

Effectiveness of Teaching Sessions on Anxiety Level among Mothers of Children with Congenital Heart Disease

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Abstract

Congenital heart disease is a stressful and anxiety overwhelming experience for parents and their children, therefore nurses are pivotal in providing a comprehensive and evidence based strategies to reduce anxiety among parents and enhance their children' wellbeing. **Aim:** To evaluate the effectiveness of teaching sessions on anxiety level among mothers of children with congenital heart disease. **Study design:** A quasi-experimental design was used. **Setting:** The study was conducted in paediatric cardiology department at Mansoura University Children Hospital affiliated to Mansoura University. **Sample:** A purposive sample of forty mothers having children from 3 months to 6 years with congenital heart disease were participated in this study. **Tools of data collection:** Three tools were used; first: by Interview Questionnaire to gather data about characteristic of the study subjects, mothers' knowledge regarding congenital heart disease. Second: Mothers' reported practice sheet was designed by the researchers to assess mothers' reported practice regarding congenital heart disease. Third: Taylor's Manifest Anxiety Scale was used to assess the anxiety level of the studied mothers. **Results:** There was a highly statistical significant difference between the studied mothers' total mean score of knowledge and reported practice with positive correlation regarding congenital heart disease at pre and post teaching sessions. Also, there was highly significant negative correlation among mothers' knowledge, practice and anxiety level. **Conclusion:** the implementation of teaching sessions for the mothers of children with congenital heart disease had reduced their anxiety level. Furthermore, teaching sessions had improved mothers' total mean score of knowledge and reported practices about caring of children with congenital heart disease. **Recommendations:** The study recommended establishing programs, as mothers' support groups, to assist them overcome the adverse psychological effects of congenital heart disease among their children.

Keywords: Anxiety, Congenital Heart Disease, Children, Mothers, Teaching Sessions.

Introduction:

Congenital heart disease (CHD) is the main cause of death during infancy period which considered a public health concern worldwide. It has been defined as the occurrence of structural anomaly

in the heart or great blood vessels throughout intrauterine life (**Murala, Karl, & Pezzella, 2019**). The Prevalence of CHD is approximately from 8 to 12 per 1000 live births globally, while the incidence in United States is ranging from 6.6 to 1000 per live births.

(Institute for Health Metrics, & Evaluation, 2016). The exact reason of most congenital cardiac anomalies is unknown. Most are believed to be a consequence of various factors as complex interaction of genetic and environmental influences **(Suluba, Shuwei, Xia, & Mwanga, 2020).** Maternal risk factors involve chronic illnesses such as diabetes or poorly controlled phenylketonuria, alcohol consumption, and exposure to environmental toxins and infections. Family history of a cardiac defect in a parent or sibling increases the probability of a cardiac anomaly **(Hockenberry, Wilson, & Rodgers, 2017).**

Congenital heart diseases are categorized in two classifications that divide anomalies into a cyanotic and cyanotic defects depending upon whether the patients clinically reveal cyanosis **(Alapati & Rao, 2016).** The absence of cyanosis does not inevitably signify to good development and the result for the children with a cyanotic congenital heart disease (ACHD). CHD involves numerous types of structural heart defects that develop during intrauterine life, including ventricular septal defect (VSD), atrial septal defect (ASD), patent ductus arteriosus (PDA), and Tetralogy of Fallot **(Animasahun, Madise-wobo, & Kusimo, 2017).**

Clinical manifestations of CHDs based on the types, level of defects, and accompanying comorbidities. Most common presentations involve tachycardia, tachypnea, cough, bluish skin, exertion dyspnea, developmental delay, infection, and feeling tired. A variation of invasive and non-invasive investigations may be needed for the

diagnosis of heart disease **(Hockenberry & Wilson, 2015).** A comprehensive evidence based medical treatment may be combined with surgical correction of the defects according to the nature and degree of anomalies **(Animasahun, 2019).**

The consequences of CHD are dramatic on its seriousness and complications. The majority of children have chronic hypoxia and heart failure which affect their daily functioning, development, and overall wellbeing **(Liu et al., 2014).** Children frequently have a negative self-image, face embarrassment and humiliation. They also experience several behavioural and learning difficulties, such children are definitely require physical, emotional, and social care in various stages of their life **(Doupnik et al., 2017).**

Parents of children with (CHDs) are often challenged with a stressful and anxiety aggravating experience particularly the mothers; are shocked firstly and then they feel excessive disappointment and anxiety regarding the severity of the disease, unknown future for the child, category of medical procedures, treatment program, and distress from death that can lead to emergence of psychological strain on them **(Biber et al., 2019; Edraki et al., 2014).** Mothers play the key role in providing care for their children with CHDs, such care is inevitably the burden on them which imposes heavy financial, physical and mental burden on the mothers that affect their social, professional and familial roles **(Rahimianfar et al., 2015).** The feeling of disappointment commonly results from inadequate knowledge regarding

the procedures and treatments, unawareness of the hospital policy, unsociability of the health care professionals, and fear from request for explanation about their children illness, therefore education is considered an essential part of successful coping for mothers and their children with CHD (Sjostrom-Strand & Terp, 2019).

