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Educational Program on the Knowledge and Attitude of Pregnant Women Regarding Neonatal Jaundice

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Abstract **Background:** Early awareness of pregnant women about neonatal jaundice (NNJ) has an essential role in preventing severe hyperbilirubinemia and its dangerous complications. **Aim:** the study aimed to assess the level of knowledge and attitude of pregnant women regarding NNJ and to evaluate the effect of an educational program for neonatal jaundice among the target population. **Subject and methods:** three hundred pregnant women attended the Antenatal Clinic at Women Health Hospital in Assiut University were divided into 150 pregnant women as study and 150 as control groups. Quasi-experimental research design was applied. **Tool:** Using a structured interview questionnaire including five parts; personal data, obstetric, medical and family history, assessment of knowledge, attitude toward neonatal jaundice, and neonatal follow up. **Results:** There was a statistically significance difference between level of knowledge and attitude in pre- vs. post-test in the study group compared with the control group and there was statistical evidence of neonatal outcomes for improving women's breast feeding and decrease number of jaundice days. **Conclusion:** This study revealed that pregnant women had inadequate knowledge regarding NNJ and their attitude was negative while the application of an educational program has led to significant improvement in the level of women's knowledge and attitude in the study group, which was reflected on the newborn positively. **Recommendations:** Implementing a routine health education program for pregnant women about NNJ and raising awareness of the relatives as they were identified as the main source of knowledge.

Keywords: *educational program, neonatal jaundice, knowledge and attitude, pregnant women*

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1. Introduction

The most prevalent health problem among neonates is Neonatal jaundice (NNJ). It changes the color of body skin and sclera to the yellowish discoloration; which considers the main clinical features of NNJ due to an elevated level of bilirubin in the neonate's body. Also, it is an important cause of neonatal morbidity worldwide and represents about 60% and 80% of full-term and preterm neonates respectively [1].

Most cases are physiological; but, if the bilirubin levels reach to highest value it becomes dangerous especially for central nervous system; which may lead to impairment and disabilities such as cerebral palsy, deafness, mental retardation, or gross developmental delays, especially in the developing countries. Also, it may lead to neonatal death. These severe complications may have resulted from bilirubin accumulation in the brain tissue. So, NNJ must be carefully evaluated and prevented from progress [2].

The American Academy of Pediatrics (AAP) [3] has confirmed that the following are preventable causes of neonatal jaundice: Early discharge from the hospital before 2 days without early follow-up, lack to recognize the risk factors of severe jaundice, inability to perform bilirubin analysis for jaundice in the early hours of life, failure to exactly assess the seriousness of jaundice by clinical observation, most of women consider it physiological only and no fear of jaundice (ignorance of complications). In addition; the parents delay in measurement of bilirubin, delay in starting treatment, and/or lack of attention to the concerns of parents about jaundice, and poor of breastfeeding [4].

Pregnant women therefore play an essential role in the early identification and prevention of complications. Pregnant women should be educated about jaundice, early identification of danger signs and also its complications. It helps in an effective treatment and also in the prevention of jaundice complications [5]. Nurses also play an important role in the education of parent about the importance of breastfeeding, early identification of jaundice and appropriate treatment of jaundice as early as possible to prevent the irreversible complication [6].

1.1. Significance of Study

Neonatal jaundice is an important issue worldwide that causes significant neonatal morbidity and accounts approximately for 75% of readmissions to hospital in the early week of life. Severe NNJ can lead to permanent brain damage or even death in otherwise healthy newborns [5]. So, increasing awareness of pregnant women has a vital role in preventing the complication of NNJ. Likewise, it is important and fundamental to improve the parents' knowledge about how to recognize NNJ as well as how to respond properly.

2. Aim of the Study

The present study aimed to:-
1. Assess knowledge and attitude of pregnant women regarding NNJ at Assiut University, women's health hospital.
2. Implement and evaluate the effect of an educational program for neonatal jaundice among the target population

3. Research Hypothesis

The implementation of an educational program enhances the pregnant women knowledge and changes their attitude towards NNJ with positive effect on their neonates.

4. Subject and Methods

Research design: Quasi-experimental research (Pre and posttest) design was used.

4.1. Study Setting

The study was conducted at antenatal outpatient clinic, at Woman's Health Hospital, Assiut University. It is a tertiary referral center and one of the largest teaching hospitals in Upper Egypt. It serves all women from rural and urban areas.

4.2. Study Subjects

The current study recruited 300 primigravida and primipara pregnant women in the third trimester, attending to the Antenatal Outpatient Clinic for antenatal care.

Inclusion criteria: It included; women in child bearing period with singleton pregnancy (primigravida and primipara) and accepted to take part in the study.

Exclusion criteria: It included; women with any medical problems associated with pathological jaundice such as severe anemia, liver disease, gallbladder inflammation & Rh incompatibility.

