

Effect of Video-Assisted Counseling Program on Pregnant Women's Knowledge and Practice towards Congenital Anomalies

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Abstract

Background: The major cause of death in both industrialized and developing nations is congenital abnormalities, which pose a public health risk. **Aim:** To investigate the effect of video-assisted counseling program on pregnant women's knowledge and practice towards congenital anomalies. **Design:** Quasi-experimental design (pre-post) was used to achieve the aim of this study. **Setting:** This study was applied in the antenatal clinic at Zagazig University Hospital. **Sample:** A purposive sample of 70 pregnant women (one group pretest and posttest) who attending the antenatal clinic and detected fetal anomalies. **Four tools were used for data collection:** (1) A structured interviewing questionnaire, (2) Pregnant women knowledge assessment sheet, (3) Pregnant women attitude assessment sheet and (4) Pregnant women's knowledge regarding screening practices. **Results:** This study found a highly significant difference between study participants' knowledge, attitudes, and practices about congenital anomalies before and after a video-assisted counseling program. **Conclusion:** Their knowledge, attitude, and practice have all improved as a result of the implementation of a video-assisted counseling program for pregnant women with congenital anomalies. **Recommendation:** ongoing counseling programs regarding congenital anomalies during pregnancy to all pregnant women, and replication of the study with a large sample size to further settings.

Key words: Congenital anomalies, Counseling program, pregnant women's knowledge and practice, Video-assisted.

Introduction:

Since congenital anomalies lead to rising impairments and fatalities, they are seen as a public health concern. They are a significant contributor to spontaneous abortion and stillbirth (Rasmussen et al., 2019). The risk factors for congenital anomalies have been even though the causes are still unknown in about half of the instances, as being genetic, maternal, nutritional, ecological, economic, and environmental (Singh et al., 2019). Consanguineous marriages have also been identified as a significant risk factor for congenital anomalies, particularly within Muslim groups (Tayebi et al., 2015).

Understanding the many forms and etiologies of congenital anomalies is crucial for prevention program, while early detection of congenital anomalies is crucial for

improving the efficacy of rehabilitation program. Furthermore, a detailed understanding of the kinds of congenital anomalies and the risk factors that lead to them in pregnant women might help to lower perinatal morbidities and fatalities (Taboo, 2012).

The process of diagnosing fetal anomalies through ultrasound and prenatal screening may cause pregnant women to undergo extremely high levels of social, physical, psychological, and emotional stress (Irani et al., 2019). The health of pregnant women can therefore be improved by learning good coping methods, which can also help women decide how to cope with the situation (Mosher et al., 2019).

The process of identifying fetal abnormalities through prenatal screening and ultrasound can cause pregnant mothers to feel

extreme social, physical, psychological, and emotional stress (Kamranpour et al., 2019). Anxiety, PTSD, psychosocial morbidity, and melancholy symptoms may be lessened, according to prior studies, if pregnant women are contacted for social assistance (Schafer et al., 2017).

The nurse's function as a counselor may be essential in preventive intervention efforts, particularly concerning self-medication usage during pregnancy and its detrimental implications. She must satisfy the needs of expectant mothers to promote their best health. Effective counseling has been associated with better and more favorable outcomes in terms of knowledge, attitude, and practice during pregnancy (Devi et al., 2019).

According to a video-assisted counseling program, people may make their judgments about the course of therapy and whether they will need it in the future because they have access to a variety of information. The information and attitudes that were improved by this counseling program with video assistance were effective. Hence, people with both moderate and low levels of education may find the video-assisted counseling program helpful (Kamranpour et al., 2019).

Significance of the study:

Little is known regarding pregnant women in Egypt's understanding of congenital anomalies and their attitudes about these disorders, even though these conditions can affect up to 4% of infants and are more common in Arab populations. We believe that mothers with information would aid in screening and prevention. Research showed that pregnant women frequently received the necessary information. A crucial factor in safe motherhood is congenital anomaly knowledge, attitude, and practice (KAP). Inadequate KAP among pregnant women may potentially have negative effects on the health of both the mother and the fetus. This suggests that to expand their awareness, counseling regarding congenital abnormalities during pregnancy is necessary. A good understanding of BD among expectant mothers could lead to early identification and rapid consultation with the appropriate medical professionals by nursing mothers and other careers.

To improve pregnant women's knowledge of congenital defects during pregnancy, an efficient video-assisted counseling program is needed. The impact of counseling on pregnant women's knowledge, attitudes, and practices about congenital abnormalities has been the subject of sporadically published studies in Egypt. Thus, the researcher sought to close this knowledge, attitude, and practice gap among pregnant women regarding congenital abnormalities by carrying out this study. Hence, to accomplish the purpose of this research, that to investigate the effect of video-assisted counseling program on pregnant women's knowledge and practice toward congenital anomalies

Operational definitions

Knowledge: Pregnant women receive knowledge about congenital abnormalities through counseling.

