

Effect of Antenatal Nursing Interventions on Knowledge, Attitudes and Coping Strategies of Pregnant Women who Detected Fetal Anomalies regarding Congenital Anomalies

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Abstract

Background: Congenital anomalies represent a public health concern and the leading cause of mortality in developed and developing countries. Approximately 50% of all congenital anomalies cannot be linked to a specific cause. **This study** aimed to evaluate the effect of antenatal nursing interventions on knowledge, attitudes, and coping strategies of pregnant women who detected fetal anomalies regarding congenital anomalies. **Subjects and Methods: Design:** A quasi-experimental design was utilized in this study. **Setting:** This study was conducted at the antenatal clinic at Beni-Suef University Hospital. **Sample:** A total of 75 pregnant women attending the antenatal clinic and detected fetal anomalies. **Four tools were used for data collection:** (1) A structured interviewing questionnaire, (2) Assessment of pregnant women knowledge about the congenital anomalies, (3) Attitude scale this tool evaluating attitudes of pregnant women towards how detected fetal congenital anomalies, and (4) Parental Coping Strategies Inventory (PCSI). **Results:** The mean age of the participating women were 25.9 ± 5.4 years. After the program, the participating women's knowledge of congenital anomalies regarding types, risk factors, and prevention have raised ($p < 0.05$), and the attitudes towards having a child with anomaly were improved, chances of rehabilitation from 0.40 ± 0.49 to 0.77 ± 0.42 , and leading a normal life from 0.64 ± 0.48 to 0.89 ± 0.31 ($p < 0.05$). A statistically significant improvement was found between the knowledge, attitude, and the Coping Strategies Inventory of the studied pregnant women as pre/ immediate post one month of antenatal nursing intervention ($p < 0.05$). **Conclusion:** Implementation of antenatal nursing intervention for pregnant women regarding congenital anomalies had a positive effect on improving their knowledge and attitude. **Recommendations:** Healthcare providers should encourage mothers to use coping strategies that are likely to be more effective. Further studies should focus on the quality of life and the coping strategies used by women with children who have congenital anomalies.

Keywords: Knowledge, Attitude, Coping strategies, Pregnant women, Antenatal nursing intervention, Congenital anomalies.

Introduction

Congenital anomalies are considered a public health concern since they result in increasing disabilities and mortalities. They constitute a major cause of spontaneous abortion and stillbirth. Children who survive with congenital anomalies suffer an increased risk of developing cognitive, physical, and social problems. Worldwide, congenital anomalies occur in 2-4% of all birth (Rasmussen et al., 2019), and the Arab region

countries record more congenital anomalies than non-Arab countries (Al-Gazali et al., 2018).

Although the exact causes of congenital anomalies stay unknown in almost half of the incidents, genetic, maternal, nutritional, ecologic, economic, and environmental risk factors have been suggested (Singh et al., 2019). Consanguineous marriages, especially within the Muslim communities, have been also referred to as an important risk factor contributing to congenital anomalies, which

may explain the relatively higher rates of congenital anomalies in Arab and Muslim countries (**Tayebi et al., 2015**).

Studies show that parents who cope with stress using problem-centered strategies have lower levels of stress as compared to those that use avoidance strategies. Family intervention programs have helped stressed families view difficult situations as less overwhelming, and teach them to handle their emotions and improve social relations. Family interventions assist the mothers and fathers to limit their negative behavior and thoughts (e.g., obsessive thoughts like spending almost all of their time with the child, etc.) and focus on other areas of their life such as being a couple, hobbies, friends, or work. However, the family must be able to opt for this type of intervention when the child's disability is diagnosed. At times, they may rely on support groups that assist families in satisfying their needs and help them rationally understand the events that have taken place (**Collins et al. 2017**).

Understanding the various types and etiologies of congenital anomalies is crucial for the preventive programs, and early recognition of congenital anomalies plays a pivotal role in improving the efficacy of the rehabilitation programs. Further, adequate knowledge about the types and risk factors leading to congenital anomalies among pregnant women can help in the prevention of perinatal morbidities and mortalities (**Taboo, 2012**). The process of detecting fetal abnormalities based on ultrasound and prenatal screening can cause significant social, physical, psychological, and emotional stress in pregnant women (**Irani et al., 2019**). Therefore, identifying effective coping strategies can improve the health of pregnant women and can lead to help women choose coping strategies following the contextual factors (**Mosher et al., 2019**).

The process of detecting fetal abnormalities based on ultrasound and prenatal screening can cause significant social, physical, psychological, and emotional stress in pregnant women (**Kamranpour et al., 2019**). Previous studies reported that receiving social support from pregnant women after detected disease can reduce depression, anxiety, psychosocial morbidity, and post-traumatic stress disorder symptoms (**Schafer et al., 2017**).