4.3. Sample Size Calculation

It was calculated using Open Epi Info, Ver-3. The sample size was calculated based on the prevalence of NNJ of 18.9 % [5]. The minimum required sample was 278 pregnant women's. It was raised to include 300 pregnant women to compensate for any dropout or refusals.

4.4. Sampling Technique

A multi-stage sampling technique was used for the study. **In the first stage**, simple random sampling methods were used to select three days out of the five working days of antenatal clinics in the hospitals by balloting; these days were divided between researchers according to work schedules (two days for the study group and one day for the control group).

In the second stage, based on the data derived from the pilot study, the number of pregnant women attending the clinic per day was ranged between 45- 60 cases, about one-third of them were in the third trimester and approximately half of them were primigravida and primipara. Systematic random sampling method was used to select the participants i.e. firstly, a die was tossed to choose the first respondent and then every third respondent was recruited for the study

Participants were randomly assigned into two groups:
1) The study group (n=150): Pregnant women who received the educational program beside the routine antenatal care.
2) The control group (n=150): Pregnant women who received only the routine antenatal care.

4.5. Tool of the Study

A Structured interview questionnaire was designed by the researchers and consisted of five parts:

Part 1: Personal data as age, address for resident, level of education for pregnant women and their husbands, occupation and contact details.

Part 2: Included obstetric, medical and family history.

Part 3: It included questions regarding knowledge about neonatal jaundice as definition, signs and symptoms, risk factor, normal value, complication and treatment of it which adopted from [7].

Scoring system:-

The Knowledge items contain 13 questions; a correct answer was scored one grade and incorrect zero. The score of each item summed – up and then converted into percent score (Poor <50%, fair = 50-70% and good ≥ 70%).

Part 4: Pregnant women's attitude toward NNJ as breastfeeding plays a major role in reducing NNJ; premature babies are more exposed to NNJ…etc. It was adopted from [7].

Scoring system:-

It consisted of 12 statements about NNJ. It was 3 likert scale statements (agree, uncertain, disagree). Items were scored (2, 1 and 0) respectively; the score of each item summed – up and then converted into percent score (negative < 60% and positive > 60%).

Part 5: Post natal follow up of neonatal outcomes between two groups as (number of NNJ, increased breast feeding during jaundice, number of jaundice days at home and hospitalization, Phototherapy indicated and medication taken at home).

Reliability of a tool:

The internal consistency of the knowledge scale was calculated by using Cronbach α coefficient; and it was 0.590 and the attitude scale was 0.745.

Validity of questionnaire:

Questionnaire was examined and reappraised by a group of specialists in the field of Obstetrics & Gynecological, Community Health, Pediatric Nursing and Public Medicine staff at Assiut University. The panel reviewed the instruments for clarity, relevance, comprehensiveness, understanding and applicability.

4.6. The Educational Program

It had been designed by the researchers depending on the pertinent literary text. The goal of this program is to enhance pregnant women's awareness about neonatal jaundice and also, supports the role of (UNICEF) regarding early breast feeding to reducing the neonatal jaundice.

I-Assessment stage:

The researchers designed educational plan to promote women's awareness, it depend on pre-test to evaluate participants' information and attitude between both groups about NNJ, then the schedule and the instructional instruments were developed.

II-Planning stage:

This stage involved the organization for achieving the program as: preparing the place of lecture, meeting, brochure, etc.

Teaching place: program conducted at antenatal clinic at separated room beside the examination room.

Time of meeting: The determined based on convenient time of a participant and the coordination between the researchers and pregnant women.

Teaching techniques and substances: The researchers used plain teaching styles like: lecture, discussion. The media handouts regarding NNJ were designed by the researchers and given to participants in study group after finishing the instructional plan.

Lecture included: introduction about NNJ, definition, signs and symptoms, causes, risk factors and complications, treatment and Post-test was done.

III- Implementation and evaluation stage:

The educational program for study group was accomplished in one session for one hour; after that, pregnant women were given brochure contained main information about NNJ as part of the program. The evaluation was done through immediate posttest and finally post natal follow up of neonatal outcomes after two weeks of labor by telephone in both groups.

4.7. Field Work

During meeting, the researchers inform pregnant women by themselves then illustrate the goal of the work. Pretest was conducted before implementing the educational program to evaluate all the participants' awareness. Posttest was applied for study group only to assess the acquired information after finishing the program. Follow up of neonatal outcomes was performed after two weeks of child birth for the two groups. The field work was executed from March to October 2018.

4.8. Procedure

I- Administrative phase:

Before implementation of the study an official letter approval was obtained from the director of woman's Health Hospital. The letter included a permission to carry out the study.