Attitude: About congenital abnormalities during pregnancy, pregnant women have an attitude.

Practice: The way pregnant women deal with congenital abnormalities is called "practice."

Aim of the study:

To investigate the effect of video-assisted counseling program on pregnant women's knowledge and practice of congenital anomalies

Research hypothesis:

H1: Pregnant women who are participating in the video-assisted counseling program will have a good level of knowledge regarding congenital anomalies post-program than pre-program.

H2: Pregnant women who participate in video-assisted counseling program will have a positive attitude regarding congenital anomalies post-program than pre-program

H3: Pregnant women who are participating in the video-assisted counseling program will have adequate practice regarding congenital anomalies post-program than pre-program.

Subjects and Method

Research design:

To accomplish the goal of this study, a quasi-experimental pre-post design was

adopted.

Data Collection Tools:

Tool I: A questionnaire for structured interviews Following a study of the relevant literature (Schafer et al., 2017 and Irani et al., 2019), which included two parts:

Part 1: Pregnant women's demographics (age, residence, education, occupation)

Part 2: Information on the number of prior births, prior ANC follow-up, history of birth defects in their prior infant, and history of birth defects in their family members.

Tool II: a questionnaire for pregnant women's knowledge of congenital anomalies. There were 16 items in all, including 16 elements about the definition, risk factors, types, causes, and preventive.

Scoring system:

Three open-ended questions in it asked about congenital defects, and the interviewer was given sample responses. According to their responses, women were assigned a score between 0 and 6 for each question. Women who correctly identified Six different congenital defects received six points, while those who correctly identified six risk factors and six preventative measures received six points each. Each accurate response was worth one point. There are three levels of knowledge scoring, as follows: -poor < 50% (scored from 0-6), 50–75% of knowledge is fair (average) (scored from 7-12) and good knowledge > 75% (scored from 13-18).

Tool III: Pregnant women's attitude assessment sheet: This tool is intended to assess pregnant women's attitudes concerning

Pilot study

It carried out on 10% of the studied subject (7 pregnant women) to ascertain the clarity, and applicability of the tools. Regarding the results of the pilot, no modifications to the study tools made and pilot study subjects included in the study sample.

Ethical consideration:

The Scientific Ethics Committee of the Nursing Faculty of Zagazig University granted ethical permission. Each lady was explained the study's purpose before giving her informed

fetal congenital abnormalities. It was a Likert scale with three possible responses: (0) disagree, (1) Neutral, and (2) agree.

Scoring system:

The overall score was between 0 and 10. Indicating a negative attitude towards prenatal congenital abnormalities was a total score of 0 to less than 5, whereas positive attitude was indicated by a total score of 5 to 10.

Tool IV: Pregnant women's knowledge regarding screening practices:

This instrument was used to evaluate women's knowledge regarding screening practices, fetal congenital anomaly detection methods, and follow-up procedures.

Scoring system for women's knowledge regarding screening practices:

(1) For correctly completed, (0) for not completed. A total of 0 to 30 points might be earned. A score of 60% was deemed adequate practice, and a score of 60% was deemed inadequate practice. The total practice scores were translated into percent scores.

Validity & Reliability of the Tools:

Five professionals in the field of obstetric and maternity nursing analyzed the tools and evaluated their content validity. To ensure completeness and relevancy, the modification was made when necessary. Reliability between tests was employed. Cronbach's alpha coefficients were used to calculate the tools' internal consistency. Cronbach's alpha values for the study tools were dependable at 0.86 for Tool I, 0.76 for Tool II, 0.81 for Tool III, and 0.84 for Tool (IV). Cronbach (1951) judged values of 0.70 or higher to be good.

agreement to participate. The privacy of women and the confidentiality of personal information were both fully respected. Each woman who volunteered to participate in the study received a brief explanation of the intervention before doing so, as well as information on their right to withdraw at any time.

Procedure:

The current study was conducted in five stages that were carried out in quick succession: the preparatory phase, the assessment and interviewing phase, the planning phase, the implementation phase, and the evaluation

phase. Six months, commencing at the beginning of March 2022 and ending at the end of August 2022, were dedicated to fieldwork.

The phase of preparation: To build the study's instruments, the study's design and data collection methods were developed after examining relevant recent, historical, local, and international literature in magazines, books, periodicals, journals, and computer searches.

Planning phase: A video-assisted counseling program was designed based on the results of the pre-test assessment.