The difficulty of this process often requires coping strategies to adapt to the situation. Coping has been defined as a behavioral and cognitive effort to "manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of a person. Previous studies show that patients with an ineffective coping style illustrated inappropriate management of their disease. They reported that coping style affected the mental health and health behaviors of the patients, which could affect mortality and morbidity due to the disease. When health providers know effective coping strategies, they can better help patients to cope with this difficult situation (**Kaasen et al., 2013**).

A review of the studies conducted on this subject shows that the most common coping strategies that patients reported as effective in coping with their disease included comparing one's situation with something worse, religiousness and spirituality, acceptance of the situation, seeking information, and optimism and positive thinking (**Yu & Sherman, 2015**). Previous studies have reported that receiving social support after the detection of disease can reduce depression, psychosocial morbidity, and post-traumatic stress disorder symptoms (**McCann & Lubman, 2015**).

Coping, a multidimensional process referring to how individuals deal with stress, involves conscious cognitive and/or behavioral efforts to deal with events appraised as stressful, or exceeding the resources of the individual. The two types of coping are problem-focused coping and emotion-focused coping. An individual can apply either or both types of coping to a situation (**Smith et al., 2017**).

Besides, nurses have an important role in supporting and educating mothers who have children with congenital anomalies to help them handle the physical and psychological problems resulting from congenital anomalies, and knowledgeable mothers can better cooperate with the nurses to build up an effective connection with their children.

Significance of the study:

Although congenital anomalies occur in up to 4% of births and Arab communities show higher rates, little is known about the knowledge of pregnant women in Egypt about

congenital anomalies and their attitudes towards these disorders. We think that knowledgeable mothers would help in screening and protection. There is an urgent need for antenatal nursing intervention for pregnant women in similar stressful situations who are unable to suitably cope. By gaining control over the stressful factors and determining suitable coping strategies, the emotional state of these families can be improved (Robles and Romero 2016).

Aim of the study:

This study aimed to evaluate the effect of antenatal nursing interventions on knowledge, attitudes, and coping strategies of pregnant women who detected fetal anomalies regarding congenital anomalies **through:**

- Assessing the pregnant women knowledge who detected fetal anomalies regarding congenital anomalies
- Assessing the pregnant women attitudes who detected fetal anomalies regarding congenital anomalies.
- Implementing coping strategies for pregnant women who detected fetal anomalies regarding congenital anomalies
- Evaluating the effect of antenatal nursing intervention on pregnant women knowledge, attitude, and coping strategies.

Hypothesis

H1: The pregnant women who are exposed to the antenatal nursing intervention regarding congenital anomalies their knowledge will be improved compared to their pre-intervention level.

H2: The pregnant women who are exposed to the antenatal nursing intervention regarding congenital anomalies their attitude will be improved compared to their pre-intervention level.

Subjects and Method

Research design:

A quasi-experimental design was utilized in this study. Quasi-experimental research is a prospective or retrospective study in which patients self-select or are selected into one of some different treatment groups to compare the

real effectiveness and safety of non-randomized treatments (Maciejewski, 2020).

Setting:

In this nursing intervention, a total of 75 pregnant women attending the antenatal clinic at Beni-Suef University hospital and general hospital were included. The study locale, Beni-Suef city, is the capital of the Beni-Suef governorate and situated 110 km south of Cairo.

Sample:

Sample type:

A Purposive sample was used.

Sample size:

The sample size was calculated using Epi-Info version 7 Stat Calc, [Center for Disease Control (CDC), WHO], based on the following criteria; improvement rate of 50%, the confidence level of 95%, and margin of error of 5%.

All the women attending the antenatal clinic at Beni-Suef University hospital during the first week of October 2019 were asked to participate. Out of 143 women, a total of 92 women agreed to participate giving us a response rate of 64.3%, however, only 75 women attended the sessions of the program and were included in the analysis.

Data Collection:

Four tools were used for data collection.

Tool I: A structured interviewing questionnaire this tool was developed by the researchers after reviewing related literature (Yu & Sherman, 2015; McCann & Lubman, 2015; Schafer et al., 2017; and Irani et al., 2019).

and consisted of two parts:

Part (1): This tool was used to collect demographic characteristics of pregnant women (age, residence, education, occupation)

Part (2): This tool was used to collect obstetrical history included gravidity and parity.

Tool 2: Assessment of pregnant women's knowledge about the congenital anomalies: It included 16 items related to the definition, types, causes, and prevention.

Scoring system:

It included 3 open-ended questions asking for the congenital anomalies, while the model answers were given to the interviewer. Women were given a score from 0 to 6 in each question according to their answers. One point was given to every correct answer, so women who could detect 6 types of congenital anomalies were given 6, those who could name 6 risk factors were given 6, and women who could mention 6 preventive precautions were given 6. The total score of knowledge was 18, and the highest possible score was 18 and the lowest score was 0. Scores $\geq 60\%$ of the total score were considered of optimal knowledge.