The pediatric nurses constitute the cornerstone in implementing a comprehensive and evidence based educational intervention for successful coping to parents and their children with CHD (United Nations Development Program, 2018). Nurses are pivotal in providing mothers with essential information regarding their children illness. Early identification, supportive management and counselling are important in alleviating mother's diagnosis-related anxiety and improving their child's wellbeing (Sjostrom-Strand & Terp, 2019).

Significance of the problem:

Congenital Heart Disease has an excessive effect on children's morbidity and mortality as well as the financial burden. They appear the second reason of death in children with congenital anomalies (Animasahun, Madise-wobo, & Kusimo, 2017). Worldwide, this disease has appeared in approximately 1.3 million children (van der Linde, 2011). The prevalence of congenital heart diseases (CHDs) in school children was 1.01/1,000 in Egypt. In Lebanon 1 in 100 babies are born with congenital heart malformation annually. (Institute for Health Metrics & Evaluation, 2016). Children with congenital heart defect face many problems, such as lack of

physical ability, easily fatigue, exertion dyspnea, infection, developmental delay, dental problems and heart failure symptoms which cause stress and anxiety for mothers and impose heavy financial, physical and psychological burden on them (Van der Mheen et al., 2019). Therefore, this study focused on implementation of teaching sessions on anxiety level among mothers of children with congenital heart disease

Aim of the Study:

This study aimed to evaluate the effectiveness of teaching sessions on anxiety level among mothers of children with congenital heart disease.

Research hypotheses:

- H1:** Mothers' knowledge and reported practices mean scores will be higher after implementation of teaching session than before.
- H2:** Mothers' level of anxiety will be reduced after implementation of teaching session than before

Research design:

A quasi- experimental (pre/post) design was carried out.

Subjects and methods:

Setting of the study:

This study was undertaken at a paediatric cardiology department at Mansoura University Children Hospital affiliated to Mansoura University, Mansoura City, Egypt.

Sample:

The study involved purposive sample of 40 mothers caring for

children with congenital heart disease who admitted during the period from August to the end of November, 2019 in the previously mentioned setting and fulfilling the following inclusion criteria of children; confirmed diagnosis of congenital heart defects, age from 3 months to 6 years, both sexes and who were not receiving cardiac surgical intervention. Exclusion criteria include, infants/children who have mental illness, other congenital malformations and mothers who unwilling to participate and have psychiatric disorders.

Sample size calculation was estimated based on power calculation formula in order to detect an effect size of one group (time series) with 5% significance level, 95% confidence interval and 88% power so a sample size of (40) were included in the study sample (Sigma=1, Effect size=0.5, Alpha =0.05, Power =0.88, Test ="two. tail") (**Statistics Kingdom.com**).

Tools of data collection:

Three data collection tools were used in this study.

Tool I: A structured questionnaire sheet (pre/post-test), was developed by researchers after reviewing the related literature in Arabic language to accomplish the purpose of this study. Each mother was interviewed individually to collect the data related to her knowledge about congenital heart defects and its treatment. It consisted of two parts as follows:

Part 1: Demographic characteristics of the studied sample which include:

- a. **Mothers' characteristics** such as age, level of education, occupation, residence and consanguinity between parents.
- b. **Children characteristics** such as age, gender, birth order and mean child's age in which the disease discovered

Part 2: Mothers' knowledge about congenital heart diseases such as definition, causes, types, clinical manifestations, complications and methods of treatment.

Scoring system of mother's knowledge: It was developed as the following: a score two was given for complete correct answer, a score 1 was given for incomplete correct answer and a score 0 was given for wrong and don't know. The mother's knowledge level was categorized as follows: good knowledge if the score was $\geq 75\%$ and more score, average knowledge from 50-75% and poor if the score $< 50\%$ (**Abdel-Salam and Mahmoud, 2018**).

Tool II: Mothers' reported practice:

It was developed by the researchers in the light of relevant literature review to assess mothers' reported practice caring for children with congenital heart disease as children diet regimen (as give healthy diet as doctor order, reduce salts in diet), physical daily activities (as encourage the child about slow exercise as walking, monitor child during playing), personal hygiene with dental care (as maintain regular child bathing and regular change his clothes) and general health of child

(as frequent following the child weight and height).