To create the video-assisted counseling program, the following processes were used.

1. Development of the program's first draught for video-assisted counseling.

2. The program for video-assisted counseling is valid in terms of its content.

3. Writing the video-assisted counseling program's final draught.

Composing the first draught of the video-assisted counseling program:

The goal, criteria, literature research, expert viewpoints, level of comprehension of the women, simplicity of language, and pertinent audio-visual aids were all taken into consideration as the initial draught of the video-assisted counseling program was created.

Content validity of video-assisted counseling program:

The first iterations of the video-assisted counseling program were presented to experts, which included five nursing professors from the mother and newborn health nursing department, along with a checklist of criteria. There was 100% agreement that the program's content met the requirements. The provided feedback was taken into consideration and ensured the program for video-assisted counseling's authenticity and clarity.

Preparation of the final draft of the video-assisted counseling program

The video-assisted counseling program was modified after taking the advice of the professionals into account. The final version of the program for video-assisted counseling was produced after incorporating the experts' suggestions.

Description of video-assisted counseling program: The title of the video-assisted counseling program was "congenital anomalies." The following items are included in

it:

- Definition of fetal congenital anomalies

- Types of fetal congenital anomalies

- Risk factors for developing fetal congenital anomalies

- Fetal adverse effect results from fetal congenital anomalies.

- Prevention and screening for anomalies

- Changing the negative attitudes of pregnant women toward congenital anomalies

Implementation phase:

The researchers spent three days a week (9 am to 1 pm) in the aforementioned location. The researchers conducted two counseling sessions. Congenital anomaly kinds and their harmful effects on fetuses were discussed during counseling, as Risk factors from congenital anomalies, prevention and screening for anomalies, and changing the negative attitudes of pregnant women towards congenital anomalies.

Counseling sessions

The intended learning outcomes of the counseling session were:

Knowledge

- Summarize types of congenital anomalies.

- List fetal adverse effects of congenital anomalies

- Enumerate risk factors from congenital anomalies

- Identify prevention and screening for congenital anomalies.

- Talk about strategies for modifying pregnant women's negative attitudes toward congenital abnormalities.

Skills

- Demonstrate screening for congenital anomalies.

Competence

- Value the importance of proper screening for congenital anomalies.

Session Outline

- Definition of congenital anomalies.

- Types of congenital anomalies

- Risk factors for congenital anomalies

- The fetal adverse effect of congenital anomalies
- Prevention and screening for anomalies
- Modifying the negative attitudes of expectant mothers regarding congenital abnormalities

Evaluation phase: Immediately following the use of a video-assisted counseling program for congenital abnormalities, a post-test was conducted. To assess the program's impact on pregnant women's knowledge, attitudes, and practices about congenital abnormalities, the researchers employed tools II, III, and IV.

Statistical design:

Statistical Package of Social Science (SPSS) version 22 was used on an IBM personal computer to gather, tabulate, and statistically analyze the data (SPSS, Inc. Chicago, Illinois, USA). Where the aforementioned stats were used: Descriptive statistics: the presentation of qualitative data as percentages and numbers. Analytical statistics are employed to ascertain any potential relationships between the components under study. The significance of the difference between two correlated proportions was evaluated using the X² and McNemar's tests. P values greater than <0.05 were regarded as statistically insignificant. Statistics were considered significant at a P value of <0.05. Statistics experts deemed at P value of <0.001 to be highly significant.

Results

Table 1 shows that a significant portion of the women in the study (56%) were between the ages of 20 and 30 and had only completed their secondary education (50%). 86% % of the women in the study were housewives, and 79 % of them resided in rural areas.

The majority of the women who took part in the current study (84%) have given birth just once or twice before. The ANC follow-up had already begun for 71% of the women. Of the participant mothers, only (10%) had a history of a birth defect in a prior child (**Table 2**).

Figure 1 reveals that experience, followed by doctors (28%), was the primary source of information about congenital defects

for 30% of the women in the study. With a highly statistically significant difference between women's knowledge of congenital defects before and following the deployment of the video-assisted counseling program,

Table (3) demonstrated that there was an improvement regarding knowledge mean scores of study participants towards the congenital anomalies pre and post-video assisted counseling program (P <0.001).

Figure 2 showed that, before the installation of the video-assisted counseling program, 65% of the study's women participants had poor knowledge about congenital defects; however, after the program's implementation, their knowledge levels improved, and (66%) of them had good knowledge.

The study women's overall attitudes concerning congenital abnormalities before and after the video-assisted counseling program are compared in **Figure 3**. As can be seen from the figure, there was a highly significant difference between the total attitude before and after counseling, with 67% of study participants having a positive attitude towards congenital anomalies after the video-assisted counseling program compared to 17% of the studied women before the program.