Tool 3: Attitude scale: This tool is used to evaluate attitudes of pregnant women towards how detected fetal congenital anomalies.

Scoring system:

The subject's response was recorded using a Likert type, the attitude part included 3 yes/no questions with scores from 0 to 3, and women with scores of 2 or 3 were considered of positive attitude.

Tool 4: parental Coping strategy inventory (PCSI) assessment instrument, to be used for the larger field study, consisting of a total of 68 items divided among the 12 subscales. For each item, parents were presented with five graded responses: strongly disagree, disagree, neutral, agree, or strongly agree.

Scoring system:

The items composed of (5) point Likert scale with response options are: strongly disagree, disagree, agree, and strongly agree. A higher score means greater use of particular coping strategies.

The coping items were scored (5, 4, 3, 2) and (1) for the responses strongly agree, agree, neutral, disagree, and strongly disagree respectively for each area, the scores of the

items were summed up and the total divided by the number of items, given a mean score for the part. These scores were converted into a percent score. It is included:

Learning scale

- L1. Searching for related information
- L2. Learning from others who are experienced
- L3. Searching for related alternative therapy
- L4. Learning information related to treatment
- L5. Learning from a health care professional
- L6. Learning how to use medication
- L7. Learning about the progress of illness change
- L8. Learning about the side-effect of treatments and illness
- L9. Learning about what would happen to my children
- L10. Learning knowledge related to the illness

Struggling scale

- S1. Hesitation in deciding on choosing the right treatment (between western and alternative therapy)
- S2. Wondering whether one should give up the western treatment
- S3. Not knowing how to solve the conflict of medical decision between family members
- S4. Not knowing how to make a medical decision when seeing the child suffer from side-effects
- S5. Not knowing how to tell the truth to the child

Interaction with patient scale

- P1. Discussing the illness
- P2. Discussing what has to be done
- P3. Sharing concerns and feelings
- P4. Confronting the difficulty together
- P5. Letting the child help with chores
- P6. Satisfying the child's need as much as possible

Interaction with spouse

- SP1. Agreement with the decision of illness and treatment
- SP2. Understanding and talking with others
- SP3. Facing the difficulty together
- SP4. Helping with chores
- SP5. Having enough time to be with a spouse
- SP6. Maintaining a normal sexual life
- SP7. Quarreling over child's illness

Interaction with a healthy sibling

- H1. Disclosure of the illness
- H2. Discussing the illness
- H3. Having an opportunity to express their feelings
- H4. Helping with chores as before
- H5. If there is an argument, be generous to the sick child first

Emotion support

- E1. Someone who can listen to your concerns and feelings
- E2. Someone concerned about your health
- E3. Someone who can comfort you when you have difficulty
- E4. Someone who can inspire you to continue your life

Information support

- I1. Someone provides you with information about the illness
- I2. Someone advises you about daily living
- I3. Someone advises you to take your child to the hospital
- I4. Someone discusses the future with you and a plan
- I5. Someone provides solutions to your problem

Actual support

- A1. Someone works with you to let you get away from difficulty

- A2. Someone helps you do chores when your child is sick
- A3. Someone helps you to do some exercise
- A4. Someone can provide you with financial or material support

Maintaining stability

- T1. Trying to forget unpleasant things
- T2. Feeling guilty for not caring good care of the child
- T3. Finding someone to talk about the feelings
- T4. Escaping from reality
- T5. Smoking
- T6. Drinking
- T7. Taking medication
- T8. Being alone

Maintaining an optimistic state of mind

- O1. Having faith in the recovery of the child
- O2. Having hope in the progress of the illness
- O3. Would be happy when seeing any progress of the illness
- O4. Would like to try although there is not much chance
- O5. Believing that there is a way out of everything
- O6. Having faith in health care professionals

Searching for spiritual meaning

- M1. It would be the only way if this is the child's destiny
- M2. Illness is because of the child's past sin
- M3. A tribulation from god 3á20
- M4. Searching for meaning as to why the child is sick

Increasing religious activities

- R1. Praying

- R2. Asking for solutions from the gods by performing a religious ritual
- R3 Using the ritual to change the destiny of the child
- R4. Wearing the Fu or halidome to bless

Operational Design

This design involved the details of the preparatory phase of the study, the pilot study, and the fieldwork.

Preparatory phase:

The researcher reviewed the literature and prepared the data collection tools including the socio-demographic as well as the psychosocial problems among pregnant women who detected fetal anomalies and coping strategies

Validity of the study:

Tools used in the study were developed by the researchers after reviewing the current local and international related literature using books, articles, and scientific magazines. This helped them to be acquainted with the problem and guided them in the process of tools' designing.

Reliability of the study:

The Cronbach's alpha for reliability was 0.71 while content validity was assessed by 3 professors in the field of the study to test its contents and face validity.