II. Pilot study: Pilot study was carried out before starting of data collection on (30) pregnant women which excluded from the study. The aim of this study was to test the clarity of the tools and to estimate the required time to fill the questionnaire. Based on the results of pilot study, necessary modifications in the tools were done.

III. Ethical issues:

Research proposal was approved from ethical committee in the Faculty of Nursing, Assiut University. There was no risk for study subjects from conducting the research. The study was following common ethical principles in clinical research. Informed consent obtained from the pregnant women who were willing to participate in the study after explaining the nature and purpose of the study. Confidentiality and anonymity was assured. Study subjects had the right to refuse to participate or withdraw from the study without any rationale at any time and study subjects' privacy was considered during data collection.

4.9. Statistical Analysis

Date entry and data analysis were carried out using IBM-SPSS version 21. To prepare the data for analysis, basic statistics were calculated (frequencies, cross-tabulation and histogram). Data were presented as mean, standard deviation, frequencies and percentages. Chi-square test was used to compare the difference in distribution of frequencies among different groups. For continuous variables; independent t-test analysis was carried out to compare the means of normally distributed data. For repeated measures; paired t-test analysis was used. Multivariate logistic regression analysis was calculated to investigate the significant factors influencing NNJ (Odds Ratio -OR-, 95% confidence interval -95% CI- and Likelihood Ratio Test –LRT-). Significant test results were considered when p value was ≤ 0.05.

5. Results

Table 1: the table of personal data shows that there was no significant difference between the study and the control groups regarding mean age, women's and husband's education, residence, mean gestational age and occupation.

Figure 1: This figure illustrated that there was no significant relation between study and control groups regarding to women's knowledge about NNJ. The majority of studied sample in both groups were poor knowledge regarding neonatal jaundice.

Table 2: this table revealed that there was statistical significance between level of knowledge in pre- test and post-test (8.7±2.76 and 23.15±1.97 respectively) with p-value= (<0.001**).

Figure 2: This figure revealed that there was a statistically significant difference between pre and post educational program regarding to pregnant women's

knowledge about NNJ with evidence improve the knowledge level from poor to good with P-value = (0.001**).

**Table 1. Distribution of study participant according to their personal data**

| Personal data	Study group (n= 150)		Control group (n= 150)		P-value
	No.	%	No.	%	
Age/ years (Mean ± SD)	27.02 ± 6.1		25.81± 5.2		0.065
<20	19	12.1	24	16.0	
20-30	95	60.8	104	69.3	0.080
>30	36	23.1	22	14.7	
Mother educational level					
Illiterate & read and write	54	36.0	42	28.0	
Basic &secondary education	78	52.0	97	64.7	0.072
University	18	12.0	11	7.3	
Husband educational level					
Illiterate & read and write	49	32.7	34	22.7	
Basic and secondary education	73	48.6	81	54.0	0.142
University	28	18.7	35	23.3	
Occupation					
Housewife	142	94.7	147	98	
Employee	8	5.3	3	2	0.125
Residence					
Urban area	48	32	33	22	
Rural area	102	68	117	78	0.069
Number of gravidity (Mean ± SD)					
Primi-gravida	84		68		
Primi-para	66		82		0.065
Gestational age ((Mean ± SD)	36.6±2.6		36.6±1.9		0.980
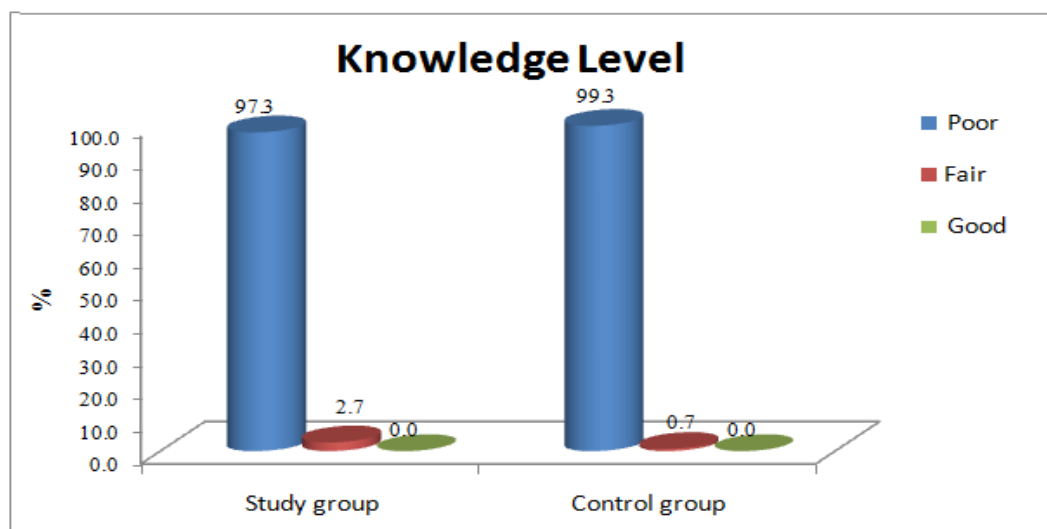
Figure 1. Relationship between studied groups according to knowledge level of the pregnant women about NNJ before the program:

Table 2. Comparison of pregnant women's' knowledge about neonatal jaundice before and after the program in the study group

Knowledge	Pre	Post	P. value
Definition of NNJ	0.8±0.4	1±0	<0.001**
Types of NNJ	0.47±0.63	1.99±0.16	<0.001**
Causes of physiological	0.2±0.4	1±0	<0.001**
Causes of pathological	1.17±0.93	3.39±0.57	<0.001**
Risk factors	1.16±0.7	2.87±0.69	<0.001**
Normal value of jaundice	0.02±0.14	1±0	<0.001**
Signs & Symptoms	2.31±0.94	5.21±0.85	<0.001**
Complications of jaundice	1.53±0.96	3.65±0.69	<0.001**
Prevention of jaundice	0.22±0.42	1±0	<0.001**
Treatment of jaundice	0.81±0.72	2.03±0.27	<0.001**
Knowledge Score	**8.7±2.76**	**23.15±1.97**	**<0.001****
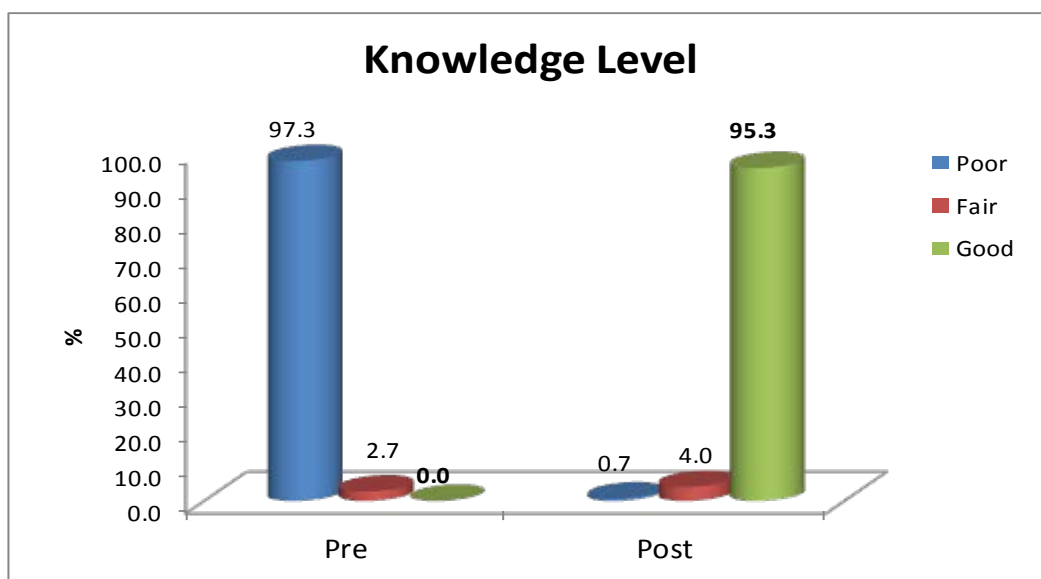
Figure 2. Relationship between studied groups according to knowledge level of NNJ before and after the program in the study group
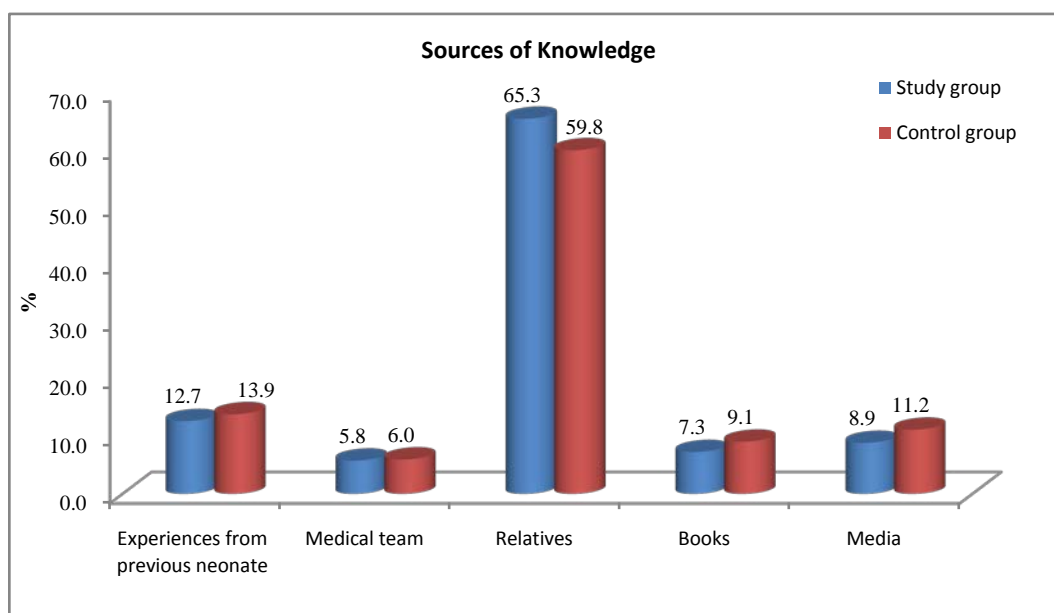
Figure 3. Sources of pregnant women's' knowledge toward NNJ between the study and control groups before the educational Program
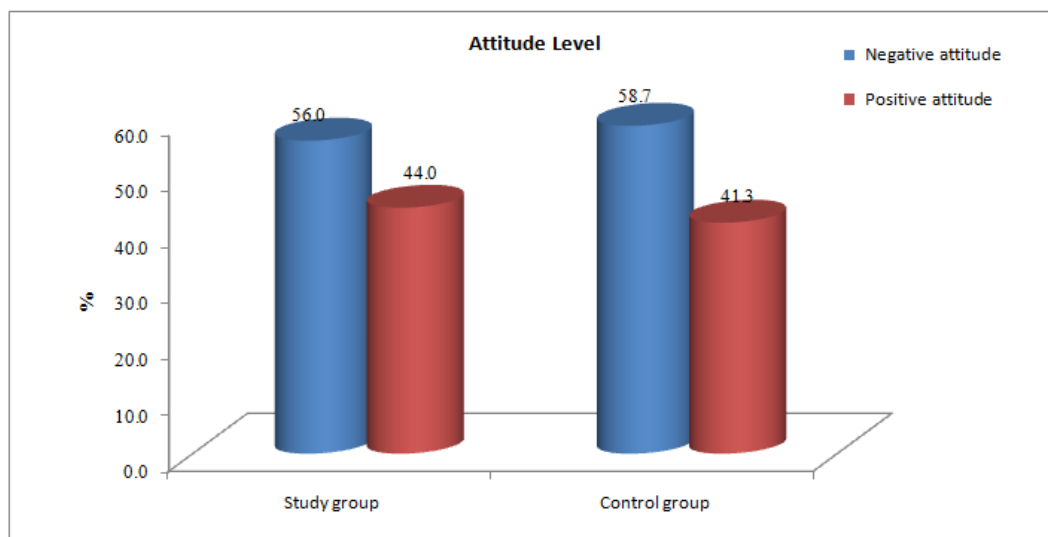
Figure 4. Pregnant women's' attitude toward NNJ between the study and control groups before the educational Program
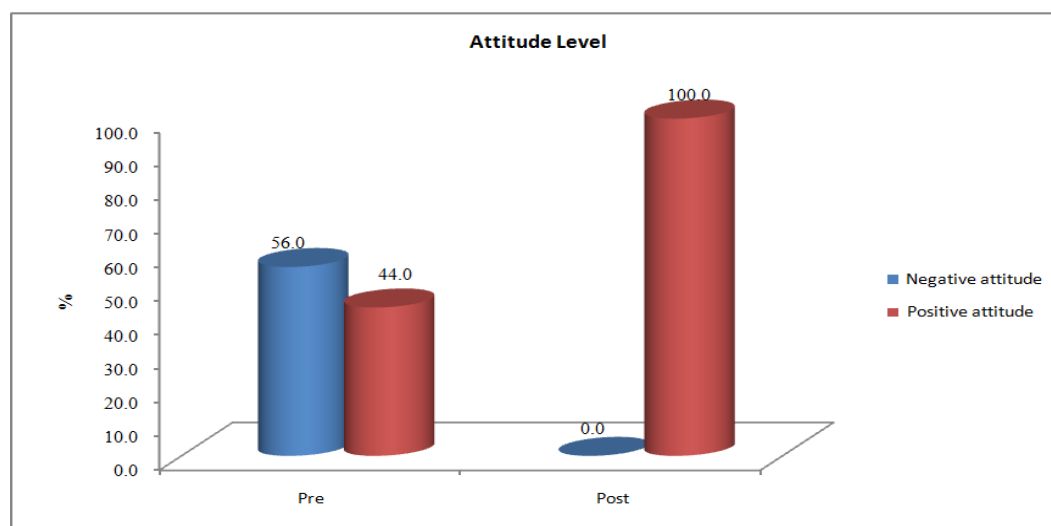
Figure 5. Pregnant women's attitude toward NNJ the in study group before and after the educational Program in the study group

