Health Education Program For Nurses Working At Maternal And Child Health Centers on Early Detection And Prevention of Mental Retardation During Childhood

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Abstract: Today, mentally retarded individuals comprise a significant portion of the world population. Children with mental retardation are seen as a burden to others and to their families. The economic impact of mental retardation is wide-ranging, long lasting and enormous. The aim of the study: to evaluate health education program for nurses working at Maternal and Child Health Centers on early detection and prevention of mental retardation. Subjects and Method: Study design: a quasi – experimental study design was used. Study settings: The study was carried out in 4 Maternal and Child Health Centers (MCH) affiliated to the Ministry of Health in Tanta city, El-Gharbeya Governorate. These MCH centers were selected randomly representing 4 districts of Tanta city. Tools of data collection: Two tools were used for data collection: A structured questionnaire sheet and an observational checklist. Results: The program was effective in improving nurses' knowledge and skills in early detection and prevention of mental retardation in children. There was statistically significant relationship between the performance scores for nurses of both groups and their total knowledge score before implementation of the program, where poor knowledge was associated with poor performance. Conclusion and recommendation: periodic refreshment in-service education and training programs should be regularly organized in MCH centers for nurses in order to equip them with adequate knowledge and skills on early detection of childhood disabilities. Nurses should provide health education for pregnant mothers about MR in order to prevent the occurrence of mental retardation.

Keywords: *Mental retardation, Adaptive behavior, Maternal and Child Health Centers*

I.   Introduction

One of the most important public health problems is mental retardation. It is a world- wide problem causing much human suffering both to the individual and to his family [1]. Mental retardation is disorder manifested in significantly below average overall intellectual functioning and deficits in adaptive behavior. The World Health Organization, referred mental retardation as intellectual disability or handicap, and defined it as "a condition of arrested or incomplete development of the mind characterized by impairment of skills and overall intelligence in areas such as cognition, language, motor and social abilities" [2]. In Egypt, the Egyptian Diagnostic Manual of Psychiatric Disorders defined mental retardation as "a subnormal general intellectual functioning which originates during developmental period up to 18 years" [3, 4].

The economic impact of mental retardation is wide-ranging, long lasting and enormous. These disorders impose a range of costs on individuals, families and communities. In the United States of America, the annual total costs related to mental disorders have been reported as more than the costs attributed to cancer, respiratory disease or AIDS. Although estimates of direct costs in low income countries do not reach these levels because of the low availability and coverage of mental health care services, indirect costs [4, 5].

Causes of mental retardation are numerous and include genetic and environmental factors. Diagnosis is highly dependent on a comprehensive personal and family medical history, complete physical examination and a careful developmental assessment of the child [3, 6]. Worldwide the prevalence of intellectual disability in (2011) is around 1% of the total population in high income countries, and 2% of the total population in low and middle income countries. Mental retardation is a very important public health problem in Egypt. In 2013 it was reported

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that it affects 4% of the disabled children population. Among school children mental retardation accounted 1.8% of all disabling conditions [7-9].

Maternal and child health care interventions can prevent many mental handicaps. It should begin by public education and completed by measures taken during the preconception, prenatal, perinatal, and postnatal periods. The emphasis is on planned pregnancies, regular prenatal care, regular health checkups for the mother, child immunization nutrition, prevention of environmental hazards, and accidents, early identification and screening, genetic studies, family planning, and creation of awareness among the general population. Early detection of children with mental retardation is important in maternal and child health care setting, because it helps in early treatment for some conditions, better planning and management of cases [10, 11]. Nurses have a vital role in MCH centers care, and therefore, they should be prepared to deliver all types of care, including measures for early detection and prevention of disability [12, 13].

Aim of the study: This study aimed to evaluate health education program for nurses working at Maternal and Child Health Centers on early detection and prevention of mental retardation.

Subject& Methods:

Research design: A quasi- experimental research design was used in this study.

Study settings: This study was conducted in 4 Maternal and Child Health Centers (MCH) affiliated to the Ministry of Health in Tanta city, El-Gharbeya Governorate. These MCH centers were selected randomly representing 4 districts of Tanta city.