Scoring system of mother's reported practices: It was calculated as score one for done while zero for not done. The mothers' score of practice was categorized as follows: the level of mother' practice was considered satisfactory if the score was $\geq 75\%$ or more and unsatisfactory if the score was $< 75\%$

Tool III: Taylor's Manifest Anxiety Scale (TMAS): This was adapted from **Taylor (1953)** modified, and translated to Arabic language by researchers. It has subsequently been used as a general indicator of anxiety as a personality trait. The scale was 50 items and modified TMAS to 26 items that was worded as short statements (e.g. " My sleep is turbulent and intermittent, I went through times when I couldn't sleep, I believe I am no more nervous than others..") . True/false responses are used for each item and the replies indicating anxiety are counted, giving a score equal or more than 13 with the higher the score is representing a higher level of anxiety and less than 13 is representing reduce the anxiety level. Total score for anxiety scale was classified as follows; less than 50% indicating no anxiety and more than 50% indicating anxiety.

Tools validity and reliability:

The tools were tested for its content validity by a group of 5 experts in the field of pediatric nursing in faculty of nursing. Modifications of the study tools were made according to the panel

judgment on clarity of sentences, appropriateness of the content and sequences of items. Regarding reliability of internal consistency by using coefficient Cronbach's alpha was as follow; for tool I (Knowledge sheet: 0.70), for tool II (Practice sheet: 0.728), and for tool III (Taylor's Manifest Anxiety Scale: 0.741). Total reliability for three tools was assessed by using coefficient alpha was 0.848.

Pilot study:

A pilot study was conducted on 4 subjects representing 10% of the sample size to establish the feasibility, clarity, applicability, replication of the questionnaire. It also helped to assess the time needed for the interview prior to data collection. Required modifications were done by exclusion of some items consequently; the pilot study sample was excluded from the main study.

Ethical considerations:

An ethical approval was attained from the Research Ethics Committee at Faculty of Nursing, Mansoura University. Also permission was obtained from the director of Mansoura children hospital and the head of inpatient and outpatient of medical cardiac departments after an explaining of the aim, tools, duration and the benefits of the study. Oral consent was obtained from each mother after explaining the aim of this study. Secrecy of information and namelessness and the mothers was assured that the data was confidential and the mothers have the right to leave the study whenever was discussed to each mother before collecting data.

The framework of the study was carried out to 4 phases as the following:

Assessment phase: An initial assessment was carried out by the researchers. All mothers were interviewed individually according to their agreement, readiness and level of education. The researchers started by introducing themselves to each mother accompanying her child with congenital heart disease, gave them a brief idea about the study, its purpose and gaining their oral consent. Data was collected from the beginning of August to the end of October, 2019.

Development phase: Based on the need assessment data, objectives and related references, theoretical and practical contents of the program for mothers of children with congenital heart disease were developed by the researchers. The program was constructed, revised and modified from the related literature which includes two parts:

Theoretical part: It includes information about definition, incidence, pathophysiology, types, clinical manifestations, complications and methods of treatment of congenital heart diseases, importance of surgical repair, types of investigations that should be done before surgical repair and complications after surgical repair. A hand out was developed for the mothers to assist them caring for their children. It covered the required needs related to children and answering the questions of both children as well as their mothers.

Practical part: Child's care is practiced by researchers in front of

mothers and demonstrated with video tapes about diet regimen, physical daily activities, personal hygiene with dental care and general health of child. Suitable coping strategies with congenital heart diseases as about a diagnosis, the negative effects of hospitalization on children and their mothers and how to achieve high level of wellbeing. The practical part was lengthy and broad. Also role play was used to solve health problems, consequences of the disease and also answering mothers and their children questions.

Implementation phase: The program was carried out at the study settings from August to the end of October, 2019. The Intervention was applied in simple Arabic language that has been sequenced through the 7 sessions; 3 sessions for theory and 4 sessions for practice to cover the content of the program. Mothers were divided into subgroups according to their level of education, the number for each group varied (3-5 mothers in each group) and the basic content was the same for groups. The duration of each session was 30 minutes, two days (Sunday and Wednesday) per week. The researchers were available at paediatric cardiology department at Mansoura University Children Hospital affiliated to Mansoura University, in the morning shift from 11.00 a.m. to 2.00 p.m. which was a suitable time for mothers and their children. The researcher started each session with a summary for the previous one. The teaching methods were lectures, group discussion, brainstorming, role play, demonstration and re-demonstration. Proper audio-visual materials; coloured posters and video tapes were applied.

Evaluation phase: After completing the program contents, the post-test was done using the same form of the pre-test to evaluate effectiveness of teaching sessions on anxiety level regarding care of their children with congenital heart disease.

Statistical analysis:

The collected data were organized; tabulated and analysed using electronic computer and Statistical Package for

Social Sciences (SPSS) version 20. Descriptive statistics were calculated for the data in the form of: number and percentages, mean and standard deviation for quantitative data. Also in analytical statistics, inter-group comparison of categorical data was performed by using t- test. Also, Pearson correlation coefficient test was used. Level of significance is adopted at P-value <0.05.

