairiya, Qalyubia Governorate A total of 115 primigravida women attended the primary health care unit from July 2023 to the end of December 2023. The daily attendance rate of primigravida women is approximately 10 to 12, with about 1 to 2 pregnant women excluded each day for not meeting the sample criteria.

Tools of data collection

Three tools used for data collection:

Tool I: A structured interviewing questionnaire constructed by the researchers after reviewing related literature; it included two parts:

Part 1: General characteristics of the studied sample as (age, residence, education, occupation, family income, the presence of other wives for the husband).

Part 2: Obstetrics history, it included questions related gestational age as (First day of the last menstrual period and Uterine age permission) and abortion times, plus

gynecological history, it included questions as family planning methods before, previous complication of genital infection or STDs as (presence of genital tract infection before, previous complication of any disease as (have complications of sexually transmitted diseases, presence of previous gynecological operations (a history of previous gynecological operations, husband suffer from sexually transmitted diseases.

Tool II: Knowledge assessment questionnaire: This tool adapted from the researchers after reviewing related literature **(Tawfik et al., 2021)** and include11 questions wrote in an Arabic language in the form of close and open-ended questions related to (definition of STDs, causes, mode of transmission, the effect of STDs, sign and symptoms, complications. and other question as (Definition of syphilis, hepatitis B, AIDS, HPV, gonorrhea, herpes simplex virus (HSV), molluscum cantagiosum, scabies, chancroid and clamedia) the benefit of sexually transmitted disease tests, the purpose of the Ministry of Health's protocol for the detection of sexually transmitted diseases, the precautions sexually transmitted diseases and the sources of knowledge about STDs.

Scoring system of knowledge:

Each item of knowledge gave a score (2) for correct answer and a score (1) for incorrect answer or don't know. Then the total score calculated by summation of the scores of all items and classified into: -

-Satisfactory knowledge ≥60% of correct answer

-Unsatisfactory knowledge <60% of correct answer

Tool III: Primigravida women's attitudes questionnaire toward preventive behaviors regarding sexually transmitted diseases:

Section 1: Primigravida women's attitudes toward the preventive behaviors: This tool designed by the researchers after reviewing related national and international literature and wrote in Arabic language format and include 11 items, related to primigravida women attitude toward preventive behavior regarding sexual transmitted diseases.

Section 2: Primigravida women's attitudes toward the preventive behavior of the husband it included 8 items related to primigravida women attitude toward preventive behavior of the husband regarding sexual transmitted diseases.

Scoring system for the attitude of pregnant women toward the preventive behaviors and attitudes toward the preventive behavior of the husband

Each item of attitude statement was assigned to 3-points Likert scale from strongly agree to strongly disagree. to assessing pregnant women attitude toward instructional system design model on preventive behaviors related sexual transmitted diseases.

-Strongly agree (score 2)

-Agree (score 1)

-Strongly disagree (score 0)

Tools validity and reliability

Tools of data collection reviewed by panel expertise of three professors' obstetrics and gynecological nursing to test content validity and the modification are made. Reliability was assessed by cronbache´s alpha co-efficient test.it was 0.7for the tool II and was 0.65 for tool III.

Ethical consideration

Ethical aspects considered before starting the study as the following:

-Approval to conduct the study obtained from the Scientific Research Ethical Committee at Faculty of Nursing, Benha University and obtained for the fulfillment of the study. Code P 96

-The aim of the study explained to each pregnant woman before applying the study.

-A wrote consent obtained from each participant to participate in the study.
-The study not have any physical, social or psychological risk on the participants.
-Maintain confidentiality, self-esteem and dignity of the participant.
-The researchers were giving the freedom to each participant to withdrawing from the study at any time.