Study subjects: All available nurses working in the above mentioned settings were recruited for participation in this study. The total sample was 118 nurses. They were divided randomly into two equal groups (study and control group).

Tools of the study: Two tools were developed by the researcher according to literature review [14-21], in order to obtain the necessary data.

Tool (1):-A structured questionnaire schedule: This tool was developed by the researcher for assessing nurses' knowledge regarding early detection and prevention of mental retardation. The questionnaire included the following parts:-

Part (1): Socio demographic data related to nurses, this included: age, level of education, years of general experience, years of experience in the field of children, training courses in the field of early detection and prevention of mental retardation in childhood diseases.

Part (2): Knowledge assessment questionnaire schedule:

Nurses' knowledge regarding mental retardation was assessed through a questionnaire schedule developed by the researcher. It was included knowledge about: Definition, classification, causes, risk factors and methods of diagnosis of mental retardation, nurses' knowledge about prevention of mental retardation. Nurses' knowledge about mental retardation rehabilitation, and role of the nurse in early detection and prevention of mental retardation.

It was written in the form of multiple choice questions, true and false questions, complete the sentence, and yes/no questions. Grading of the nurses' answers to questions about early detection and prevention of mental retardation were converted as follows: Correct complete response will be scored (2) and the correct incomplete response will be scored (1) and the incorrect response will be scored (zero).These scores will be summed up and the total score will be converted into a percent score. Nurse's knowledge score will be classified as: Good if the percent score will be more than 70%. Fair if the percent score will be 60%:70%. Poor if the percent score will be less than 60%.

Tool (2): An observation checklist for assessing nurse's practices:

An observation checklist was developed by the researcher in order to assess the nurses' practices in performing complete assessment of the newborn and children at the follow up visits for early detection of mental retardation. It included data regarding:

Part one: History taken:

The nurse was observed for taking: Child's demographic data such as child's age, mother's age, education and work status. Risk factors for mental retardation including; child's history during pregnancy, delivery, and childhood periods, such as (child's incubated more than 48 hrs, need for oxygen therapy, premature baby, ask if the child has seizure, maternal health condition during pregnancy and delivery, ask if the mother delivered child with mental retardation before, ask if a family member suffering from mental retardation, or malformation).

Part two: General physical examination of the child included:
-Examination the child's skin for signs of jaundice or cyanosis.
-Looking for any abnormalities or malformations in head, face, eyes, or mouth.
-Looking for any abnormalities in the spine.

-Growth measurements included; child's weight, length/height and head circumference, and recording in the growth chart.

Part three: Standardized developmental screening,

It was done through periodic examinations of major developmental milestones in selected ages. It was developed in the light of World Health Organization, (2014), integrated management of childhood illness: care of the well child [22]. It included observing the nurse while assessing the performance of the child's skills according to his/ her age or by assessing the child or asking his/her mother regarding: Cognitive, behavioral skills: e.g. seeing, hearing, moving, and touching. These skills help the child to recognize people, things, and sounds [22]. Social skills: e.g. assessing the child to express self through verbal and non-verbal skills [22]. Gross motor skills: e.g. assessing child reaching and grabbing. Child sitting, standing, and walking [22]. Affective/emotional skills: e.g. assessing a child to receive and express appropriate emotions and affection [22]. Scoring system for the nurses' practice regarding early detection and prevention of mental retardation was as follows: The items observed to be done was given score (1) and the items not done were given score (zero). Scores of the observed items was summed up and the total was converted into a percent score. The practice was considered good if the percent score was more than 70%, satisfactory if the percent score was 60% or more and poor if less than 60%.

II .Method

The operation of this study was carried out as follows:

1-Obtaining approvals.

An official permission to conduct the study was obtained from the Dean of the Faculty of Nursing to the directorate of Health Affairs in Tanta, and from him to the directors of MCH centers to conduct the study was obtained. The directors of MCH centers were informed about objectives of the study in order to take their permission to collect the data from the selected settings.

2-Developing the tools.

