Effect of Teaching Program for Nurses on Quality of Care for Brucellosis among Children in Benha Fever Hospital

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Abstract

Background: Brucellosis in children, "undulant fever" or "Mediterranean fever", or "Malta fever" is a systemic infection and may present in many atypical forms, from mild to severe acute infections in about half of the cases. **Aim of the study** is to assess the effect of teaching program for nurses' knowledge, quality of care for brucellosis among children **Research Design** A quasi - experimental study was utilized. **Setting:** The study was conducted in Benha Fever Hospital affiliated to Egyption Health and population minstry. **Subject**: Aconvient sample of 100 nurses, all who are dealing with brucellosis cases and 36 children hospitalized with brucellosis from the previously mentioned setting during 6 months. **The tools of data collection:** Three tools were used for data collection, the first tool was a structured interviewing questionnaire sheet, to assess nurses' knowledge regarding brucellosis.The second tool was a child health assessment sheet and the third tool was an observational Checklist to assess nurses practice toward care of children with brucellosis. **Results** : less than one third of the studied nurses had good knowledge related to total knowledge about brucellosis pre-program implementation, while more than two thirds of them had good knowledge post program and there was a positive statistical correlation between total knowledge and total practice scores regarding care of children with brucellosis. **Conclusion:** It can be concluded that before implementation of teaching program the studied nurses had a deficit knowledge and inadequate performance level related to care of children with brucellosis. Meanwhile, after the teaching program, nurses' performance is significantly improved that reflects the importance of continuous education for nurses working at hospital. **Recommendation:** Periodical educational programs for nurses to improve nurses' performance for care of children with brucellosis and standardized nursing guidelines about infection control.

Key words: Brucellosis, Quality of care and Teaching program.

Introduction

Brucellosis is a highly contagious zoonosis caused by small, gram-negative coccobacilli, namely, Brucella species. Ingestion of unpasteurized dairy products such as milk and cheese or undercooked meat can infect human **(*Bosilkovski et al., 2009)*.** In addition, infection can be transmitted to humans through contact with fluids from infected animals such as cattle, sheep, camel, or other infected animals. The bacteria can enter the body through the eyes and inhalation of infected droplets **(*Pappas et al., 2006).*** Symptoms include recurring fever, headache, arthralgia and muscle aches, anorexia and weight loss, constipation, secondary anemia, nervous system signs, night sweating and orchitis. The disease in humans may last for three months and mortality is low. In animals, the primary sign of infection in females is abortion and in males epididymitis and orchitis

and diagnosis can only be confirmed by laboratory tests that may even confirm latent infections ***(Corbel, 2010).***

Brucellosis in the Mediterranean, chiefly due to *B* melitensis, has the highest age/sex-related incidence in males in their mid-20s. A report from northern Saudi Arabia found that 60% of cases of brucellosis occurred in individuals aged 13-40 years, whereas 21% occurred in those younger than 13 years, 16% in those aged 40-60 years, and 2.5% in those older than 60 years ***(Dean et al., 2012).*** Brucellosis causes more than 500,000 infections per year worldwide. Its geographic distribution is limited by effective public and animal health programs, and the prevalence of the disease varies widely from country to country ***(Pappas et al., 2006).***

The main source of infection in children is consumption of unpasteurized dairy products and adults boys are more commonly infected than girls are. Transmission from mother to child is rare but possible. Disease presents with flu-like syndrome or persistent bone pain, weakness, and headaches. Other common symptoms and signs include fever, arthralgia, sweating, and arthritis, especially monoarthritis, and the most commonly affected joints are hip and knee ***(Mantur et al., 2007).***

Educational programs are considered as means for providing nurses with theoretical and technical information needed to acquire new skills and to continually improve nursing practice. Also help them to accept responsibilities for their professional development. The knowledge and practices of nurses in relation to infection control were deficient. The implementation of a specially developed program has led to statistically significant improvements in nurses' knowledge and practices ***(Abo-Lwafa, 2013).***

Aim of the study

This study aimed at assessing the effect of teaching program on nurses' knowledge, quality of care for brucellosis among children

Hypothesis

This study hypothezed that applying teaching program for pediatric nurses who caring for children with brucellosis will improve their quality of care .