Pilot study

A pilot study was carried out on 10 women was conducted to test the validity and reliability of the questionnaire. Results obtained were useful in an appraisal and modification of the tools; these subjects were later excluded from the sample of the study.

Fieldwork:

Data collected from the beginning of October 2019 and the end of January 2020. The researchers attained predetermine setting 3 days per week (Saturday, Sunday, and Monday) from 9 am to 2 pm. The study was conducted through initial assessment, planning, implementation, and evaluation phases. In the initial phase, the researchers asked pregnant women and record the answer in an Arabic-

language questionnaire. Then, the knowledge and attitude of the pregnant women were assessed by one investigator, to avoid inter-observer bias, using an interview questionnaire.

During the initial phase, the researcher met the pregnant women recruited for the study at the antenatal clinic at the Beni-Suef University Hospital, Oral consent was obtained from each study participant after an explanation of the study aim and benefit in each study setting. Then introduced herself and explained the purpose of the research. In this phase, all pregnant women were interviewed individually to collect data related to the socio-demographic status, present obstetrical history, as well as the history of previous pregnancies and deliveries utilizing the structured interviewing schedule. The interview took around 15 minutes to be completed for each interview.

Implementation phase: The awareness program, designed by the investigators, included 3 sessions, 30 minutes each. The first session focused on explaining the different types of congenital disorders, the second session discussed the risk factors associating with the development of congenital anomalies with providing different coping strategies to pregnant women to help them to cope with the situation, while the third session was about the prevention and screening for anomalies. At the same time, the three sessions aimed at changing the negative attitudes of pregnant women towards congenital anomalies. Brochures and leaflets, supported by illustrated figures and graphs, have been distributed.

Evaluation phase: all women were assessed again over their knowledge and attitude using the same tools (2, 3, and 4) and the scoring system was similar to that of the baseline assessment after one month of intervention.

Ethical Considerations

The study was approved by the ethical scientific research committee at the Faculty of Nursing, Beni-Suef University, and data for each participant were collected only after obtaining verbal consent. Then explaining the aim of the study was done simply and clearly to be understood by common people. Data were

considered confidential and not be used outside this study.

Statistical analysis:

Data entry, verification, and validation were carried out using standard computer software. Data were analyzed using the software, Statistical Package for Social Science (SPSS Inc. Released 2009, PASW Statistics for Windows, version 18.0: SPSS Inc., Chicago, Illinois, USA), then processed and tabulated. Frequency distribution with its percentage and descriptive statistics with mean and standard deviation were calculated. Chi-square, t-test, correlations were done whenever needed. P values of less than 0.05 were considered significant.

Results

Out of the 75 pregnant women who were included in this awareness program, 32% were living in urban areas and 68% were living in rural areas. The mean age of the participating women was 25.9 ± 5.4 years, and 64% of them were literate. Only 21.3% of the pregnant women were in their first trimester, while 45.3% were in their second trimester. Almost a quarter of the women were primigravida, and 76% were multi-gravida, and a high of 72% had 2 children or less (Tables 1, 3).

The results showed that women residing in urban areas were more likely to have good knowledge ($p < 0.05$), while older women and women with more than 2 children had more positive attitudes towards congenital anomalies ($p < 0.05$). Other socio-demographic and obstetric characteristics showed no statistical differences whether between knowledgeable women and those with suboptimal knowledge or between women with positive and negative attitudes (Tables 1, 3).

Baseline assessment of the participating women's knowledge about congenital anomalies showed that only 5 (6.7%) had optimal knowledge about congenital anomalies

and this frequency improved after the awareness program to 32 (42.7%) ($p < 0.05$) (Figure1). In detail, knowledge about types raised from 1.47 ± 1.38 to 3.45 ± 1.61 , risk factors from 1.51 ± 1.45 to 3.61 ± 1.77 , and prevention from 1.89 ± 1.56 to 3.69 ± 1.51 ($p < 0.05$) (Table 2).

Alike, baseline assessment of the participating women's attitude towards congenital anomalies showed that 36 (48%) had positive attitudes towards congenital anomalies and this frequency improved after the awareness program to 58 (77.3%) ($p < 0.05$) (Figure2). In detail, attitude towards having a child with anomaly raised from 0.29 ± 0.46 to 0.43 ± 0.50 , chances of rehabilitation from 0.40 ± 0.49 to 0.77 ± 0.42 , and leading a normal life from 0.64 ± 0.48 to 0.89 ± 0.31 ($p < 0.05$) (Table 4).

Table (5) indicated the coping strategies used by pregnant women, it is obvious that religious activities were the most frequent strategy used (89%), followed by spiritual (80%), and information support (76%).