Structured questionnaire sheet and observation checklist were developed by the researcher after reviewing relevant literatures. Tools were tested for their face and content validity by a group of 5 experts in the field of community health nursing. Reliability of the tools was tested by using Coronbach's test.

3- Ethical and legal considerations.

Consent of the ethical committee of the Faculty of Nursing was obtained. An informed consent for participation in the study was obtained from the entire sample after explanation of the nature and purpose of the study to them .Nature of the study was not causing any harm and /or pain for the entire sample. Confidentiality and privacy were put into consideration regarding the data collected. Knowledge sheets were anonymous. Non participant observation was used by the researcher while assessing nursing practice.

4- The pilot study

A pilot study was carried out before embarking in the field of work for checking the relevance, appropriateness and clarity of the questionnaire, test the applicability of the observation checklist, and identify any unexpected obstacles or problems in data collection as well as the time needed for tool administration. The pilot study was done on 20 nurse chosen from different Maternal and Child Health Center other than those included in the study, to avoid contamination. Accordingly, the necessary modifications were done.

5- Developing the educational program.

The following steps were adopted to develop the program.

1-Preparatory phase:

1-Developing the booklet for nurses in order to increase nurses' knowledge and improve their performance regarding early detection and prevention of mental retardation.

2-Planning phase

A-Formulating program objectives.

1-General objectives.

The goal of the program was to enable Maternal and Child Health Care nurses to gain knowledge and skills helping them in early detection and prevention of mental retardation.

2-Specific objectives

By the end of the health education program nurses will be able to:

• Define mental retardation and disability.

• Recognize the prevalence of mental retardation in Egypt.

• List causes of mental retardation.

- Differentiate between mental retardation and mental illness
- List signs and symptoms of mental retardation.
- Determine classifications of mental retardation.
- Discuss the risk factors for mental retardation
- Demonstrate the nursing assessment of child for early detection of mental retardation.
- Compare between the normal development of the under 5 child and the child with mental retardation in the same age.
- Explain the different nursing activities of early detection and prevention of mental retardation.
- Discuss the nursing role in early detection and prevention of mental retardation.
- Determine the community resources that are available to help families of a mentally retarded child.

B-Preparing and organizing the program content.

Nurses' needs were determined in the pre program assessment. Needs were taken into consideration when preparing the program content. Organizing the content of the program was done to facilitate learning activities to achieve the objectives. The content was organized into 5 sessions, each session was 60 minutes.

C-Selecting the teaching strategies.

The following teaching strategies were used for implementation of the health education program: Lecture, group discussion, demonestration and redemonstration, Role playing.

D-Preparation done before program implementation.

1) Pre-requisites.

- **Human resources**

The program was totally carried out by the researcher, this to ensure providing complete, consistent and accurate knowledge about early detection and prevention of mental retardation for the study group.

- **Non human resources.**

The audiovisual materials used in this study included booklet, power point sides, doll, measuring tape (to demonstrate procedure related to measuring height and head circumference of the infant). The booklet and power point were prepared by the researcher based on literature review. Booklets were distributed to the studied sample at the end of the sessions to refresh their knowledge, and the power point was presented during each session as needed.

2) Scheduling the nurses' groups.

Each Maternal and Child Health Care center was visited separately, and the nurses from each center were divided randomly into two groups control and study group. Nurses in the study group only were attended the sessions, they were ranged from 15-20 nurse in each group.

E-Preparation was done before each teaching session.

1. Arranging the training room (the educational kitchen, or the head nurse room) in each center.
2. Ensure that audiovisual materials were in good working condition.
3. Preparing role play situation by using a doll.

F-Implementation of the program.

The field work of this study was done in 9 months from October 2015 to May 2016. Each nurse of the studied sample was first informed about the program objectives, as well as the time schedule in order to obtain their active participation and co operation during implementation of the program. Then pretest for each nurse in the study group was done. Regarding the observation checklist (each nurse performance in examining the new born for early detection of mental retardation was observed three times. The average was obtained. Five hours of teaching were implemented for the study group in each center in a five successive days (one hour each session per day).