Subjects and Method

Design

A quasi – experimental study was utilized for conducting the study.

Setting

This study was carried in Benha Fever Hospital

Subjects

A convenient sample of (100) nurses, all available nurses working in Benha fever hospital and dealing directly with brucellosis cases during 6 months.

-For children: the sample composed of (36) children hospitalized for treatment of brucellosis. There are ranges from 1 year to less than 18 years.

Tools of data collection

Data were collected by using the following tools:

Tool I: A structured Interviewing Questionnaire Sheet: A pre-designed

questionnaire sheet (pre/post program implementation), It was developed by the researcher under thesis supervisors after reviewing literatures, books and periodicals to assess nurse's knowledge regarding Brucella. It prepared in Arabic language to suit educational level of nurses.

It includes two parts:

Part one:

Personal characteristics of the studied nurses that included age, educational level, years of experience and attendance program regarding management of brucellosis.

Part two:

This part was developed to assess nurses' knowledge about brucellosis such as definition, causes, mode of transmission, manifestations, treatment, complications, prevention and nursing care.

Scoring system:

Nurse's knowledge about brucellosis was consisted of 9 questions (closed ended questions) evaluated as follow:

- Complete answers obtained (2 points).

- Incomplete answers obtained (1 point).

- Don't know was obtained (zero point).

The total score ranged from 0-18 (2x9 gave maximum score). The scores of the items were summed up and the total divided by number of the items giving a mean score for the part .These scores were converted into percent score, mean and standard deviation were computed. The nurse knowledge was considered as:

- Less than 60% indicated poor knowledge.

- From 60%<85% indicated average knowledge.

- More than 85% indicated good knowledge.

Tool II: Child Assessment Sheet

It was developed by the researcher based on literature and includes two parts:

Part one:

Personal characteristics of studied children which include age, gender, residence and rank and these data were collected from child's medical file.

Part two:

Medical record of children which includes medical diagnosis, previous hospitalization, vital signs, laboratory investigations and medications. These data were collected from child's medical file and nurses' notes.

Tool III: Observational Checklists:

It was adapted from ***(Ruth et al., 2013),*** and was modified by the researcher under thesis supervisors. It was used to assess nurses' performance during child care which includes: hand washing, gloving, body temperature (oral, axillary), I.V injection, I.V fluid administration and canulation.

Scoring system:

Nurse's performance was

consisted 7 procedures which include 54 steps had been evaluated as follow:

- Less than 60% indicated incompetent practice.

- From 60%<85% indicated average practice.

- And more 85% indicated competent practice.

Ethical considerations

All nurses and child' parents were informed about the aim of the study and its benefits, in order to obtain their acceptance to participate. The researcher was informing them that the participation in the study was voluntary; they had the right to withdraw from the study at any time, without giving any reason and the collected data was treated confidentially.

Pilot study

A pilot study was carried out for 10% of total sample size (10) nurses and (3) children to test validity, reliability, applicability and time of data collection. No radical modifications were done to the questionnaire. Therefore, the sample of pilot study was included in the total study sample.

Content validity and reliability of tools:

Content validity of tools was done by 3 experts in the field of pediatric nursing. As regard reliability of tools, cronbach's knowledge 0.84 and Cronbach's Alpha practice 0.87.

Field of work

The data was collected from the previously mentioned setting by using the previous study tools in a period of six months starting from the beginning April 2016 until the end of September 2016. The researcher has collected data at three days (Sunday, Monday and Wednesday) / week during morning and afternoon shifts. Data were collected throughout three tools at the first every nurse was interviewed individually for filling the structured interviewing questionnaire sheet. The time required for each nurse for answering the personal characteristic sheet was about 2-5 minutes. The questionnaire sheet was completed over a period of time about 10-15 minutes. For the observational checklist each nurse was observed three different times and the mean was taken. The time for each observational checklist ranges from 10-20 minutes.

Administrative design

An official permission was obtained from the Dean of Faculty of Nursing Benha University and directors of previously mentioned setting to conduct the study.