Pilot study:

The pilot study carried out on 10 % of the total participant women in the study period about 3 weeks which include 27cases during the period to test clearly around approximately 14th to 20th of June to test the feasibility and applicability of tools as well as to estimate the time needed for data collection and there aren't modifications. Women involved in the pilot study included to the total study sample

Field work:

The study was carried out at the Sandabes Al-Qanater Al-Khairiya, Qalyubia Governorate covering 6 months from July 2023 until December 2023. A written official approval to conduct this study was obtained from the dean of faculty of nursing to the director of the primary health care unites at Sandabes Al-Qanater Al-Khairiya, Qalyubia Governorate in order to obtain agreement to conduct this study after explaining its purpose to the participant pregnant women, test its appropriateness, comprehensiveness, clarity, importance and applicability. The jury results were done. Finally, the researchers conducted pilot study to a test content validity of tools used. The researchers visited the study sitting two times/week (Saturday, Tuesday) from 9.00 am to 12 pm. The study was carried out through the following five phases; preparatory phase, interviewing and assessment phase, planning phase, implementation phase and evaluation phase. The researchers applied the five steps of the instructional system design model was constructed under the following phases: Analysis, Desigen, Development, Implementation, Evaluation. These phases are consistent with the phases of the field work of this study

Preparatory phase: The preparatory phase was the first phase of the study, the researchers carried out through review of local, national and international related literature about the study. This was a guide for the researchers to prepare the required data collection tools. The researchers distributed the tools to three experts in the field of obstetrics & gynecological nursing at faculty of Nursing, Benha University in order to obtain agreement to conduct the study after explaining its purpose. test its appropriateness, comprehensiveness, clarity, importance and applicability. The jury results were done. Finally, the researchers conducted pilot study to a test content validity of tools used. This phase is consistent with the **Analysis phase** of the instructional system design model, the researchers followed a specific research technique such as needs analysis, goal analysis, and task analysis regarding the participant criteria, age, information needs and types, causes, risk factors of sexual transmitted diseases and different methods of prevention of sexual transmitted diseases. Also, the researchers wrote the goal from application of instructional system design model.

Interviewing and assessment phase: At the beginning of the interview the researchers greeted with the pregnant women and introduced herself to each participant involved in the study, the researchers explained the purpose and provided the participants with all information about the study to gain confidence and trust. The researchers took a written consent from participants to participate in the study. According to **Desigen phase** of the instructional system design model, the researchers determined the tools for data collection and instructional strategies that used

for pregnant women were assessed for general characteristics in the special separate place to maintain the privacy of the participants and assessed by Structure interviewing questionnaire (tool 1). The researchers assessed the pregnant women's level of knowledge regarding sexual transmitted diseases by using pre-test (Tool II), and then the researchers informed pregnant women's about the time of the posttest and follow up. then the researchers distribute to Evaluating pregnant women's attitudes toward preventive behaviors regarding sexually transmitted diseases (tool III) divided into two sections, Section 1: Evaluating pregnant women's attitudes toward their preventive behavior and Section 2: Evaluating pregnant women's attitudes toward preventive behavior of her husband. The collected data serving as a pretest for baseline comparison with posttest data and based on the results that obtained from the assessment data. the average time needed for the interview of every woman was 30- 45 minutes and the baseline data obtained from the filled tools.

Planning Phase: Based on baseline data obtained from assessment phase and relevant review of literature, **the development phase** that included in the instructional system model was applied by the researchers for pregnant women to accommodate the pregnant Women' deficit knowledge and preventive behaviors of pregnant women regarding sexual transmitted disease. The researchers designed three theoretical sessions. The researchers also applied **the development phase** for create and develop the content of each session and followed the teaching strategies such as discussion the lecture and brain storming, demonstration for the content of practical session and uses instructional media such as the instructional book in PowerPoint on the laptop, picture of signs of some sexual transmitted disease. The contents were prepared according to pregnant women level of understanding in simple Methode, organized and scientific Arabic language.

Phase IV: Implementation phase: General and specific objectives of instructional system model were stated and implemented to satisfy the actual needs of the studied sample. The study sample included 115 pregnant women. The researchers were classified the study sample into (10) groups for the period of data collection, each group involved approximately (9 -11) pregnant women, then the researchers designed scientific sessions (three theoretical and one practical session) for illustrating the knowledge and preventive behavior to the pregnant women regarding the sexual transmitted diseases. The duration of each session around 30 to 45 minutes. The researchers interviewed 4-6 pregnant women weekly. The researchers discussed one session every two weeks according to flow rate of the study sample who meet the sample criteria.

At the beginning of the first session, pregnant women were oriented with the model contents. Each woman was informed about the time of the next sessions at the end of session, taking into consideration the use of Arabic language that suits the pregnant women according to educational level.