Results:

Table (1): Distribution of demographic characteristics of the studied mothers and their children (N=40)

Variables	No.	%
Mothers' Age		
18- <28	2	5
28- <39	2	5
39-<50	25	62.5
≥ 50	11	27.5
Mothers' education		
Illiterate	4	10
knows writing &primary	7	17.5
Secondary	23	57.5
University	6	15
Mothers' Occupation		
Working	9	22.5
Not working	31	77.5
Residence		
Urban	34	85
Rural	6	15
Consanguinity between parents		
yes	16	40
No	24	60
Children age in years		
< 2yrs.	20	50
2- < 4 yrs.	11	27.5
4 - 6yrs.	9	22.5
M ± SD 2.70 ± 1.40		
Gender		
Male	18	45
Female	22	55
Child age when the disease discovered		
M± SD = 2.6 ±5.1		

Table (1) presented distribution of demographic characteristics of the studied mothers and their children. More than half (57.5%) of mothers had secondary school and more than three quarters (77.5%) of them were not working. Also, 85% of mothers live in urban areas. Furthermore, 60% of mothers have no consanguinity between parents. Regarding children age, it was obvious that 50% of children was less than 2years and more than half (55%) of them were females.

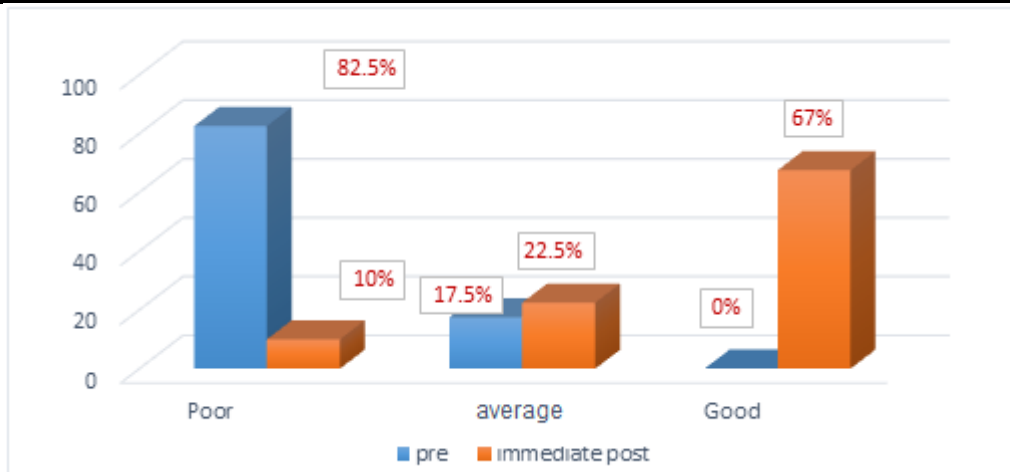


Figure (1): Mothers’ level of knowledge about care of their children with congenital heart diseases before and after teaching sessions

Figure (1) shows mothers' level of knowledge about care of their children with congenital heart diseases before and after teaching sessions. It reveals that 82.5% of mothers had poor knowledge before teaching sessions compared to only 10% of them after teaching sessions. Furthermore, none of the mothers have good knowledge score before teaching sessions compared to 67% of them have good knowledge after teaching sessions.

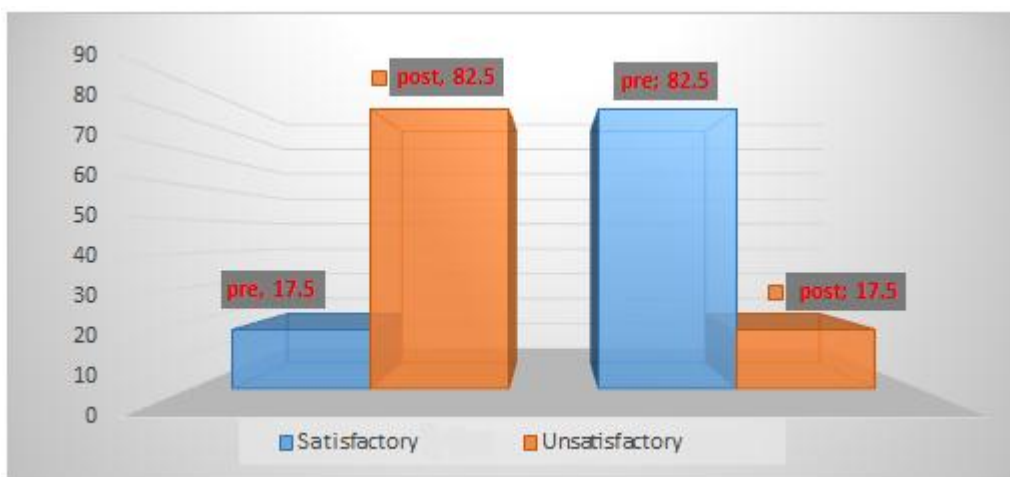


Figure (2): Mothers' level of reported practice about care of their children with congenital heart diseases before and after teaching sessions

Figure (2) shows mothers' level of reported practice about care of their children with congenital heart diseases before and after teaching sessions; the majority of mothers (82.5%) had unsatisfactory practice before teaching sessions compared to only 17.5% of them after teaching sessions.