Table 3. Postnatal Jaundice follow up of Study versus Control groups

Follow up items	Study group (n= 150)		Control group (n= 150)		P-value
	No.	%	No.	%	
Incidence of post natal Jaundice	63	42.7	73	48.7	0.311[+]
Phototherapy Indicated	8	5.3	19	12.7	0.081[+]
No. Jaundice Days (n=138)	5.77 ± 0.4		11.27 ± 0.6		< 0.001**
↑ BF during Jaundice (n=138)	55	85.9	29	39.2	< 0.001**
Medication at Home (n=132)	51	82.3	67	95.7	0.012*

+Chi-square test and T-test was used to compare the proportions among groups.

Table 4. Independent Effect of the Educational Program on post natal jaundice: Multivariate Regression Analysis

Factor	Odds Ratio	95% CI*	LRT** P-value
• Age	1.079	0.991 – 1.174	0.081
• Pregnant women's Education (Higher)	0.883	0.354 – 2.198	0.789
• Father's Education (Higher)	1.249	0.485 – 3.402	0.664
• No. Jaundice Days	0.773	0.667 – 0.897	0.001**
• ↑ BF during Jaundice (n=138)	3.856	1.088 – 13.663	0.037*
• Medication at Home (n=132)	0.831	0.186 – 3.711	0.808

*CI= Confidence Interval
**LRT=Likelihood Ratio Test.

Figure 3: This figure illustrate the sources of pregnant women's knowledge which reveals that the main source of knowledge in both group acquired from relatives in both groups (51.3% & 48% respectively).

Figure 4: This figure evident that there was no significant relation between study and control groups regarding to women's attitude. Most of women in groups have negative attitude (56 & 58.7 respectively) with P-value = (0.347).

Figure 5: This figure showed that there was a significant change in the women's attitude after educational intervention with P-value = (0.001**).

Table 3: Reveals that there a statistically significant effect of educational program between both group, which improve women's breast feeding and decrease number of hospital stay in study group than control group with P-value = < 0.001**.

Table 4: Illustrated the factors that affected by educational program in study group, which revealed that the number of post natal jaundice and improving breast feeding is the most factors affected by educational program in multivariate regression analysis (0.001** & 0.037* respectively).

6. Discussion

NNJ during the first week of life can occasionally progress to severe condition. If inappropriately managed it may lead to long-term, irreversible neurological impairment or death [8].

The current study found that the mean Knowledge level of the pregnant women toward NNJ in the study group improved significantly after the educational program. This result was in line with [4] Kashaki, et al., (2016) who indicated that higher mean scores of knowledge with a statistically significant difference in the study group. Correspondingly, the results were in agreement with [9,10] WHO, (2003) and Hassan, et al., (2018) who founded that implementation of an educational program

leads to significant improvement in the pregnant women's knowledge i.e. the total knowledge score was improved after giving the instructions.

This might be attributed to that the improvement in the total knowledge was related to the positive change in the pregnant women's perception of the NNJ after giving them valuable information and instructions and telling them about bad outcomes and complications of NNJ and how it can be prevented by early detections breast feeding and proper management.

The study results observed that there was a lack of studied pregnant women's knowledge as regards; types, causes, risk factors, normal value, signs, complications, prevention, and treatment of NNJ during the assessment before the program which reaches a good level after the program with statistically significant differences between pre and posttest. The results were consistent with the findings of other studies done by [11,12] Khalesi and Rakhshani (2008), Egube, et al., (2013) and studies done in developing countries such as Ethiopia by [13] Adebami (2015), Nigeria by [14] Ogunlesi (2015), Iran by [15] Amirshaghaghi, et al., (2008), and Turkey by [16] Sutcuoglu, et al., (2012). While the Egyptian study conducted with [17] Moawad, et al., (2016) revealed unexpected moderate knowledge from the pregnant women's as regards NNJ.

These results were in accordance with the results of an Egyptian study conducted by [5] Allahonya, et al., (2016) who reported in his study about Pregnant women's perception toward neonatal jaundice, that the lack of pregnant women's knowledge might lead to the delayed care and develop complications as kernicterus.

This lack of pregnant women's knowledge in the study results might be attributed that the study sample was primi-gravida and primi-para and they not had the enough experience as other pregnant women's who had a previous neonate with NNJ and history of hospital admission.

The present study results indicated that the attitude of the pregnant women's toward NNJ in the study group pregnant women's was changed positively after the educational program with SSD between pre and posttest. This result was in agreement with the previous educational program done by [18,19,20,21] Guled, et al., (2018), Jalambo, et al., (2017), Heydartabar, et al., (2016), and Sukandar, et al., (2015) who found that there was a positive attitude of the pregnant women's observed after the educational program with SSD before and after implementation of the program. Furthermore, studies by [12,22,23] Goodman, et al., (2015), Rodrigo and Cooray (2011), and Egube, et al., (2013) indicated that pregnant women's attitude and behavior towards NNJ were satisfactory.