The subsequent session started by feedback about the previous session and the objectives of the new session. Motivation and reinforcement during sessions were used to enhance motivation for the sharing in the study. During sessions, each woman has an opportunity to ask questions and share information with each other. At the end of each session, the researchers gave chance to pregnant women to ask any questions to correct any misunderstanding related to the types of sexual transmitted diseases. Different strategies of teaching were used as lecture, discussion, role model, demonstration, suitable

teaching media were included hand out (Booklet) about prevention of sexual transmitted diseases. **The implementation phase** of the ADDIE model deals with the actual delivery of the content of lectures of sexual transmitted diseases to the participant in the study. There are three steps of implementation phase of the ADDIE training process: firstly, the researchers carried out through understanding review of local, national and international related literature about this study. This was a guide for the researchers to prepare the required information's and increase their understanding of the model content and materials for achieved the goals from application of this model. Second, the researchers organize and arranging the participants according to the sessions to ensure they have access to the materials and tools they need to complete the program's activities and ensure the expansion of their knowledge to the pregnant woman's. Third, the researchers keep the setting up an environment that is conducive to educate the pregnant women in good and clean, ventilated environment and keeps privacy of the participant for maintain confidently and trust to all the pregnant women participating. The researchers discussed the all knowledge related the sexual transmitted diseases to the participant in the study as the following sessions:

The Theoretical sessions:

First session:- At the beginning of the first session the researcherss gave the pregnant women the instructional system design model and illustrated the instructional system design model to the studied pregnant women including the general and specific objectives by using Arabic language to suit all level of pregnant womens' education. Then, the researcherss started by the introduction of the theoretical part of the instructional system design model and was provided pregnant with knowledge about definition of STDs, types of syxual transmitted diseases(HIV, HBV, HPV, syphillis, gonorrhea, herpes simplex virus (HSV),molluscum cantagiosum, scabies, chancroid and clamedia) and causes of STDs.then,

Second session:- Started by a feedback about the previous session and discuss the objectives of the new session then, the researcherss provided pregnant women with knowledge about different methods of STDs and discusing three types of STDS includeing syphillis, HIV& HBV by using different teaching methods as lecture, group discussion and brain storming.

Thired session:- Started by a feedback about the previous session and discuss the objectives of the new session then, the researcherss discused the other three types of STDs and the effect f STDs on pregnant women and the effect of STDs on fetus.

Fourth session:- Started by a feedback about the previous session and discuss the new session about the complication of STDs on pregnant women and the fetus. preventive behaviors regarding STDs and the line of treatment.

Implementing the certain procedures as (testing avelable investigation as HIV, HBV and syphilus regarding the routine protocol of ministry of health and the ahygenic care as the one methode of preventive behavior of STDs and how to ues the condume male).

Phase V: Evaluation phase:

The evaluation phase emphasized on determining the effect of Instructional system design model on pregnant women knowledge and attitude regarding sexual transmitted diseases by comparing the results pre, post of application of Instructional system design model . Post-test was done after one-month from the last sesssoin to evaluate the effectiveness of an instructional system design model on knowledge and attitude related STDs through schdual of visiting for follow up at

ante-natal care at primary health care unite . In order to test pregnant women' retention of knowledge and improving attitude as indicators of this model. The researcherss used tool no. II (Pre-posttest) to assess pregnant women knowledge regarding STDs. Tool no. III (Pre-posttest) to assess attitude toward the preventie behavior regarding sexual transmitted diseases.

Statistical analysis:

The collect data was coded, organized, categorized, tabulated and analysed by using appropriate statistical methods. Data were verified prior to computerized entry. The Statistical package for social sciences (SPSS version 25) was used followed by data tabulation and analysis. Descriptive statistics were applied (e.g., mean, standard deviations, frequencies and percentages). Chi-square test, and Pearson correlation coefficients were used.

Results:

Table (1): Shows that, 34.8% of the studied women were in the age group from 26 -< 30 years old with a mean age of 28.75±7.39 years, 52.2% of them were living in rural areas, and 39.1% of them had secondary education. Regarding the occupation, 65.5% of the studied women were not working, 65.2% of them had insufficient monthly income, and 95.7% of them their husbands don't have other wives.