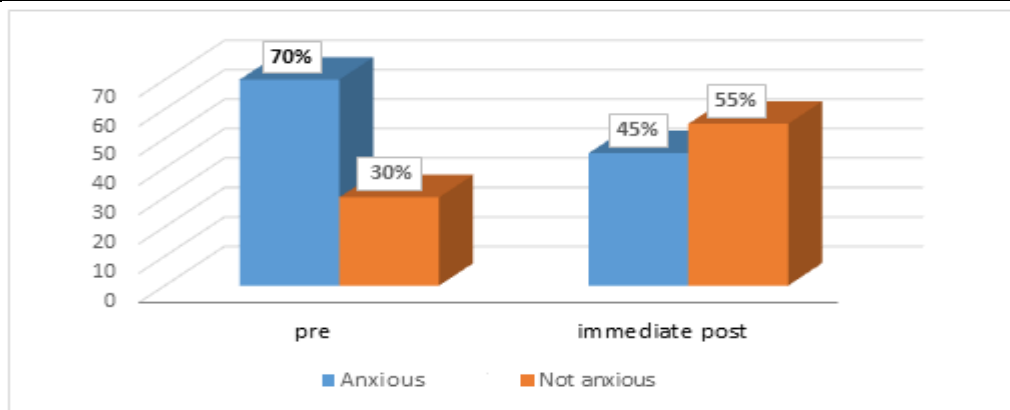


Figure (3): Total anxiety level of mothers about care of their children with congenital heart diseases before and after teaching sessions

Figure (3) shows total level of mothers' anxiety about care of their children with congenital heart diseases before and after teaching sessions; about 70% of mothers were anxious before teaching sessions compared to 45% after teaching sessions. 30% the mothers were not anxious before teaching sessions compared to 55% after teaching sessions.

Table (2): Mean Score of total mothers' knowledge, reported practice and anxiety level before and after teaching sessions about caring children with congenital heart diseases (N=40)

Items	Before teaching sessions	After teaching sessions	t-test	P
	M± SD	M± SD		
knowledge	2.42±1.15	7.63±2.42	10.48	0.00*
Practice	24.07±5.03	29.95±4.70	4.92	0.00*
Anxiety	17.4±4.1	13.84±4.38	4.11	0.00*

(*) Statistically significant at $P \leq 0.05$

Table (2) indicated the mean score of mothers' knowledge and reported practice and anxiety level sessions. As evident that mothers have a higher total mean score of knowledge (7.63±2.42) and practice (29.95±4.70) after the teaching sessions this improvement reflects a highly statistically significant difference. As regards a total mean score of anxiety, there was a decrease in mean score 17.4±4.1 & 13.84±4.38 before and after teaching sessions respectively with a significant difference $P= 0.00$

Table (3): Correlation between the studied mothers' total knowledge and reported practice score before and after teaching sessions (N=40)

Items	Total mothers' practice level			
	Before teaching sessions		After teaching sessions	
	r	P	r	P
Total mothers' knowledge level	1.00	0.00*	0.736	0.00*

(*) Statistically significant at $P \leq 0.05$

Table (3) represented correlation between the studied mothers' total knowledge and reported practice score before and after teaching sessions; there is a positive correlation between knowledge and practices before and after teaching sessions with highly statistically significant test ($r= 1.00$ & 0.736 respectively) $P=0.00$.

Table (4): Correlation between the studied mothers' total knowledge level, reported practice and their anxiety level before and after teaching sessions (N=40)

Items	<i>Total mothers' anxiety level</i>			
	Before teaching sessions		After teaching sessions	
	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>
<i>Total mothers' knowledge level</i>	-0.544**	0.003	-0.619**	0.000
<i>Total mothers' reported practice level</i>	-0.353*	0.026	-0.417**	0.007

**correlation is significant at < 0.01 level (1-tailed)

*correlation is significant at the < 0.05 level (2-tailed).

Table (4) represented correlation between the studied mothers' total knowledge level, reported practice and their anxiety level before and after teaching sessions; there is a highly negative correlation between mothers' knowledge and anxiety level before and after teaching sessions ($r=-0.544$ & $P=0.003$ & $r=-0.619$ & $P=0.000$ respectively). Meanwhile, there is a negative correlation between mothers' practice and anxiety level before and after teaching sessions with statistically significant difference ($r=-0.353$ & $P=0.026$ & $r=-0.417$ & $P=0.007$ respectively).

Discussion:

Cardiovascular anomalies are the most common type of birth defects and the leading cause of significant morbidity and mortality worldwide. The diagnosis of a congenital heart disease can be distressing and terrifying for the parents as well as its consequences are frequently due to an immense emotional and financial strain on the family and their children (Dulfer, Duppen, Helbing, & Utens, 2014). Pediatric nurses are working in partnership with the parents in providing intervention strategies, for helping the parents of children with CHD in the clinical settings, (Roberts, Richard, Hal, & Bonita, 2016). The current study aimed to evaluate the effectiveness of teaching sessions on

anxiety level among mothers caring children with congenital heart diseases.