The total practice of the examined ladies before and after the intervention of the video-assisted counseling program was made clear in **Figure (4)**. The bulk of them (81%) had poor congenital anomaly practices before program participation, whereas this number dropped to 23% after program intervention. On the other hand, just 19% of the women who were investigated had acceptable pre-program practices for congenital abnormalities compared to 77 % post-program intervention.

The study's women's total knowledge and total practice scores were correlated before and after the video-assisted counseling program, as shown in **Table (4)**. It should be mentioned that after the video-assisted counseling program, there was a statistically significant positive association between the overall knowledge scores of the investigated women and the total practice scores (p<0.001**).

Table (1): Demographic data of the studied women (N=70)

Variables	The studied women	
	No	%
Age years:		
Less than 20	11	16.0
20-30	39	56.0
31-45	20	28.0
Women education:		
Read & write	10	14.0
Secondary education	35	50.0
University	17	24.0
Postgraduate	8	12.0
Women occupation:		
Housewife	60	86.0
Employed	10	14.0
Residence:		
Rural	55	79.0
Urban	15	21.0

Table (2): Obstetric history of the studied women (N=70)

Obstetric history	The studied women	
	No	%
Number of previous births		
Yes	59	84.0
No	11	16.0
ANC follow-up previously		
Yes	50	71.0
No	20	29.0
Previous history of birth defect in their baby		
Yes	7	10.0
No	63	90.0

Figure (1): Sources of information about congenital anomalies among the studied women (N=70)

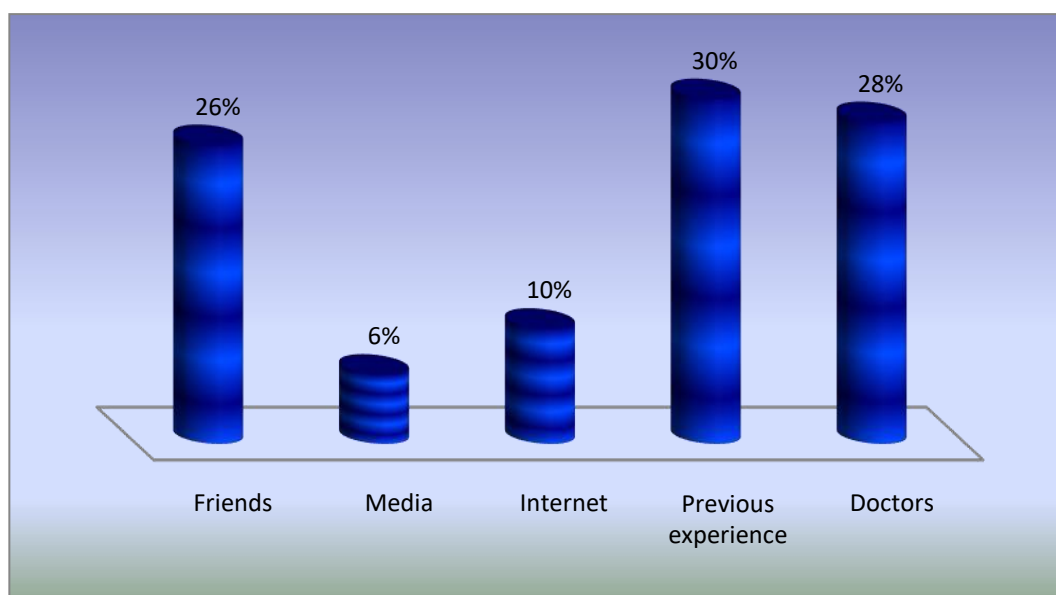


Table (3): Comparison between knowledge mean scores of study participants towards the congenital anomalies pre and post-video assisted counseling program (N=70)

Items	Before the video- assisted counseling Program	After the video- assisted counseling program	(CI of mean difference)	P-value
Definition	1.55±1.33	3.33±1.49	-2.44:-1.62	<0.001*
Types	1.56±1.33	3.34±1.49	-2.44:-1.62	<0.001*
Risk factors	1.34±1.32	3.59±1.66	-2.41:-1.76	<0.001*
Prevention	1.78±1.62	3.75±1.46	-2.09:-1.48	<0.001*

Figure (2): Comparison between the total knowledge level of the studied women towards congenital anomalies pre and post-video assisted counseling program (N=70):