Table (6): The table described the coping strategies used by pregnant women following their prenatal diagnosis of fetal anomalies. These coping strategies included seeking information, religiousness and spirituality, cognitive avoidance, and seeking social support and their subscales. It's indicated a significant improvement in all items of Coping Strategies Inventory at the post- antenatal nursing intervention than pre- antenatal nursing intervention.

Table (7): The table showed that there was a significant correlation between the knowledge and Coping Strategies Inventory of the studied pregnant women, and a significant correlation between the attitude and Coping Strategies Inventory of the studied pregnant women as pre-post after one month after one month of the intervention ($p < 0.05$).

Table 1: Association between socio-demographic characteristics of the pregnant women and their knowledge about congenital anomalies

Socio-demographic characteristics		Optimal n=5 (%)	Suboptimal n=70 (%)	Total n=75 (%)	P-value
School site	Urban	4 (16.7)	20 (83.3)	24 (32.0)	0.034*
	Rural	1 (2.0)	50 (98.0)	51 (68.0)	
Age (Mean±Sd) years		27.8±5.8	25.8±5.4	25.9±5.4	0.424
Education	Literate	5 (10.4)	43 (89.6)	48 (64.0)	0.099
	Illiterate	0 (0.0)	27 (100.0)	27 (36.0)	
Trimester	1 st	2 (12.5)	14 (87.5)	16 (21.3)	0.550
	2 nd	2 (5.9)	32 (94.1)	34 (45.3)	
	3 rd	1 (4.0)	24 (96.0)	25 (33.3)	
Gravidity	Primi	2 (11.1)	16 (88.9)	18 (24.0)	0.345
	Multi	3 (5.3)	54 (94.7)	57 (76.0)	
Parity	≤ 2	4 (7.4)	50 (92.6)	54 (72.0)	0.568
	> 2	1 (4.8)	20 (95.2)	21 (28.0)	

**p*-value is considered significant

Table 2: Improvement of the participating pregnant women's knowledge about congenital anomalies after one month of nursing intervention

Items	Before	After	(CI of mean difference)	P-value
Types	1.47±1.38	3.45±1.61	-2.25:-1.73	<0.001*
Risk factors	1.51±1.45	3.61±1.77	-2.39:-1.82	<0.001*
Prevention	1.89±1.56	3.69±1.51	-2.07:-1.53	<0.001*

**p* value is considered significant

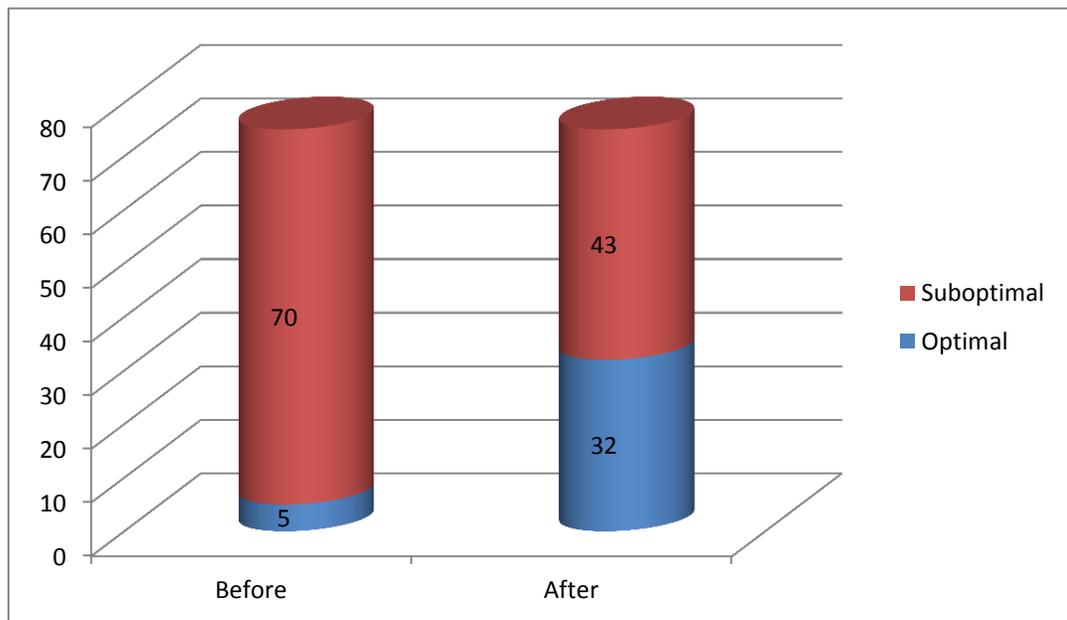
**Figure 1:** Improvement of the participating pregnant women's knowledge about congenital anomalies after one month of nursing intervention.