Statistical design

The collected data was reviewed, organized, categorized, tabulated, and analyzed. Data entry and analysis was done through using SPSS20 statistical software package. The tests used were frequencies, percentage, mean scores, standard deviation, X^2 , Person correlation coefficient test (r test) and Fisher exact test. Data was presented in the form of tables and figures.

Result:

Table (1): Number & percentage distribution of the studied nurses according to their personal characteristics (n=100).

Personal characteristics	**No.**	**%**
Age (years)		
20 < 25	21	21.0
25 < 30	39	39.0
30 < 35	26	26.0
≥ 35	14	14.0
Range	21-53	
Mean ± SD	29.41 ± 6.71	
Experience years		
1 < 5	32	32.0
5<10	36	36.0
10<15	15	15.0
≥ 15	17	17.0
Range	1-34	
Mean ± SD	9.06 ± 6.76	
Educational level		
Diploma Technical Secondary School of Nursing	29	29.0
Diploma Secondary School of Nursing	10	10.0
Institute nurses	34	34.0
Bachelor of Nursing	27	27.0

Table (1): showes that about more than one third (39%) of age is between 25<30 years, the mean age of the studied nurse 29.41 ± 6.71, about (36%) of years of experience is between 5<10 and the mean years of experience of the studied nurse 9.06 ± 6.76, about one third (34%) of educational level was institute nurses.

Table (2): Number & percentage distribution of the studied children according to their personal characteristics (n=36)

	No.	**%**
Personal characteristics		
Age (years)		
≤ 6	5	13.9
7- 12	7	19.4
13 ≤18	24	66.7
Range	2.17	
Mean ± SD	12.42 ± 4.11	
Gender		
Male	19	52.8
Female	17	47.2
Residence		
Urban	6	16.7
Rural	30	83.3

Table (2): illustrates that about two thirds (66.7%) of the studied children their age

ranging from 13 to less than 18 years and showed that the mean age of the studied children 12.42 ± 4.11years, there are represented male (52.8 %) while female (47.2 %), about more than three quarter (83.3%) of rural areas.

Figure (1): showes that about (9%) had good knowledge of the total studied nurse according to level of knowledge in pre-program while (83%) of them had good knowledge post program.

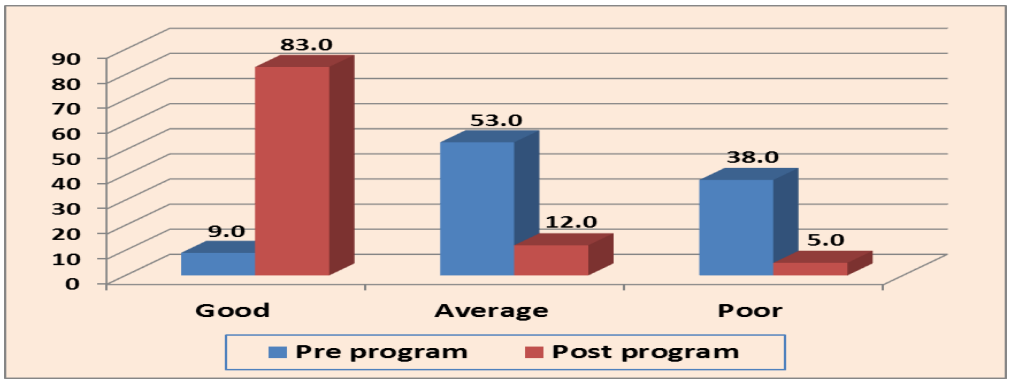

Figure (1): Distribution of the studied nurses according to level of total knowledge about brucellosis (n=100).

Figure (2): Distribution of the studied nurses according to level of total practice regarding care of children with brucellosis (n=100).