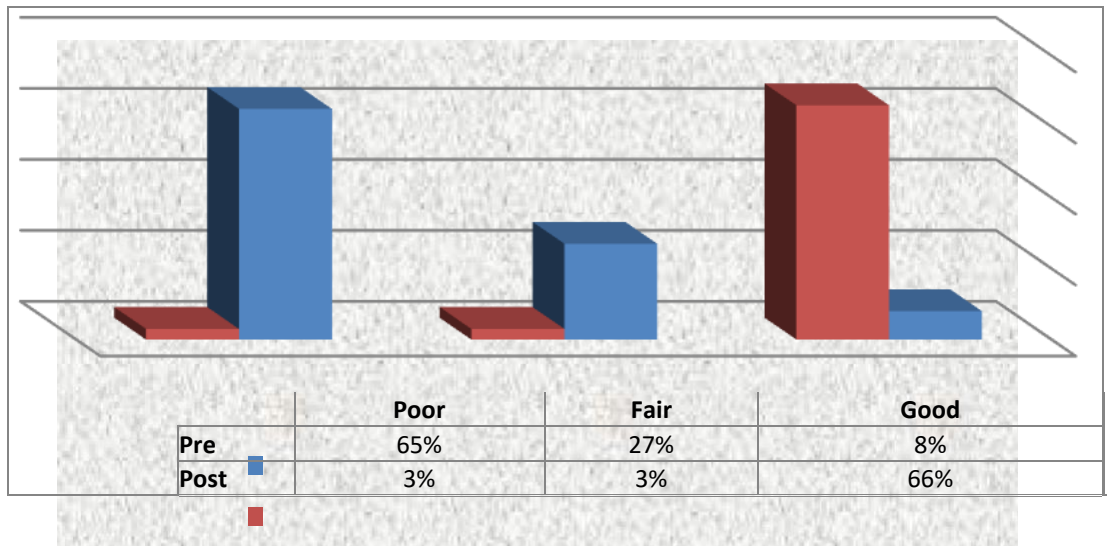


Figure (3): Comparison between the total attitude level of the studied women towards congenital anomalies pre and post-video-assisted counseling program (N=70):

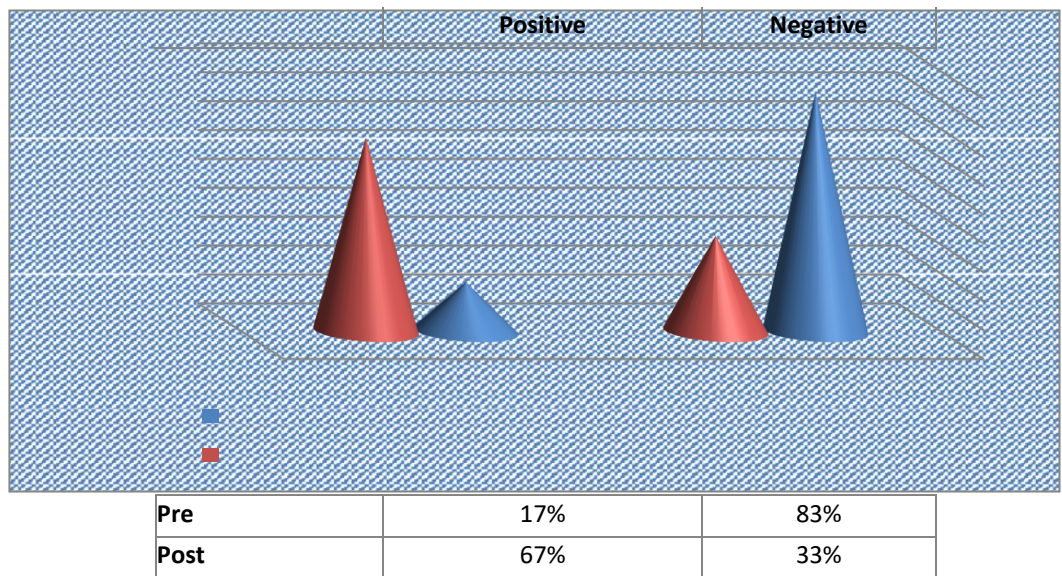


Figure (4): Percentage distribution of the studied women’s total practice regarding congenital anomalies pre and post-video-assisted counseling program (n=70).