The findings of this current study showed the demographic data of the studied mothers and their children as clear from table 1. The present study's result revealed that more than half of mothers had secondary school and only 15% of them had university, this is in agreement with Elshazali, Hohei, & Yousif, (2018) who reported in his study that near half of mothers completed secondary school, and (10.8%) of them completed university. In the present study more than three quarters of the mothers were not working, this is consistent with Berik, (2017), that represented the percentage of non-working mothers in Sudan is near three quarters. This could be explained that the burden of caring for

these children with CHD, is expected to affect the attendance of these mothers at work. Also, the majority of study sample came from urban areas; this was in agreement with **El-Mahdi, (2015)** a study done in Sudan which indicated that, urban people acquired more from health services in comparing with those in rural area.

It was illustrated from the current study that about half of children was less than 2 years. this is consistent with **Elshazali, Hohei, & Yousif, (2018)** who stated that near quarter of studied children were less than 5 years old. Also, More than half (55%) of children were females. This is incongruent with **Ibrahim, Abdelrahman, & Elshazali, (2012)** study who found that males prevailed (54.2%) more than females (45.8%).

Regarding total mothers' knowledge before and after teaching sessions about caring children with congenital heart diseases in figure (1). It was demonstrated that the mothers were significantly improved their knowledge after implementation of the teaching sessions. This is supported by **Abdel Salam & Mahmoud, (2018)** who reported that more than half of studied sample were poor knowledge and improved knowledge and reported practice score immediate post teaching program. Also, this study accordance with **Animasahun, Kehinde, Falase, Odusanya, & Njokanma, (2015)** their study title "Caregivers of Children with Congenital Heart Disease: Does Socioeconomic Class Have Any Effect on Their Perceptions?" revealed that, the parents have little knowledge about congenital heart disease, its causes,

manifestations, management, prevention, and complications. This may be related to the study sample were having enthusiasms to know much about congenital heart disease.

Mothers' total reported practice level regarding caring children with congenital heart diseases figure 2. The current study showed that the majority of mothers had unsatisfactory practice before teaching sessions with significant improvement immediately after implementation of teaching sessions. This suggests that the mothers were in need to gain knowledge and to modify their practices regarding best care for their children with CHDs. This study in a consistency with **Abdel Salam & Mahmoud, (2018)** who stated in their sample that there is highly statistically significant difference in mothers' reported practice regarding to care of congenital heart disease at post and after three months of educational implementation as compared to pre of educational implementation ($P < 0.001$). These results were supported by **Mohamed & Mohamed, (2019)** who found that, there were significant improvements in practice of home care (self-reported) of the mothers regarding congenital anomalies after receiving nursing education intervention.

Furthermore, the present study represented studied mothers' anxiety level before and after teaching sessions about caring children with congenital heart diseases figure 3. The implementation of teaching sessions had significantly reduced anxiety level among the mothers caring children with congenital heart disease. Near

three quarters of mothers were more anxious before teaching sessions compared to only less than half of them after teaching sessions. This result is consistent with **Rahimianfar et al., (2015)** who stated in their study that mothers' anxiety about infants with congenital heart disease mean score was 50.90 ± 10.80 was higher than average and mothers' anxiety level of infants being operated is high; however, this high level can be reduced by appropriate interventions such as awareness rising in the case of disease type, operation procedure and future life with decrease in mean anxiety score. This may be that the parents were little aware about the case of their child with congenital heart disease and available educational programs were not enough all these increase anxiety and stress for them. For this reason with improve parents' understanding of the child disease and its management can alleviate mothers diagnosis-related anxiety

According to the present study findings, reduced mothers' anxiety score was associated with their knowledge and practice as clear from table 2. While this finding reflected that mothers who improved in their knowledge and practice after the teaching sessions, their mean anxiety score about caring children with congenital heart diseases were decreased with a highly statistically significant difference. The researchers found this finding could be due to the effectiveness of the study teaching sessions. These results are consistent with **Lesch et al., (2014)** who found that if the parents have more knowledge about their children with

heart disease, they will be more compliant to their medication and will be less anxious. Furthermore, the knowledgeable parent is likely to inculcate better health-related behaviour and decreased the habits with risks in the child. This study accordance with **Abdel Salam & Mahmoud, (2018)** that their study confirmed that, there was a highly statistically significant difference in total knowledge score and reported practice of the studied mothers' regarding to congenital heart disease at post and after three month as compared to pre-program ($P < 0.001$).