Table 3: Association between socio-demographic characteristics of the pregnant women and their attitude towards congenital anomalies

Socio-demographic characteristics		Positive n=36 (%)	Negative n=39 (%)	Total n=75 (%)	P-value
School site	Urban	12 (50.0)	12 (50.0)	24 (32.0)	0.503
	Rural	24 (47.1)	27 (52.9)	51 (68.0)	
Age (Mean±Sd) years		27.2±6.1	24.7±4.4	25.9±5.4	0.048*
Education	Literate	21 (43.8)	27 (56.2)	48 (64.0)	0.229
	Illiterate	15 (55.6)	12 (44.4)	27 (36.0)	
Trimester	1st	7 (43.8)	9 (56.2)	16 (21.3)	0.449
	2nd	19 (55.9)	15 (44.1)	34 (45.3)	
	3rd	10 (40.0)	15 (60.0)	25 (33.3)	
Gravidity	Primi	6 (33.3)	12 (66.7)	18 (24.0)	0.123
	Multi	30 (52.6)	27 (47.4)	57 (76.0)	
Parity	≤ 2	22 (40.7)	32 (59.3)	54 (72.0)	0.039*
	> 2	14 (66.7)	7 (33.3)	21 (28.0)	

*p-value is considered significant

Table 4: Improvement of the participating pregnant women's attitude towards congenital anomalies after nursing intervention

Items	Before	After	(CI of mean difference)	P-value
Child with anomaly	0.29±0.46	0.43±0.50	-0.01:-0.25	0.032*
Rehabilitation	0.40±0.49	0.77±0.42	-0.50:-0.24	<0.001*
Leading normal life	0.64±0.48	0.89±0.31	-0.35:-0.15	<0.001*

*p value is considered significant

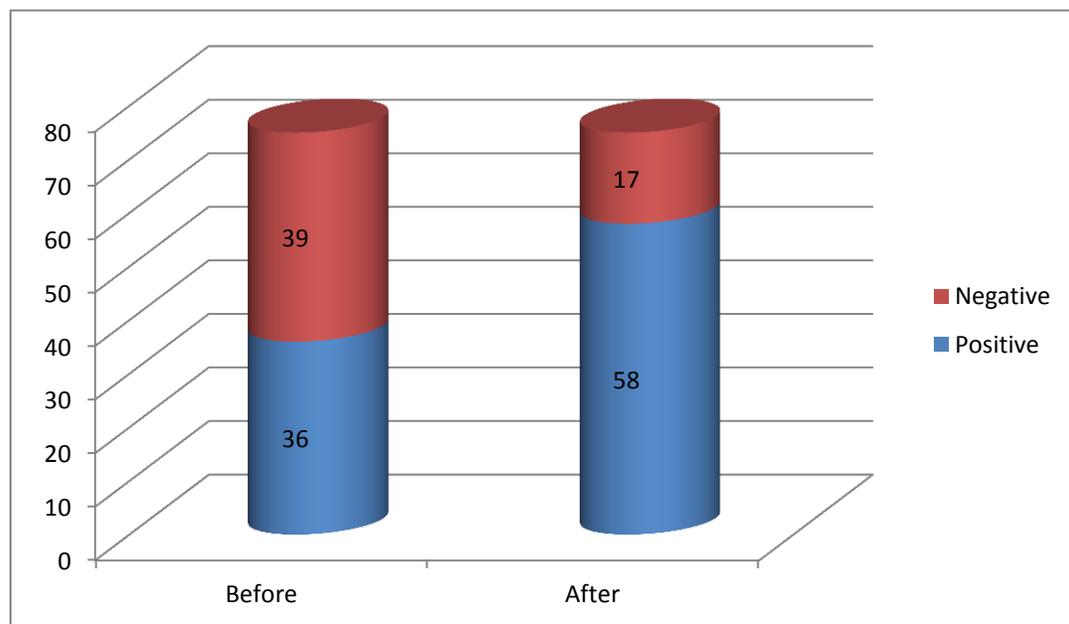
**Figure 2:** Improvement of the participating pregnant women's attitude towards congenital anomalies after the nursing intervention

Table 5: Percentage distribution regarding coping strategies used by the studied pregnant woman who detects congenital anomalies

Coping Strategies Inventory items	No	%
Learning scale	40	54
Struggling scale	17	23
Interaction with patient scale	25	33
Interaction with spouse	42	56
Interaction with a healthy sibling	18	24
Emotion support	50	67
Information support	57	76
Actual support	58	78
Maintaining stability	34	45
Maintaining an optimistic state of mind	25	34
Searching for spiritual meaning	60	80
Increasing religious activities	67	89

Table 6: Mean differences regarding Coping Strategies Inventory of the studied pregnant woman who detect congenital anomalies as pre and after one month after the nursing intervention