Table (2): Reveals that, the current gestational age of 39.1% of the studied women were between 16-20 weeks with the mean gestational age of 18.6±3.59weeks, 73.9% of them didn't have previous history of genital tract infection, as well as 78.3% of them didn't have previous history of sexually transmitted diseases. Concerning the presence of previous gynecological operations, 84.3% of the studied women didn't have previous history of gynecological operations, while 50% of those who had previous history of gynecological operations performed excision of uterine fibroid. Regarding the husbands' history of sexually transmitted diseases, 98.3% of the studied women's husbands didn't suffering from sexually transmitted diseases, while 100% of those who had previous history of sexually transmitted diseases were suffering from viral hepatitis disease.

Figure (1): Shows that, 19.1% of the studied women had satisfactory total knowledge scores regarding the sexually transmitted diseases pre the application of the instructional system design model which improved to include 80% of them post the application of the instructional system design model. While, 80.9% of them had unsatisfactory total knowledge scores regarding the sexually transmitted diseases pre the application of the instructional system design model which decreased to include 20% of them post the application of the instructional system design model.

Figure (2): Shows that, 13.9% of the studied women had positive total attitude scores regarding preventing the sexually transmitted diseases pre the application of the instructional system design model which improved to include 90.4% of them post the application of the instructional system design model. While, 86.1% of them had negative total attitude scores regarding preventing the sexually transmitted diseases pre the application of the instructional system design model which decreased to include 9.6% of them post the application of the instructional system design model.

Table (3): Shows that, there were highly statistically significant positive correlations between the studied women's total knowledge, total preventive behaviors, and total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model at P<0.001.

Table (1): Distribution of the studied women according to their personal characteristics (n=115).

Personal characteristics	No.	%
Age (Years):		
18 - < 22	25	21.7
22- < 26	20	17.4
26 - < 30	**40**	**34.8**
30 - ≤ 34	30	26.1
Mean ± SD 28.75±7.39		
Residence:		
Rural	**60**	**52.2**
Urban	55	47.8
Level of education:		
Read and write	11	9.6
Primary education	24	20.9
Secondary education	**45**	**39.1**
University education	35	30.4
Occupation:		
Work	50	43.5
Not work	**65**	**65.5**
Income:		
Sufficient	40	34.8
Insufficient	**75**	**65.2**
The presence of other wives for the husband:		
Yes	5	4.3
No	**110**	**95.7**

Table (2): Distribution of the studied women according to the obstetric and gynecological history (n=115).

Obstetrics and gynecological history	No.	%
The current gestational age (weeks):		
12-15 weeks	30	26.1
16-20 weeks	**45**	**39.1**
21-24 weeks	40	34.8
Mean ± SD	18.6±3.59	
The presence of previous history of genital tract infection:		
Yes	30	26.1
No	**85**	**73.9**
The presence of previous history of sexually transmitted diseases:		
Yes	25	21.7
No	**90**	**78.3**
The presence of previous history of gynecological operations:		
Yes	18	15.7
No	**97**	**84.3**
If yes: what is the type of operation (n=18):		
Removal of endometriosis	3	16.7
Excision of uterine fibroid	**9**	**50.0**
Removal of ovarian cyst	4	22.2
Others	2	11.1
Husbands' history of sexually transmitted diseases:		
Yes	2	1.7
No	**113**	**98.3**
If yes: what are the diseases (n=2):		
Viral hepatitis disease	2	100.0