Implementation of the program was as follows:

Instructions were provided in the form of lectures, group discussion. Each nurse in the group encouraged to express oneself, share problems, concerns and way of management. The researcher acted as a facilitator for the group interaction, by providing support, clarification, interpretation and positive reinforcement. The researcher instructed nurses at the beginning of the sessions about the rules of proper group discussion, as respect of each other's view without sarcasm, not interrupting peers during their tacking, and never joke or laugh at a comment of any nurse.

Approximately the first ten minutes of each session were dedicated for social communication and discussion of the previous session. The following 20 minutes for group discussion about session topic followed by 20 minutes for conducting demonstration and re demonstration of assessment of the newborn, role play, and

power point presentation by the researcher for more clarification. The last ten minutes of each session were dedicated for summarization of the discussed items and determining of the time of the next session and its title

J-Evaluation of the program.

Three assessments were done to the nurses in order to test their knowledge, and practice about early detection and prevention of mental retardation. Therefore, the interview sheet was introduced to the study subjects three times: **First time**: before implementation of health education using tool I, and tool II. **Second time**: immediately after the implementation of health education using tool I part (2), and tool II. **Third time**: 3 month after the implementation of health education using tool I part (2), and tool II.

K-statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 23. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). For comparison between means, student t-test was used. For comparison between more than two means, the F-value of analysis of variance (ANOVA) was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient r. A significance was adopted at P<0.05 for interpretation of results of tests of significance [*].

II.   Results

Table (1) presents the distribution of the studied subjects according to their socio demographic characteristics and their professional information. It revealed that the mean age was 43.00 years ±6.680 for control group and 43.86 years ±7.238 for the study group. In relation to the educational level, all the nurses in both groups were having nursing diploma. The majority of nurses in the control and study groups were married (93.2% and 86.4% respectively).Concerning the number of mentally retarded kids, only (6.8%) of the nurses in the studied group had mentally retarded kids. Regarding years of experience the mean years was 24.41 years ±6.803 for the control group and 25.69 years ± years 7.178 for the study group. Meanwhile the mean of their years of experience in the field of child health was 17.61 years ±5.660 for the control group and 19.03 years ± 6.772 for the study group. As regards to training courses in the early detection and prevention of mental retardation, it was found that all nurses in both groups didn't receive any training course.

Table (2) Showed mean scores of nurses' knowledge regarding the role of maternal and child care nurse in follow up visits for early detection of MR during the study phases. The table presented that there was a significant improvement in nurses' knowledge of study group regarding all items related to the role of maternal and child care nurse in follow up visits for early detection of MR during the study phases, where the total score of their knowledge increased from (17.15±7.029) preprogram, to (24.05±4.104) immediately after implementation, however, the scores decreased to (21.90±3.133) three months post implementation of the program. This difference was statistically significant (P<0.05). There was no statistically significant difference between all the mean scores of nurses' knowledge in control group .

Figure (1) represented distribution of the studied subjects regarding their total knowledge score about mental retardation. The figure illustrated that the most (98.3%) of control group had a poor scores of knowledge regarding mental retardation before and three months post implementation of the program. Among the study group, those who gained a good score of knowledge before implementation of the program were 8.5 % and this increased to 49.2% and 15.3% immediately and three months post program respectively. These differences were statistically significant. There was also a statistically significant difference between control and study groups pre and 3 months post implementation of the program (P < 0.05).

Figure (2) showed distribution of the studied subjects according to their total performance scores throughout periods of study. The figure illustrated that most of the nurses (83.1%) in the control group their total performance score before and three months post program was poor. This is compared with (81.4%) of the study group who had a poor score of performance pre implementation of the program, and (91.5%) of them had a good scores of performance immediately after implementation of the program. However, all the group had a satisfactory scores of performance three months post implementation of the program. There was a statistically significant difference between the two groups in relation to their performance three months post implementation of the program (χ^2= 42.316 and   P=0.00).

Table (3) showed the relationship between nurses' total knowledge score and their total performance score before educational program. The table illustrated that, there was a statistically significant relationship between the performance scores for nurses of both groups and their total knowledge score before implementation of the program (P < 0.05),where poor knowledge was associated with poor performance.