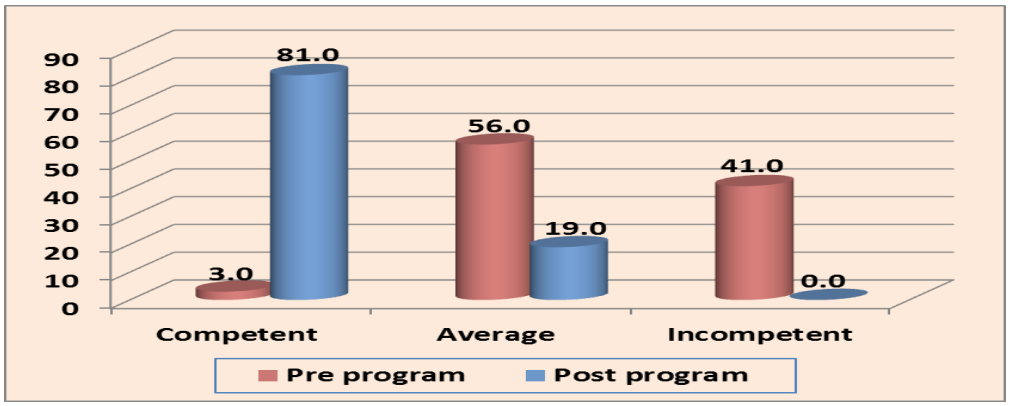

Figure (2): showes that about 3% of the studied nurse had competent practice related to total practice regarding brucellosis of pre-program implementation, while (81%) of them competent practice of post program.

Table (3): Correlation coefficient between total knowledge and total practice scores of studied nurses (n=100).

	Total knowledge score			
	Pre-program n=100		Post program n=100	
Variable	R	P	R	P
Total practice score	0.635	0.000**	0.637	0.000**

Table (3): showes that, there was positive statistical correlation between total knowledge and total practice scores regarding care of children with brucellosis.

Table (4): Relation between level of nurses' total practice scores (pre -program& post program) and nurses 'personal characteristics (n=100)

Practice level	**Pre- program**						**Post program**					
Personal Characteristics	**Competent n=3**		**Average n=56**		**Incompetent n=41**		**Competent n=81**		**Average n=19**		**Incompetent n=0**	
	No	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Age (years)												
20 < 25	2	**66.7**	12	21.4	7	17.1	21	25.9	0	0.0	0	0.0
25<30	1	33.3	28	50.0	10	24.4	29	35.8	10	**52.6**	0	0.0
30<35	0	0.0	15	26.8	11	26.8	19	23.5	3	15.8	0	0.0
≥ 35	0	0.0	1	1.8	13	31.7	12	14.8	6	31.6	0	0.0
FET			23.665						8.858			
P- value			0.001**						0.031*			
Experience (years)												
1<5	3	**100.0**	24	42.9	5	**12.2**	29	**35.8**	3	15.8	0	0.0
5<10	0	0.0	18	32.1	18	43.9	29	**35.8**	7	36.8	0	0.0
10<15	0	0.0	10	17.9	5	12.2	13	16.0	2	10.6	0	0.0
≥ 15	0	0.0	4	7.1	13	31.7	10	12.4	7	36.8	0	0.0
FET			23.343						7.676			
P- value			0.001**						0.053*			
Education al level												
Diploma Technical Secondary School of nursing	1	**33.3**	15	26.8	14	34.1	23	28.4	5	26.3	0	0.0
Diploma Secondary School of Nursing Institute nurses Bachelor of Nursing	1	**33.3**	5	8.9	4	9.8	8	9.9	2	10.5	0	0.0
	0	0.0	20	35.7	13	31.7	29	**35.8**	5	26.3	0	0.0
	1	33.3	16	28.6	10	24.4	21	25.9	7	36.8	0	0.0
FET			3.351						1.093			
P- value			0.764						0.779			

* A statistical significant difference (P ≤ 0.05) FET = Fisher Exact Test

**A highly statistical significant difference (P ≤ 0.001)

Table (4): illustrates that the nurses whom their age ranges between 20< 25 had competent practice (66.7%) in pre-program, while the nurses whom their age ranges between 25 < 30 had average practice (52.6%) in post program. the nurses whom their years of experience range from 1< 5 had incompetent practice (12.2%) in pre-program, while the nurses whom their years of experience range from 1 < 5 & 5 < 10 had competent practice (35.8%) in post program .The diploma technical secondary school of nursing and Diploma Secondary School of Nursing had competent practice (33.3%) in pre-program, while the institute nurses had competent practice (35.8%) in post program. There was a highly statistical significant difference(P ≤ 0.001).