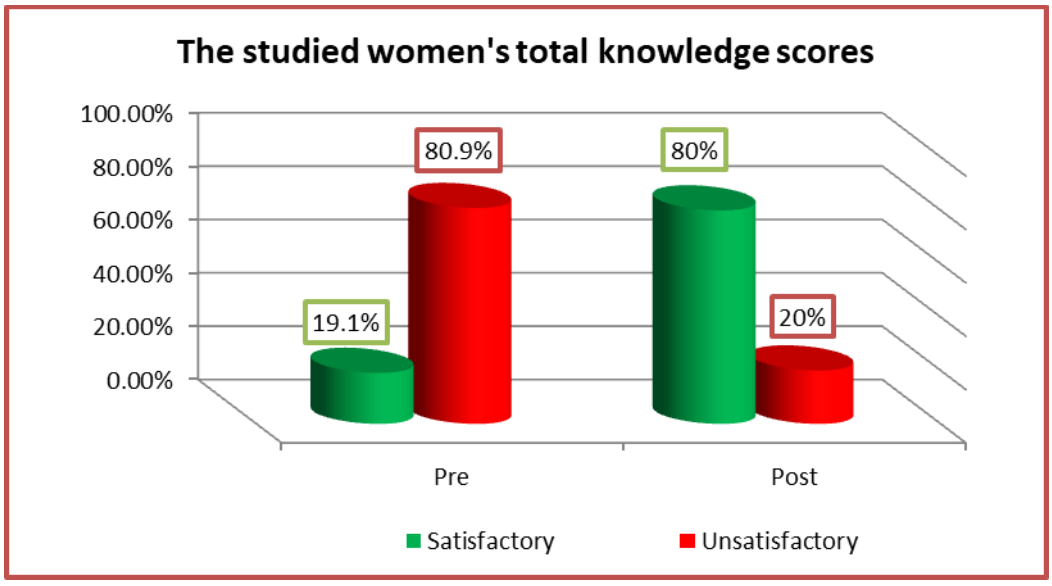

Figure (1): Percentage distribution of the studied women according to their total knowledge scores regarding the sexually transmitted diseases pre and post the application of the instructional system design model (n=115).

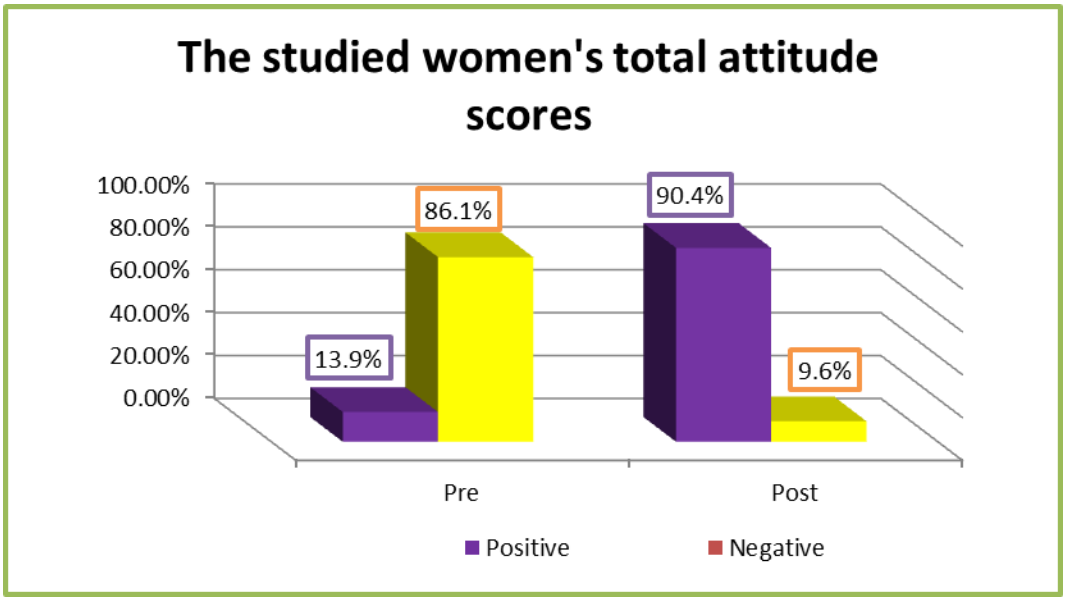

Figure (2): Percentage distribution of the studied women according to the total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model (n=115).

Table (3): Correlations between the studied women's total knowledge, and total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model (n=115).

Variables	Total knowledge scores			
	Pre		Post	
	R	P-value	r	P-value
Total attitude scores	0.670	0.001**	0.905	0.001**

Discussion:

Sexually transmitted diseases represent a significant public health challenge globally, affecting millions of individuals each year. The World Health Organization (WHO) reports that over one million new cases of STDs occur daily worldwide. These diseases can lead to severe health complications, including infertility, ectopic pregnancies, chronic pelvic pain, and increased susceptibility to HIV. Despite their prevalence and impact, STDs are often surrounded by stigma, misinformation, and a lack of awareness, particularly in regions with conservative cultural norms **(Al-sahli et al., 2024).**

Regarding the general characteristics of the studied women, the current study showed that, more than one third of the studied women were in the age group from 26 -< 30 years old with a mean age of 28.75±7.39 years, more than half of them were living in rural areas. These results were agreed with **Abd Alkrim et al., (2024)** who studied Enhancing Knowledge of Married Couples Regarding Sexually Transmitted Diseases and demonstrated that half of studied wives aged between (20-30) years with mean of (27.2 ± 1.3) years for all age groups.