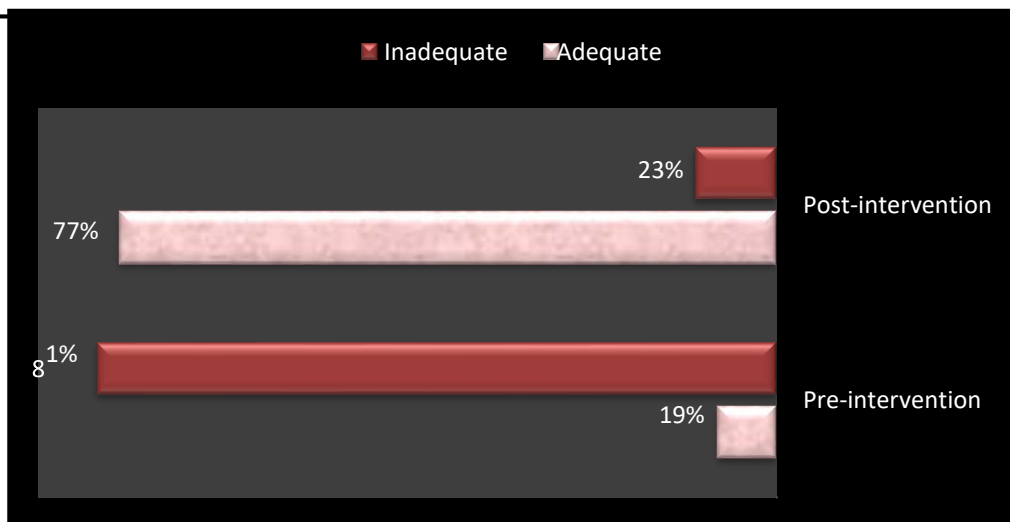


Table (4): Correlation between total knowledge score and total practice score of the studied women pre and post-video-assisted counseling program (n=70).

Variables	Pearson correlation coefficient			
	Total knowledge score			
	Pre-video-assisted counseling program (n=70)		Post video-assisted program (n=70)	
	r	P	r	P
Total practice score	.479	.000**	.688	.000**

** Correlation is significant at <0.01 level

Discussion:

An important factor in disease prevention is the women of reproductive age. Women who are properly informed about congenital anomalies can take part in screening for these conditions and prevent the negative effects that may result. Video technology is gaining popularity because it has special qualities that accurately depict the essence of nursing occurrences. Moreover, video technology is widely employed in nursing as a teaching tool since it offers consistent multi- media, multisensory information about the subject and its environment (Balasubramanian et al., 2018).

The results of the current study revealed that, before the intervention of the video-assisted counseling program,

nearly two-thirds of the study's women participants had poor knowledge awareness of congenital defects.

However, after program's implementation, their knowledge levels improved, and about two-thirds of them had good knowledge. This finding is consistent with research conducted in North Iran, Ghana, South- West Nigeria, and Sri Lanka, which found that a sizable majority of participants had insufficient general awareness about congenital abnormalities (Bello et al., 2013; Masoumeh et al., 2015; Kanchana and Youhasan, 2018; Ogamba et al., 2021; Silva et al., 2019). Similar studies also revealed that, although having an

insufficient general awareness of congenital anomalies, women's understanding of the risk factors for congenital malformations was moderate to high among the vast majority of respondents, which is consistent with this finding.

The findings showed that just 6.7% of respondents had the best knowledge of the types, risk factors, and prevention of congenital abnormalities. It was clear from this that pregnant women needed to be given nursing intervention. Compared to the results of other investigations, this rate is significantly lower. There is no match between this result and More than 75% of the Egyptian women and 51% of the Saudi women in **Mohammed et al., (2013)** study with over 100 Egyptian and 100 Saudi women had appropriate levels of knowledge of congenital abnormalities.

Moreover, **Lawal et al., (2015)** discovered that 25.6% of the 714 Nigerian mothers who participated in their cross-sectional study and were registered for antenatal care were aware of the congenital defects. A further study by Iranian researchers **Masmouh et al., (2015)** on 150 pregnant women revealed that over 80% of the participants knew something about congenital abnormalities on a moderate to a high level. **Bello et al., (2015)** reported that 48.1% of pregnant mothers in Ghana who participated in their survey had the best knowledge of congenital abnormalities. Mothers in Singapore identified the Down syndrome risk factors in 80.7% of postpartum and 71.7% of antepartum cases, respectively (**Tan et al., 2014**).

According to the current study's findings, only living in a rural area was a risk factor for having inadequate knowledge. Age, parity, and literacy did not affect the knowledge of the pregnant participants, according to a report by **Bello et al., (2013)** that came to the same

conclusions.

Although older women, women with greater levels of education, and moms of more children were more likely to have better knowledge about congenital malformations than younger women, these findings were in opposition to earlier research that had indicated that these factors (**Masmouh et al., 2015 and Corrigan et al., 2018**).

However, the disparities between our findings and those of other research might be explained by the use of various evaluation instruments

and scoring schemes, as well as the changes in the populations that were studied. Also, our study focused on pregnant women who visited the prenatal clinics at the selected University Hospital, and these women had less formal education. A study's participant women had a younger mean age than the studies that were mentioned. Together, these elements can explain why the knowledge ratings in this study were lower than average.