From the researchers' viewpoint, the educational program increased the pregnant women's' awareness about complications of NNJ; modify the misconceptions and negative traditional attitude toward NNJ manage especially illiterate women as exposure babies o sun light, give neonate certain herbs and others, and the importance of early intervention. These were important factors which change the pregnant women's attitude positively.

In addition; the study found that the main source of pregnant women's knowledge was relatives in study and control groups. While the a few number of pregnant women's took the knowledge from the medical team, books, and mass media. This finding was concurrent with [10] Hassan, et al., (2018) who found that the relative/friends and neighbor were the main source of pregnant women's' knowledge followed by mass media. While a study by [12] Egube, et al., (2013) indicated that a majority of the pregnant women's who had awareness about NNJ their source of information was the health team, while very few had theirs from the mass media, school, or books. This results attributed that the good relation and accessibility of relatives at any time for pregnant women's.

During the study follow up; the results demonstrated that the number of NNJ days significantly lower in the study group rather than the control group after the program. Also, it was observed that the pregnant women's who received the educational program in the study group were significantly increasing breast feeding during NNJ when compared with their counterparts in the control group. These results were concurrent with [18,24] Guled, et al., (2018) and Hanafi, et al., (2014) who stated that the pregnant women's practice as regards BF was increased after the program intervention.

The study results could confirm the beneficial effects of training program by different resources including brochure and program session on increasing level of both knowledge and practice towards NNJ and importance of breast feeding in improving it. And raising their practice toward BF can be also, achieved appropriately.

7. Conclusion

Based on the current study results; it could be inferred that the level of pregnant women's knowledge toward NNJ in the study group was significantly improved after the educational program when compared with the control group. Also, the pregnant women's' attitude toward NNJ was significantly changed after the program in the study group than the control group and improve breast feeding and decrease number of jaundice days are the main goals changed in study group after implementation of the educational program.

8. Recommendations

1. Implementing a routine health education program for pregnant women about NNJ
2. Further research to evaluate the women's practice towards NNJ
3. Raising awareness of relatives as they were identified as the main source of knowledge in the current study

References

[1] Almohayya T, Fahad RA, Mohammed E Alahmari, Ibraheem N A, Ali R A, Amjaad Saleh A S and Ali S Ahmad., (2017). Incidence and Risk Factors for Neonatal Jaundice among Neonates with Urinary Tract Infection in Abha - Saudi Arabia. The Egyptian Journal of Hospital Medicine Vol.67 (2), Page 692-696 692.

[2] Ibraheim E, Ali M and Abdelalim Y., (2016). Perceptions, practices, and traditional beliefs related to neonatal jaundice

among Egyptian pregnant womens. A cross-sectional descriptive study, Medicine, Baltimore; 95(36):

[3] American Academy of Pediatrics (2004). Subcommittee on hyperbilirubinemia, management of hyperbilirubimemia in the newborn infant 35 or more weeks of gestation. Pediatrics; 114: 297-316.

[4] Kashaki M, Kazemian M, Afjeh A, Mostafa Q, Omid S, Rastegari B, Pashaei T, Ansari H, Hamid Asayesh,Shafieyan Z and Morteza M., (2016). Effect of Educational Intervention on the Knowledge and Practice among Parents of Newborns with Jaundice, international journal of pediatric, Vol.4, N.9, No.33, 3441-47.

[5] Allahony D, Hegazy N, Kasemy Z and Bahgat E., (2016). Mothers' perception toward neonatal jaundice in Kafr El-batanoon village, Menoufia, Egypt, Menoufia medical journal, Volume 29, Issu e 3,743-748.

[6] Mannjubala D, (2013). A Descriptive Study to Assess the Knowledge and Attitude on Neonatal Jaundice among the pregnant women in a Selected Village of Puducherry, Research and Reviews: Journal of Medical and Health Sciences, Volume 2, Issue 3.

[7] Olayinka O, Molars A, Kevin D, Babatunde A, Toriola T, and Olumuyiwa O (2015). Knowledge, attitude and practice of mothers I Mosan Okunola community, Lagos, Nigeria, Nigeria post graduate medical journal, volume: 22, issue: 3, page: 158-163.

[8] Basheer H. B, Makhlouf M.S, Halawany F, Fahmy N and Iskander I F, (2017). Screening for neonatal jaundice in El Galaa Teaching Hospital: A Egyptian Maternity Hospital – Can the model be replicated?, Journal of clinical neonatology, Volume: 6, Issue: 2, Page: 128-133.