The present study showed a significant positive correlation between studied mothers' total knowledge and reported practice score after teaching sessions table 3. This reflected that the researchers allowed the mothers to ask questions routinely on any part of the symptoms, investigations, diagnosis, treatment and complications of CHD which revealed their improved practice provided to their children. This result is consistent with **El-Gendy, (2020)** who proved in her study about "Guiding program for mothers to improve the quality of life of their children with congenital heart disease" that there was a significant positive correlation between total knowledge score about CHD and reported practice pre, immediately post program. Also, it is congruent with **Mohamed & Mohamed, (2019)** who found in their study about "Improving knowledge, attitude and home Care of mothers regarding children with congenital anomalies" revealed that the mothers who have a satisfactory level knowledge, had a satisfactory practice

(self-reported) regarding children with congenital heart disease implementing nursing education intervention.

The current study illustrated that there was highly negative correlation between the studied mothers' total knowledge, practice level and their anxiety level in the current study table (4), this reflected that improvement mothers' total knowledge led to reduce anxiety level with highly statistically significant difference. These results are consistent with (Yilmaz, Kavlak, Isler, Liman, & Van Sell, 2011) who reported that adequate knowledge provided for parents plays a pivotal role in the successful treatment of children through reducing anxiety and stress which enable the parents to play a part in the care of children. On the other hand for mothers' reported practice in the current study, there was negative correlation between total reported practice and anxiety level with highly statistically significant difference, which reflected that increase in mothers' reported practice led to reduce anxiety level. These results were in accordance with Sileshi & Tefera, (2017) who demonstrated that mothers' depression and anxiety can negatively affect the caring of the child with congenital heart diseases. This may be due to the need for continuous psychosocial support for mothers before or after treatment of the child for continuing caring practice for them.

Conclusion:

According to the results of the present study, the implementation of teaching sessions for the mothers of children with congenital heart disease

had reduced their anxiety level. Furthermore, teaching sessions had improved mothers' total mean score of knowledge and reported practices about caring of children with congenital heart disease with significant positive correlation between mothers' knowledge level and practice and significant negative correlation among mothers' knowledge, practice and anxiety level.

Recommendations:

Based on findings of the current study, the following recommendations are suggested:

- Develop guidelines for young children and their mothers with CHD regarding nutrition, physical activity and medication with regular follow up.
- Establish programs, as mothers' supporting groups, to assist them overcome the adverse psychological effects of CHD.
- Availability of special psychosocial workers for CHDs children to alleviate mothers and their children diagnosis-related anxiety.

Limitations of the study:

The most important limitation of this study was that the results cannot be generalized because of the small sample size of the mothers who accepted to participate in the study.

References:

- Abdel-Salam, A., & Mahmoud, F. (2018). Effect of Educational Program on The self-Efficacy and Quality of Life for Mothers Caring children With Congenital Heart Disease, IOSR Journal of Nursing and Health Science, 7(4), 68-78.

- Alapati, S. & Rao P.S. (2016).** Tetralogy of Fallot in the neonate. *Neonatology Today*, (5), 1-8.
- Animasahun, A. B. (2019).** The Relationship Between Parents' and Caregivers' Demographics and Their Knowledge about Congenital Heart Disease. Doctorate thesis, Walden University
- Animasahun, A., Kehinde, O., Falase, O., Odusanya, O., & Njokanma, F. (2015).** Caregivers of Children with Congenital Heart Disease: Does Socioeconomic Class Have Any Effect on Their Perceptions? *Congenital Heart Disease*, 10(3), 248-253.
- Animasahun, B. A., Madise-Wobo, A. D., & Kusimo, O. Y. (2017):** Cyanotic congenital heart diseases among Nigerian children. *Cardio-vascular Diagnosis & Therapy*, 7(4), 389-396.
- Berik, G. (2017).** Beyond the Rhetoric of Gender Equality at the World Bank and the IMF. *Canadian Journal of Development Studies/ Revue canadienne d'études du développement*, 38(4), 564-569.
- Biber, S., Andonian, C., Beckmann, J., Ewert, P., Freilinger, S., Nagdyman, N., ... & Neidenbach, R. C. (2019).** Current research status on the psychological situation of parents of children with congenital heart disease. *Cardio-vascular diagnosis and therapy*, 9(Suppl 2), S369.
- Doupnik, S. K., Hill, D., Palakshappa, D., Worsley, D., Bae, H., Shaik, A., ... & Feudtner, C. (2017):** Parent coping support interventions during acute pediatric hospitalizations: a meta-analysis. *Pediatrics*, 140(3), e20164171.
- Dulfer, K., Helbing, W. A., Duppen, N., & Utens, E. M. (2014).** Associations between exercise capacity, physical activity, and psychosocial functioning in children with congenital heart disease: a systematic review. *European journal of preventive cardiology*, 21(10), 1200-1215.
- Edraki, M., Kamali, M., Beheshtipour, N., Amoozgar, H., Zare, N., & Montaseri, S. (2014).** The effect of educational program on the quality of life and self-efficacy of the mothers of the infants with congenital heart disease: a randomized controlled trial. *International journal of community based nursing and midwifery*, 2(1), 51.
- El Mahdi, L. M. (2015).** Parental knowledge, attitudes and practice towards their children's congenital heart disease and its impact on their growth in Sudan Heart Centre. Doctoral thesis, University of Khartoum.
- El-Gendy, N. S. (2020):** "Guiding program for mothers to improve the quality of life of their children with congenital heart disease". Doctorate thesis, Mansoura University.
- Elshazali, O. H., HOHEL, S., & Yousif, E. M. A. (2018).** Parent's knowledge about diagnosis and management of their children with congenital heart diseases in Khartoum, Sudan. *J Pediatr Neonatal Care*, 8(6), 262-266.