Coping Strategies Inventory items (CSI)	Pre-program	After one month of intervention	X 2	P-value
Learning scale	5.53 ±2.24	9.27± 2.22	0.572	0.000
Struggling scale	2.23± 0.67	4.55± 0.43	0.593	0.000
Interaction with patient scale	2.82± 0.83	5.74± 0.42	0.094	0.000
Interaction with spouse	3.57± 0.29	6.27± 0.32	0.258	0.000
Interaction with a healthy sibling	1.35± 0.36	3.54± 1.32	0.389	0.000
Emotion support	1.24± 0.69	3.72± 0.22	0.503	0.000
Information support	2.67± 0.03	4.02 ±0.23	0.094	0.000
Actual support	1.21± 0.24	3.09 ±0.45	0.428	0.000
Maintaining stability	3.87± 1.23	6.32± 0.54	0.167	0.000
Maintaining an optimistic state of mind	2.34 ±0.52	4.73± 1.46	0.137	0.000
Searching for spiritual meaning	1.33± 0.27	3.08 ±0.35	0.096	0.000
Increasing religious activities	1.23± 0.42	3.11 ±0.23	0.447	0.000

Table 7: Correlation between Knowledge, attitude, and Coping Strategies Inventory of the studied pregnant women as pre and after one month after the nursing intervention

Variables	Coping Strategies Inventory			
	Pre-program		After one month of intervention	
	R	P	R	P
Knowledge				
Optimal	0.84	<0.05*	0.53	<0.05*
Suboptimal	0.86	<0.05*	0.84	<0.05*
Attitude				
Negative	0.96	<0.05*	0.93	<0.05*
Positive	0.97	<0.05*	0.92	<0.05*

Discussion:

Women with appropriate knowledge about congenital anomalies can participate in screening for these disorders and avoid their

negative consequences. In the current study, the results revealed that only 6.7% had optimal knowledge about congenital anomalies; types, risk factors, and prevention. This indicated the

importance of introducing the nursing intervention to pregnant women.

This rate is considerably lower than the findings of other studies. This result is not matched with **Mohammed et al., (2013)** in their study involved over 100 Egyptian women and 100 Saudi women showed that more than 75% of the Egyptian women and 51% of the Saudi women had satisfactory levels of knowledge about congenital anomalies.

Also, **Lawal et al., (2015)** found in their cross-sectional study included over 714 mothers from Nigeria and registered for antenatal care, that 25.6% were aware of the congenital anomalies. Another study conducted by **Masmouh et al., (2015)** from Iran on 150 pregnant women showed that almost 80% of the participants had moderate to high knowledge about congenital anomalies. In a study of over 443 pregnant women from Ghana, **Bello et al., (2015)** found that 48.1% had optimal knowledge about congenital anomalies. In Singapore, 80.7% and 71.7% of postnatal and antenatal mothers detected the risk factors for Down syndrome (**Tan et al., 2014**).

Results of the current study illustrated that only rural residence was a risk factor for suboptimal knowledge. Age, parity, and literacy did not show an impact on the knowledge of the participating pregnant women which consisted with a report conducted by **Bello et al., (2013)** who found the same results.

However, these findings contradicted previous findings that showed that older women, women with higher levels of education, and mothers with more children were more likely to have better knowledge about congenital anomalies (**Masmouh et al., 2015 and Corrigan et al., 2018**).

However, the variations between our results and other studies may be attributed to using different assessment tools and scoring methods, and the differences in the targeted populations. In addition, our study was conducted on women attending the antenatal clinics at Beni-Suef University hospital and those women had lower educational levels. The mean age of the participating women in our

study was younger than the cited studies. All these factors together can explain the lower knowledge scores reported in this study.

The present study revealed that on the other hand, baseline assessment of the participating women's attitude towards congenital anomalies showed that 48% had positive attitudes and improved post-intervention. This reflected the positive effects of nursing intervention. This result is in the same line with the study conducted by **Mohammed et al., (2013)** involved over the Egyptian and Saudi women, 77% of the Egyptian mothers and 72% of the Saudi mothers had negative attitudes towards congenital anomalies in children. Not only the mothers but also the children with congenital anomalies have shown in previous studies negative self-concept and low self-esteem. Similar findings were done by point to the need for psychosocial interventions for both mothers with children who have congenital anomalies and for the children themselves (**Antshel et al., 2015 and Pinquart, 2013**).

However, regardless of their risk factors or incidence in births, every congenital anomaly is a disturbing experience for women, and having a child with a congenital anomaly has a profound negative effect on them (**Mohammed et al., 2013**). The religious aspect has to be put in mind while handling this problem in Arab communities since many women believe that the congenital anomalies affecting children are simply God's will and they had nothing to do with (**Fadel, 2018**).

The results of the present study indicated a significant improvement in all items of the Coping Strategies Inventory at the post-antenatal nursing intervention than pre-antenatal nursing intervention.

This result is supported by **Bazarganipour et al., (2014)** conducted a study about coping strategies in patients with polycystic ovarian syndrome and found that people sought a medical diagnosis by seeking information to better understand and be assured of the diagnosis .also, the result agrees with **Saab et al., (2014)**.