Discussion

Findings of this study Part I: characteristics of the studied samples:

Concerning to characteristics of the studied nurses the present study results revealed that ; more than one third of the studied nurses aged between 25<30 years with the mean and standard deviation was 29.41 ± 6.71. This result was interpreted that the majority of the studied nurses were new graduated and had institute nursing education. This result was similar to the results of a study by **Fayed, (2016**) in a study entitled "Effect of Instructional on Nurse's Compliance with Universal Precautions of Infection Control at neonatal intensive care units", which was conducted in El-Menofia University. Showed that the mean age of nurses was 28.31±4.97 years.

Concerning of the studied children according to their medical history shows that no children had previous hospitalization for brucellosis, all children complained fever, about two thirds had 39.0^{o}C temperature, and the highest Brucella test 1/640 was in more than two thirds. These findings supported by **Aghaali, (2015)** in a study entitled "Prevalence of Asymptomatic Brucellosis in Children 7 to 12 years old", which was conducted in Qom University of medical sciences in Iran

Part II: Nurses' knowledge about brucellosis:

Concerning nurses' knowledge about brucellosis, the current study revealed that less than one quarter of the studied nurses had complete correct answer about knowledge of brucellosis pre-program. Meanwhile, the majority of them had complete correct answers regarding brucellosis with post program. These findings were agreement with **Aziz (2013)** in a study entitled "Assessment of Nurse's knowledge and their Roles of Health Education in Primary Health Care Centers Regarding Prevention from Brucellosis", which conducted in College of nursing, Hawler Medical University, Erbil, Iraq. Showed the majority of nurses have knowledge about brucellosis.

According to level of the nurses' knowledge about brucellosis, the current study revealed that about less than one third of the studied nurses had good knowledge related to total knowledge about brucellosis pre-program implementation These findings were in agreement with **Aziz, (2013**) while more than two third of them good knowledge post program. This result could be due to that most of nurses in hospital did not receive any program about brucellosis.

Part III: Nurses' practice regarding care of children with brucellosis:

Regarding the relation between level of total knowledge score post program and personal characteristics of the studied subjects, it revealed that, there was statistical significant difference ($P \leq 0.05$) between nurses knowledge and their characteristics in post program; there was a highly statistical significant difference ($P \leq 0.001$). These findings were agreement with **Fathy, (2016),** found that there was statistical significant difference ($P \leq 0.05$)) in a study entitled "Impact of intervention program on nursing performance provided for neonates with sepsis at intensive care units", faculty of nursing, Benha university.

Regarding correlation coefficient between total knowledge and total practice scores, these study results revealed that, there was a positive correlation (pre- program r = 0.635 and

post program r = 0.637) between total knowledge and total practice scores regarding to children with brucellosis. These findings were agreement with **Fathy, (2016).** Showed that, there was positive correlation (r=0.662pre/post program) with statistically significance difference ($p< 0.05$*).

From the researcher's point of view increasing the nurses' knowledge and improving in their practice regarding clinical manifestations and complications of brucellosis in children providing high quality of care for these children. In addition, periodical educational programs for nurses are necessary to help them to improve their practices regarding care of children with brucellosis.

Conclusion:

In the light of the present study findings, it can be concluded that before implementation of teaching program the studied nurses had deficit knowledge and inadequate performance level related to care of children with brucellosis. Meanwhile, after the teaching program, nurses' performance is significantly improved that reflects the importance of continuous education for nurses working at hospital. There was appositive statistical correlation between total knowledge and total practice scores regarding to children with brucellosis.

Recommendations:

Periodical educational programs for nurses are necessary to help them to improve their knowledge and practice for caring children with brucellosis.

Counseling service regarding prevention, detection and management should be available study setting in addition to brochures, booklets, teaching media program containing simple information about needs and problems.

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Conflict of interest

No

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