- Hockenberry, M. J., & Wilson, D. (2015):** Wong's nursing care of infants and children 10th ed., Elsevier Health Sciences.
- Hockenberry, M. J., & Wilson, D., & Rodgers, C. C. (2017).** Wong's essentials of pediatric nursing. 10th ed., Elsevier Health Sciences.
- Ibrahim, S. A., Abdelrahman, M. H., & Elshazali, O. H. (2012).** Pattern and diagnosis of congenital heart disease in patients attending Ahmed Gasim Cardiac Centre. Sudan Journal of Medical Sciences, 7(4), 249-254.
- Institute for Health Metrics and evaluation (2016).** What causes the deaths' in Egypt. Available at:<https://www.health data.org>.
- Lesch, W., Specht, K., Lux, A., Frey, M., Utens, E., & Bauer, U. (2014).** Disease-specific knowledge and information preferences of young patients with congenital heart disease. Cardiology in the Young, 24(2), 321.
- Liu, Z., Yu, D., Zhou, L., Yang, J., Lu, J., Lu, H., & Zhao, W. (2014):** Counseling role of primary care physicians in preventing early childhood caries in children with congenital heart disease. International journal of environmental research and public health, 11(12), 12716-12725.
- Mohamed, N. A., & Mohamed, A. (2019).** Improving Knowledge, Attitude and Home Care of Mothers Regarding Children with Congenital Anomalies. IOSR Journal of Nursing and Health Science, 8(1), 72-82.
- Murala, J. S., Karl, T. R., & Pezzella, A. T. (2019).** Pediatric cardiac surgery in low and middle-income countries: present status and need for a paradigm shift. Frontiers in pediatrics, 7, 214.
- Rahimianfar, A. A., Forouzannia, S. K., Sarebanhassanabadi, M., Dehghani, H., Namayandeh, S. M., Khavary, Z., ... & Aghbageri, H. (2015).** Anxiety determinants in mothers of children with congenital heart diseases undergoing cardiac surgery. Advanced biomedical research, 4 (255)1-4.
- Roberts, K., Richard, B., Hal, J., & Bonita, S. (2016):** Congenital heart disease. Nelson Textbook of pediatrics, Philadelphia, Saunders Co., 1499-1502.
- Sileshi, L., & Tefera, E. (2017).** Health-related quality of life of mothers of children with congenital heart disease in a sub-Saharan setting: cross-sectional comparative study. BMC Research Notes, 10(1), 1-5.
- Sjostrom-Strand, A., & Terp, K. (2019).** Parents' experiences of having a baby with a congenital heart defect and the child's heart surgery. Comprehensive child and adolescent nursing, 42(1), 10-23.
- Statistics Kingdom.com.(2019).** Two Sample Z-Test Calculator.[Online] Retrieved December 10, 2019, from: http://www.statskingdom.com/sample_size_t_z.html?fbclid=IwAR054I4ufAFOFEZ1VqYmxPBZznKImjSy_D5i-B-D3JzIzbpdHTvrj0qsPps.
- Suluba, E., Shuwei, L., Xia, Q., & Mwanga, A. (2020).** Congenital heart diseases: genetics, non-nherited risk

factors, and signalling pathways. Egyptian Journal of Medical Human Genetics, 21(1), 1-12.

Taylor, J. A. (1953). A personality scale of manifest anxiety. The Journal of abnormal and social psychology, 48 (2), 285-290.

United Nations Development Program UNDP data (2018). Retrieved from <http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-3-good-health-and-well-being/targets/>.

Van der Linde, D., Konings, E. E., Slager, M. A., Witsenburg, M., Helbing, W. A., Takkenberg, J. J., & Roos-Hesselink, J. W. (2011). Birth prevalence of congenital heart disease worldwide: a systematic review and meta-analysis. Journal of the American College of Cardiology, 58(21), 2241-2247.

Van der Mheen, M., Meentken, M. G., van Beynum, I. M., Van Der Ende, J., Van Galen, E., Zirar, A., ... & Hillegers, M. H. (2019). CHIP-Family intervention to improve the psychosocial well-being of young children with congenital heart disease and their families: results of a randomised controlled trial. Cardiology in the Young, 29(9), 1172-1182.

Yimaz, H. B., Kavlak, O., Isler, A., Liman, T., & Van Sell, S. L. (2011). A study of maternal attachment among mothers of infants with congenital anomalies in Turkey. Infants & Young Children, 24(3), 259-266.