[9] World Health Organization (2003). Regional Office for the Eastern Mediterranean-Ministry of Health and Population Arab Republic of Egypt. Health facility survey on out-patient care (IMCI): Egypt. Cairo: Al Marsa Printing & Publishing: Available from: http://applications.emro.who.int/dsaf/dsa364.pdf.

[10] Hassan A M, Mohamed N Th, Mohammed F M and Fathalla GE., (2018). Impact of an Educational Program for Pregnant womens about Preventing Oral Medications Misuse for Children under Five Years, American Journal of Nursing Research, Vol. 6, No. 3, 125-136.

[11] Khalesi N and Rakhshani F., (2008). Knowledge, attitude and behavior of pregnant womens on neonatal jaundice. Journal of Pakistan Medicine Association; 58:671-674.

[12] Egube B A, Ofili AN, Isara AR and Onakewhor JU., (2013). Neonatal jaundice and its management: Knowledge, attitude and practice among expectant pregnant womens attending antenatal clinic at University of Benin Teaching Hospital, Benin City, Nigeria, Nigerian Journal of Clinical practice, Vol 16, Issue 2 PP, 188-194.

[13] Adebami OJ., (2015). Appraisal of maternal knowledge of neonatal jaundice in Ilesa, Southwestern Nigeria: what implications for persistence of acute bilirubin encephalopathy in developing countries. Basic Research Journal Medicine Clinic Science; 4:156-63.

[14] Ogunlesi TA and Abdul AR., (2015). Maternal knowledge and care seeking behaviors for newborn jaundice in Sagamu, Southwest Nigeria. Nigeria Journal of Clinical Practice; 18:33-40.

[15] Amirshaghaghi A, Ghabili K, Shoja MM and Kooshavar H., (2008). Neonatal jaundice: knowledge and practice of Iranian pregnant womens with icteric K Neonatal jaundice: newborns. Pakistan Journal of Biological Sciences, Volume 11 (6): 942-945, 5.

[16] Sutcuoglu S, Dursun S, Halicioglu O, Ozturk C, Akman S, Yaprak I and Ozer E., (2012). Evaluation of maternal knowledge level about neonatal jaundice. Journal of Maternal Fetal Neonatal Medicine; 25:1387-1389.

[17] Moawad EM, Abdallah EA and Abdelalim YZ., (2016). Perceptions, practices, and traditional beliefs related to neonatal jaundice among Egyptian pregnant women's, a cross-sectional descriptive study, 95:36.

[18] Guled R A, Mamat N M, Belachew T, Abu Bakar WA and Assefa N., (2018). Effect of Nutrition Education Intervention on Knowledge Attitude and Practice of Pregnant womens/caregivers on Infant and Young Child Feeding in Shabelle (Gode) Zone, Somali Region, Eastern Ethiopia, Revelation and Science / Vol. 08, No. 01 (1439H/2018) 50-59.

[19] Jalambo M O, Sharif R, Nasser I A and Karim N A., (2017). Improvement in Knowledge, Attitude and Practice of Iron Deficiency Anaemia among Iron-Deficient Female Adolescents after Nutritional Educational Intervention. Global Journal of Health Science, 9 (7), 15-23. p15.

[20] Heydartabar R, Hatefnia E, Kazemnejad A, Ayubi E and Mansori K., (2016). Effects of Model-Based Educational Intervention on Self-medication Behavior in Pregnant womens with Children less than 2- year. Alborz University of Medical Science, Karaj, Iran. International Journal of Pediatric; 4(8): 3229-38. Vol. 4, N. 8, No, 32, Pages: 3229-3238.

[21] Sukandar D, Khomsan A, Anwar F, Riyadi H & Mudjajanto E S., (2015). Nutrition Knowledge, Attitude, and Practice of Pregnant womens and Children Nutritional Status Improved after Five Months Nutrition Education Intervention. International Journal of Science: Basic and Applied Research, 23(2), 424-442.

[22] Goodman OO, Kehinde OA, Odugbemi BA, Femi-Adebayo TT and Odusanyae OO., (2015). Neonatal jaundice: knowledge, attitude and practices of pregnant womens in Mosan-Okunola community, Lagos, Nigeria. Nigerian Postgrad- graduate Medicine Journal; 22 (3):158-63.

[23] Rodrigo B and Cooray G., (2011). The knowledge, attitude & behaviour on neonatal jaundice of postnatal pregnant womens in Provincial General Hospital, Badulla, Sri Lanka Journal of Child Health, 40 (4): 164-168.

[24] Hanafi M I, Shalaby S A, Falatah N H & El-Ammari H., (2014). Impact of health education on knowledge of, attitude to and practice of breastfeeding among women attending primary health care centers in Almadinah Almunawwarah, Kingdom of Saudi Arabia.