According to the residence more than half were lived on rural area. The present finding disagreed with **Meller, (2021)** who conducted a study, in south Africa, entitled as "wives' practice regarding to sexually transmitted diseases (STDs)" and reported that more than half of studied wives aged were ranged from 20-35 years and about one quarter from urban.

Regarding educational level of the participant, the current study showed that level around two fifth of them had secondary education. this result aligns with **Ahmed et al., (2023)** who studied Application of an Epidemiological Triangle Model on Prevalent Sexually Transmitted Diseases among Married Women" and reported that more than two third of studied women had secondary education. The present result disagreed with **Abd Alkrim et al., (2024)** who concluded that more than one quarter can't read and write.

Regarding the occupation, the present study illustrated that more than two third of the studied women were not working, the result was in the same line with **Amin et al., (2021)** a study entitled The Effect of Educational Intervention on Knowledge and Attitudes toward Sexually Transmitted Infections on a sample of Egyptian Women at Primary Care Level" and mentioned that most of studied women were housewives.

In relation to income, the current study showed that more than two third of them had insufficient monthly income, this result in the same hand with **Ali et al., (2021)** a study entitled "Pregnant Women' Knowledge and Attitude regarding Hepatitis B Virus Infection: A Structured Teaching Program" who reported that more than half of them (55.9%) hadn't enough income.

Regarding obstetric and gynecological history of the studied women revealed that, the current gestational age of around two fifth of the studied women were between 16-20 weeks with the mean gestational age of 18.6±3.59 weeks. These results as the same line with **Nagdev et al., (2023)** in India who studied "Lower genital tract infections between 18 and 24 weeks of pregnancy and its association with adverse pregnancy outcome" concluded that Maximum number of participants had gestational age between 22 and 24 years.

Also, Contrarily, this result disagrees with a study at Egypt by **El-Sayed et al., (2023**) in Egypt who studied "Evaluating Pregnant Women's Knowledge Regarding Genital Tract Infections" and mention that more than two fifth of pregnant woman were more than 29 weeks of gestation with Mean ±SD (25.8 ±5.8).

Concern the presence of previous history of genital tract infection, the current study revealed that around three quarter of studied women didn't have previous history of genital tract infection, as well as more three quarter of them didn't have previous history of sexually transmitted diseases.

Concerning the presence of previous gynecological operations, most of the studied women didn't have previous history of gynecological operations, while half of those who had previous history of gynecological operations performed excision of uterine fibroid. These results differ with **El bialy et al., (2022)** who revealed that most of the study and control groups suffered from gynecological problems previously.

Regarding the husbands' history of sexually transmitted diseases, most of the studied women's husbands didn't suffering from sexually transmitted diseases, while all of those who had previous history of sexually transmitted diseases were suffering from viral hepatitis disease. These findings are

similar to findings from the study conducted by **Shabnam, (2021)** who studied "Sexually Transmitted Infections and Spousal Violence: The Experience of Married Women in India" and reported that most of husbands hadn't STI/STI symptom.

The present finding were disagreed with a study done by **Abd Alkrim et al., (2024)** in Egypt, study about "Enhancing Knowledge of Married Couples Regarding Sexually Transmitted Diseases" and revealed that less than half of the studied husbands have a candida as a current diagnosis regarding STDs and more than one third have chlamydia, while the other's studied husbands have different diagnosis as Gonorrhea (8.5%), hepatitis B (4.2%), syphilis (1.4%) and herpes (2.8%). Also, **El-Moselhy et al., (2020)** a study entitled "Sexually Transmitted Infections: Risk-Factors among Married Female Patients' in Assiut, Egypt" who concluded that more than two third of Partner previously infected with STIs. regard the general knowledge of the studied women according to the sexually transmitted diseases pre and post the application of the instructional system design model, the current study indicated that, there were highly statistically significant improvements in all items of the studied women's general knowledge regarding the sexually transmitted diseases post the application of the instructional system design model than before at ($P < 0.001$).