The results of the present study indicated that religious activities were the most frequent

strategy used (89%), followed by spiritual (80%), and information support (76%).

This reflected that religion considered an effective way to cope with problems due to its vital effect on people's lives in improving the individual religious attitude and improving the individuals' mental health (**Rodriguez & Henderson, 2014**) hope to have God's help in difficult and stressful life conditions, and taking advantage of spiritual support are all methods by which religious people can be less damaged while facing stressful life events (**Asayesh et al., 2013**).

This result is in the same line with the study conducted by **Asayesh et al., (2013)** in Iranian titled with spiritual well-being and religious coping strategies among hemodialysis patients and found that using spiritual coping strategies play an important role in coping process in pregnant women with fetal abnormalities.

This result is in the same line with the study conducted by **Germeni & Schulz, (2014)** titled with Information seeking and avoidance throughout the cancer patient and reported that avoidance of situations and receiving negative information were among the strategies applied by women that could reduce the amount of threatening risks for fetal health during the pregnancy. Researchers believed that the avoidance strategy moderated patients' feelings and immediately led to positive results after stressful events, but it did not lead to good results in the long term.

The results of the current study also indicated that pregnant women received support from different sources from their families. Attention and support of the family for assurance in mothers.

This result is matched with the study conducted by **Zamanzadeh et al., (2017)** titled with Relationship between quality of life and social support in hemodialysis patients and found that husband was the most important source of support for pregnant women during illnesses. The presence of the spouse increased the sense of connection with others, could affect individual health and performance, and increased satisfaction during the diagnosis stage (**Harden et al., 2017**). The positive

support of peers and doctors also created a sense of hope and strengthened women's spirits. Other studies also indicated the positive impact of social support on adapting to illnesses (**Jouybari et al., 2016**).

This result is supported by **Remedios et al., (2019)** who found low means in the problem-solving sub-scale of the CSI scale, and therefore lower coping capacity before the intervention, which improved after the program and was higher at the follow-up as well.

The present study indicated that a significant correlation between the knowledge and Coping Strategies Inventory of the studied pregnant women, and a significant correlation between the attitude and Coping Strategies Inventory of the studied pregnant women as pre-post after one month after one month of the intervention ($p < 0.05$).

This is reflected in the effectiveness of intervention in changing and improving knowledge and attitude among pregnant women who detected fetal with congenital anomalies and coping strategies. Because the antenatal nursing intervention helps pregnant women to learn, understand, and raise their awareness, and it may support the pregnant women's psychological acceptance. Also, it is meaning that pregnant women desire to have information about their diagnosis and ask for strategies to improve their health status.

The results of this study are supported by **Iida et al., (2018)** who found a change in SCI and positively correlated with the change of STAI "trait anxiety," and is reporting that the decrease in stress-coping style "escape-avoidance" correlates with the decrease in trait anxiety. The family intervention may also be useful in discouraging pregnant women from perceiving the situation as overwhelming (**Guevara and González 2018**). To ensure this, the intervention should focus on teaching how to control situations by reducing negative behaviors and thoughts and improving other aspects of life such as couple relationships, friends, hobbies, etc.

The antenatal nursing intervention that has been implemented in this study achieved a positive impact in improving the knowledge and attitude of women towards congenital

anomalies; optimal knowledge from 6.7% to 42.7% and positive attitude from 48% to 77.3%. The current study showed that the implemented hospital-based program that aimed at improving the knowledge of pregnant women about types, risk factors, and prevention of congenital anomalies and changing their negative attitudes towards the same topic has achieved its goals.

The success of our program could be attributed to many reasons. First, the program was multi-session and each session focused on only one aspect of knowledge about congenital anomalies. This offered a better chance for pregnant women to understand each aspect. The relatively short period of the sessions allowed women to participate and minimize the loss to follow-up. Moreover, the program was designed to suit illiterate women and those with lower levels of education by using simple definitions, direct phrases, and illustrating figures. Besides, the investigators encouraged the participants to ask freely, discuss their opinions, and express their attitudes to reach better outcomes from the program.

Conclusion:

The findings of the current study concluded that pregnant women had knowledge deficiency and have negative attitudes towards congenital anomalies. Besides, antenatal nursing intervention for pregnant women regarding congenital anomalies had a positive effect on improving their knowledge and attitude after coping strategies implementation

Recommendations:

- Healthcare providers should encourage mothers to use coping strategies that are likely to be more effective.
- Further studies should focus on the quality of life and the coping strategies used by women with children who have congenital anomalies.
- Provide emotional and social support for families who experiences multiple emotions from the moment of diagnosis; therefore, they require consistently daily.
- Family orientation programs should be provided to improve their responses

Limitation

There was a Lack of husband participants studying at equal grades as pregnant women in the research. Hence, conducting a study on this group as a supplement to the present study is recommended.

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