The current study found that there was a highly significant difference between the total attitude before and after counseling, with more than two-thirds of study participants having a positive attitude towards congenital anomalies after the video-assisted counseling program compared to less than one-fifth of the studied women before the program which had improved after the intervention. This demonstrated the advantageous results of nursing assistance. This finding is consistent with a study by **Mohammed et al., (2013)** that included both Egyptian and Saudi women. In that study, 77% of Egyptian moms and 72% of Saudi mothers expressed disapproval of congenital defects in children. Previous studies have revealed that congenitally abnormal children and mothers both exhibit poor

self-concepts and low self-esteem. Similar results hint at the necessity for psychological therapies for women of children with congenital abnormalities as well as for youngsters (Antshel et al., 2015 Pinquart, 2013). This is demonstrated by how well interventions changed and improved knowledge and attitude among pregnant women who discovered fetal congenital abnormalities and coping mechanisms. Because the video-assisted counseling program enables pregnant women to educate themselves and become more conscious.

Nursing students' direct knowledge, perceived confidence, and perceived knowledge can all be improved with the use of video technology, which offers flexible teaching options (Armour et al., 2021). In a similar vein, Manju and Prasad (2013) conducted a comparison study to evaluate the effectiveness of video-assisted versus lecture cum demonstration method of teaching on bag technique among second-year BSc nursing students in a chosen nursing colleague at Mangalore and found that the latter method was more effective.

Concerning The total practice of the studied women before and after the intervention of the video-assisted counseling program, the results revealed that the majority of them had poor congenital anomaly practices before program participation compared to more than three-quarters post-program intervention. From the researchers' point of view, this confirms the positive effects of the video-assisted counseling program implementation.

As a result of the video-assisted counseling program, professional skills quickly become obsolete. This outcome may be attributable to the relevant scientific and technological advancements. This result correlated with Kaur & Charan's (2018) finding that the

majority of the nurses had a high practice score in the post-test phase. Nursing education should use modern, effective teaching methods given the quick advancement of training.

Concerning women's total knowledge and total practice scores were correlated before and after the video-assisted counseling program. The findings of the present study concluded that the majority of the studied women post the video-assisted counseling program, there was a statistically significant positive association between the overall knowledge scores of the investigated women and the total practice scores. From the researchers' point of view, this is reflected that video-assisted counseling program implementation met the women's needs and improves practice.

The findings of the present study have supported the aim and hypothesis of the study and the knowledge, attitude, and practice among the studied women have improved. From the researchers' point of view, this is reflected in the success of the video-assisted counseling program implementation and its positive effects.

Conclusion:

Based on the findings of the current study, it can be said that implementing a video-assisted counseling program for pregnant women regarding congenital defects improved their knowledge, attitude, and practice.

Recommendation:

Based on the results of the current study, the following recommendations can be suggested:

- Continuing counseling sessions for all pregnant women on congenital defects
- Replication of the study in an additional setting with a large sample size to generalize and confirm results.

References:

- Antshel, K., Conchelos, J., Lanzetta, G., Fremont, W., & Kates, W. (2015):** Behavior and corpus callosum morphology relationships in velocardiocardial syndrome. *Psychiatry Research*; 3, 235-45.
- Armour M., Brady S., Williamson-Link K., McGovern L. & Struchil K., (2021):** Supported Communication Video Training for the Nursing Department in an Inpatient Rehabilitation Hospital, *Rehabilitation Nursing*, 46(5): 289–296.
- Balasubramanian P., Shetty O.P. & Rao S., (2018):** Video-Assisted Teaching Module (VATM): developed for primary caregivers on home care of the schizophrenic patient, *Nursing & Care Open Access Journal*, Volume 5, Issue 6, 337-341.
- Bello, A.I., Acquah, A.A., Quartey, J.N.A., & Hughton, A. (2013):** Knowledge of pregnant women about birth defects. *BMC Pregnancy and Childbirth*; 13:45.
- Corrigan, N., Brazil, D.P., & McAuliffe, F. (2018):** Fetal cardiac effects of maternal hyperglycemia during pregnancy. *Birth Defects Res A Clin Mol Teratol*; 85:523- 30.
- Devi B., Khandelwal B. & Da M., (2019):** Comparison of the effectiveness of video- assisted teaching program and traditional demonstration on nursing students learning skills of performing obstetrical palpation, *Iranian Journal of Nursing and Midwifery Research*, 24(2): 118–123.
- Irani, M., Khadivzadeh, T., Asghari, S.M., Ebrahimipour, H., & Tara, F. (2019):** Emotional and cognitive experiences of pregnant women following prenatal diagnosis of fetal anomalies: A qualitative study in Iran. *IJCBNM*; 7:22-31
- Kamranpour B, Noroozi M, Bahrami M. 2019; The needs of women who have experienced pregnancy termination due to fetal anomalies: A literature review. Iranian J Nursing Midwifery Res 24:1-10.**
- Kanchana KTG and Youhasan P. Knowledge and Attitudes on Fetal Anomalies among Pregnant Women in Teaching Hospital Mahamodara, Galle. International Journal of Public Health Science. 2018; 7 (4): 231~235.**
- Kaur A. & Charan, G.S. (2018):** A study to assess the effectiveness of STP on knowledge and practice regarding ABGs among intensive care unit nurses in selected hospitals at Jalandhar, Punjab. *International Journal of Health Sciences and Research*. 8(8), 182-188.
- Lawal, T.A., Yusuf, O.B., & Fatiregun, A.A. (2015):** Knowledge of birth defects among nursing mothers in a developing country. *African Health Sciences*; 15: 1.
- Manju M.S. & Prasad V., (2013):** A comparative study to assess the effect of video-assisted versus lecture cum demonstration method of teaching on bag technique among second-year BSc nursing students in a selected nursing colleague at Mangalore, Shetty Institute of Health Science, affiliated to the Rajiv Gandhi University of Health Science Bangalore, recognized by INC&KNC, 575013 India.
- Masmouh, P., Vahid, K., Hamid, A.M., Khosheh, K., & Samira K. (2015):** Knowledge of pregnant women about congenital anomalies: A cross-sectional study in the north of Iran. *Indian Journal of Health Sciences*; 8:1.
- Masoumeh P, Vahid K, Hamid AM, Khosheh K, Samira K. 2015 Knowledge of pregnant women about congenital anomalies: A cross-sectional**

- study in the north of Iran. *Indian Journal of Health Sciences.*; 8 (1).
- Mohammed, A.R., Mohammed, S.A., & AbdulFatah, A.H.M. (2013):** Congenital Anomalies among Children: Knowledge and Attitude of Egyptian and Saudi Mothers, *Journal of Biology, Agriculture and Healthcare*; 3:20:18-32.
- Mosher, C.E., Redd, W.H., Rini, C.M., Burk halter, J.E., & DuHamel, K.N. (2019):** Physical, psychological, and social sequelae following hematopoietic stem cell transplantation: A review of the literature. *Psychooncology*; 18:113-27.
- Ogamba CF, Roberts AA, Babah OA, Ikwuegbuenyi CA, Ologunja OJ, Amodeni OK. 2021;** Correlates of knowledge of genetic diseases and congenital anomalies among pregnant women attending antenatal clinics in Lagos, South-West Nigeria. *Pan African Medical Journal.* 38 (310).
- Pinquart, M. (2013):** Self-esteem of children and adolescents with chronic illness: a meta- analysis. *Child Care Health Development*; 39(2), 153-61.
- Rasmussen, S.A., Erickson, J.D., Reef, S.E., & Ross, D.S. (2019):** Teratology: From science to birth defects prevention. *Birth Defects Res a Clin Mol Teratol*; 85:82-92.
- Schafer, J.O., Naumann, E., Holmes, E.A., Tuschen-Cafoer, B., & Samson, A.C.(2017):** Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *J Youth Adolesc*; 46:261-76
- Silva JD, Amarasena S, Jayaratne K, Perera B. Correlates of knowledge on birth defects and associated factors among antenatal mothers in Galle, Sri Lanka: a cross-sectional analytical study. *BMC Pregnancy and Childbirth.* 2019; 19 (35).
- Singh, A., Ravinder, K., & Jammu, S. (2019):** Pattern of congenital anomalies in the newborn: A hospital-based prospective, Jammu (J&K)-India; 11:34-6.
- Taboo, Z. (2012):** Prevalence and risk factors for congenital anomalies in Mosul City. *The Iraqi Postgraduate Medical Journal*; 11 (2): 458-70.
- Tan, S.L., Doyle, P., Maconochie, N., Edwards, R.G., Balen, A., Bekir, J., Brinsden, P., & Campbell, S. (2014):** Pregnancy and birth rates of live infants after in vitro fertilization in women with an without previous in vitro fertilization pregnancies: a study of eight thousand cycles at one center. *Am J Obstet Gynecol.*, 170: 34-40
- Tayebi, N., Yazdani, K., & Naghshin, N. (2015):** The Prevalence of congenital malformations and its correlation with consanguineous. *OMJ*; 25:40.