The result was in the same line with **Juyani et al., (2022)** who evaluated the efficacy of an educational intervention grounded in the Instructional Systems Design (ISD) model in enhancing women's preventive behaviors regarding sexually transmitted infections (STIs) and revealed that a statistically significant disparity in the average scores of women's STD knowledge between the experiment group and the control group following the implementation of the educational intervention.

Additionally, these results were in the line with **Ahmed et al., (2023)** a study about Application of an Epidemiological Triangle Model on Prevalent Sexually Transmitted Diseases among Married Women" and illustrated that, while more than half of the studied women had poor total knowledge levels prior to the implementation of the epidemiological model, and the percentage reduced to minority after the epidemiological model's implementation. Added to that, around one fifth of the women had good total knowledge levels prior to the implementation of the epidemiological model, and increased to around three quarter after the implementation.

Also, a study by **Amin et al., (2021)** who studied "Educational Intervention on Knowledge and Attitudes toward Sexually Transmitted Infections on a Sample of Egyptian Women at Primary Care Level" and showed that the significant improvement of the women total knowledge level from the pre-intervention to in the post-test ($p = 0.001$). From the research point of view connected to instructional system design model, which assists in increasing women's education and encourage a clear understanding of STDs.

As regard the studied women according to the total knowledge scores regarding the sexually transmitted diseases pre and post the application of the instructional system design model, the present study showed that, around one fifth of the studied women had satisfactory total knowledge scores regarding the sexually transmitted diseases pre the application of the instructional system design model which improved to include most of them post the application of the instructional system design model. While, most of them had unsatisfactory total knowledge scores

regarding the sexually transmitted diseases pre the application of the instructional system design model which decreased to include one fifth of them post the application of the instructional system design model.

This finding aligns with **El-Sayed et al., (2023)** concluded that less than two thirds of studied women had poor knowledge regarding GTIs. Also, these results agreed with **Elbialy et al., (2022)** who revealed that the majority of the study and control groups had poor knowledge score before implementation of the intervention, while the majority of the study group had good knowledge score immediately and three months after intervention. Regarding the control group, there was no significant improvement in their knowledge score pre and three months after intervention.

Moreover, these results were in the same hand with **Baldeh & Isara, (2019)** who studied "Knowledge of Sexually Transmitted Infections amongst Pregnant Women Attending Antenatal Clinics in West Coast Region of The Gambia" found that majority of participants had poor knowledge of STIs.

The result was disagreed with **Özbey et al., (2025**) a study entitled "The Relationship Between Knowledge Level of Sexually Transmitted Diseases and Sexual Health Literacy in Women Applying to Gynecology and Obstetrics Outpatient Clinic" indicated that simply increasing knowledge about sexual health is not sufficient; education should also focus on enhancing individuals' ability to interpret and apply that knowledge.

This result differs with a study conducted in Bangladesh by **Huda et al., (2022)** entitled "Prevalence and demographic, socioeconomic, and behavioral risk factors of self-reported symptoms of sexually transmitted infections (STIs) among ever-married women: evidence from nationally representative surveys in Bangladesh" and reported that involving participants with STD symptoms, around three quarter of the participants stated they had knowledge about STDs. From the researchers' point of view the nature of living in rural areas with traditional beliefs that affect their awareness and education about sexually transmitted diseases.

Regard of the studied women according to the total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model, the current study indicated that, minority of the studied women had positive total attitude scores regarding preventing the sexually transmitted diseases pre the application of the instructional system design model which improved to include majority of them post the application of the instructional system design model. While, most of them had negative total attitude scores regarding preventing the sexually transmitted diseases pre the application of the instructional system design model which decreased to include minority of them post the application of the instructional system design model.

This result pareled with **Elbialy et al., (2022)** who concluded that before intervention implementation, around three quarter and most of the study group and control groups respectively reported unsatisfactory total score of practice. The total score became satisfactory for all the study group immediately and three months after intervention. Similarly, a study done by **Juyani et al., (2022)** who reported that an educational program for empowering and promoting behaviors that prevent STIs are effective to improve total attitude regard participant. As well as, study done by **Amin et al., (2021)** who mention that implementing

educational programs improve studied group attitude toward Sexually Transmitted Infections.

This result was disagreed with **Winarto et al., (2023)** who studied "Knowledge, Attitude, and Practice Towards Sexually Transmitted Infections Among Women of Reproductive Age in an Urban Community Health Centre in Indonesia" concluded that most of respondents had a positive attitude. From the researchers' point of view, pre-and post-intervention assessments allow for real-time adjustments and reinforce learning which improve attitude regarding preventing the sexually transmitted diseases.

Concern correlations between the studied women's total knowledge, and total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model, the present study showed that, there were highly statistically significant positive correlations between the studied women's total knowledge, and total attitude scores regarding preventing the sexually transmitted diseases pre and post the application of the instructional system design model at p <0.001.

This result in same hand with **Jones & Smith, (2023)** Who studied "Sexual health literacy and its impacts on risk behaviors" highlighted that inadequate sexual health knowledge contributes to an increase in risky sexual behaviors, especially among young individuals. Also, **Ahmed et al., (2023)** who reported there were positive statistically correlations between the studied women` total knowledge scores and total practices scores post implementation of epidemiological triangle model.

Conclusion:

Based on the finding of the current study it's concluded that, there were significant Improvement in knowledge and attitude of studied women Hypotheses are supported and the aim is achieved

Recommendations:

-Developing a protocol and guidelines to improve pregnant women's knowledge in Qalubia government, Sendbes El kantar El Khaira.

-Organizing workshops for pregnant women regarding the methods of preventive behaviors toward sexual transmitted diseases

Further study needs to be performed:

Dissemination of the instructional system design model content to all women and men for providing tailored information and organized process towered Attitude regarding preventive behaviors toward sexual transmitted diseases in Qalubia government, Sendbes El Qantar El Khairiya.

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تطبيق نموذج تصميم النظام التعليمي على المعرفة والاتجاهات فيما يتعلق بالأمراض المنقولة جنسيًا بين السيدات البكريات

أشجان على عبد اللطيف- سامية عبد الحكيم حسانين عبود- رحاب سليمان عبد العليم

يلعب التثقيف الصحي دورًا محوريًا في تعزيز المعرفة وتشكيل الاتجاهات الإيجابية نحو الأمراض المنقولة جنسيًا، خاصة بين النساء الحوامل البكريات. ويتطلب تحقيق ذلك استخدام نموذج فعّال لتصميم النظام التعليمي يكون ملائمًا لاحتياجات الفئة المستهدفة، لذلك هدفت هذة الدراسة إلى تقييم تأثير نموذج تصميم نظام تعليمي على المعرفة والاتجاهات المتعلقة بالأمراض المنقولة جنسيًا بين السيدات البكريات، وتم إستخدام تصميمًا شبه تجريبي، وقد أجريت هذة الدراسة فى وحدة الرعاية الصحية الأولية بسندبيس في القناطر الخيرية، محافظة القليوبية، وقد شملت الدراسة على عينة بلغ عددها ١١٥ سيدة بكرية ممن تنطبق عليهن معايير الاشتمال، وقد أظهرت النتائج وجود تحسن ذي دلالة إحصائية عالية في جميع بنود المعرفة بعد تطبيق نموذج تصميم النظام التعليمي ($P<0.001$) مقارنة بما قبل التدخل. كما أوضحت النتائج وجود علاقات ارتباط إيجابية ذات دلالة إحصائية عالية بين إجمالي درجات المعرفة وإجمالي درجات الاتجاهات لدى النساء محل الدراسة فيما يتعلق بالوقاية من الأمراض المنقولة جنسيًا قبل وبعد تطبيق نموذج تصميم النظام التعليمي عند مستوى دلالة($P<0.001$)، وقد أسفر تطبيق نموذج تصميم النظام التعليمي عن تحسن ملحوظ في إجمالي المعرفة وإجمالي الاتجاهات لدى النساء الحوامل لأول مرة فيما يتعلق بالأمراض المنقولة جنسيًا، وقد أوصت الدراسة بضرورة الاستمرار في تقديم التثقيف الصحي لجميع النساء الحوامل البكريات حول الأمراض المنقولة جنسيًا، وذلك لتشجيعهن على طلب العلاج والحفاظ على الصحة الجنسية.