Table (4) showed correlation between socio-demographic, years of experience, experience in child's health and work place of the studied groups with the total score of knowledge throughout periods of study. Regarding the study group it was found that, there was a significant negative correlation between their total knowledge score in preprogram stage and three months post program and their age, marital status (married), years of experience (p=0.015 and 0.001 respectively), experience in child's health (0.042 and 0.011 respectively) and their work place (medical center in Segar) (P <0.05). A significant positive correlation was also seen between total knowledge score of study group three months post implementation of the program and their marital status (married nurses)(P= 0.001), their work place (second child care center in El-Embaby and fifth child care center in El-Agezy) (P=0.010 and 0.037 respectively).

Table (1): Distribution of the studied subjects according to their socio demographic characteristics and their professional information.

Categories	The studied nurses (n=118)				χ^2 P
	Control group (n=59)		Study group (n=59)		
	N	%	N	%	
Age/years					
▪ 30-	21	35.6	20	33.9	
▪ 40-	27	45.8	26	44.1	0.21
▪ >50	11	18.6	13	22.0	0.90
Range Mean ± SD	(30-55) 43.00±6.680		(31-58) 43.86±7.238		
Educational level					
▪ Nursing Diplome	59	100.0	59	100.0	-
Marital status					
▪ Married	55	93.2	51	86.4	1.637
▪ Divorced	2	3.4	5	8.5	0.441
▪ Widowed	2	3.4	3	5.1	
Number of mentally retarded kids					4.140
▪ 0	59	100.0	55	93.2	0.042*
▪ 1	0	0.0	4	6.8	
years of experience					
▪ 10-<20	15	25.4	15	25.4	0.00
▪ ≥20	44	74.6	44	74.6	1.00
Range Mean ± SD	(12-37) 24.41±6.803		(13-38) 25.69±7.178		
Experience in child's health					
▪ <10 years	2	3.4	2	4.3	1.295
▪ 10-<20 years	36	61.0	30	50.8	0.523
▪ ≥20 years	21	35.6	27	45.8	
Range Mean ± SD	(8-30) 17.61±5.660		(5-36) 19.03±6.772		
Training courses in child's health					
▪ None	59	100.0	59	100.0	-

Table (2): Mean scores of nurses' knowledge regarding the role of maternal and child care nurse in follow up visits for early detection of MR during the study phases.

Items of nurse's role	Control group (n=59)		t test P	Study group (n=59)			F P
	Pre	3 months Post test		Pre	Immediate	3 months Post test	
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD	Mean ± SD	
-Role during follow-up visits (9 points)							
	3.71±1.921	3.63±1.680	0.340 0.735	4.14±2.263	6.14±1.444	5.19±1.196	**20.518 0.00***
-Role toward women for prevention of MR(4 points)							

1.76±0.971	1.92±0.915	0.976 0.333	2.17±1.003	3.19±0.572	2.54±0.678	**26.152 0.00***
-Importance of early detection (5 points)						
2.10±1.155	2.29±1.051	1.156 0.252	2.31±1.523	3.73±0.827	3.10±0.635	**26.457 0.00***
-Time of nursing assessment (1 point)						
0.53±0.504	0.63±0.488	1.181 0.243	0.69±0.464	0.88±0.326	1.00±0.001	**13.000 0.00***
-Signs of early detection(6 points)						
2.14±1.395	2.25±1.359	0.559 0.578	2.93±1.837	4.22±1.190	4.07±0.888	**15.715 0.00***
-Early nursing intervention (1 point)						
0.49±0.504	0.54±0.502	0.519 0.606	0.71±0.457	0.83±0.378	0.98±0.130	**8.870 0.00***
- Role toward mentally retarded child at follow up visits (points 7)						
3.49±1.478	3.37±1.425	0.563 0.576	4.20±1.901	5.07±1.628	5.02±0.974	**5.775 0.004***
Total (33 points)	**14.22±5.166**	**14.63±5.089**	**0.186 0.667**	**17.15±7.029**	**24.05±4.104**	**21.90±3.133**	**28.986 0.00***

Figure (1): Distribution of nurses according to their total knowledge score about mental retardation throughout periods of the study.
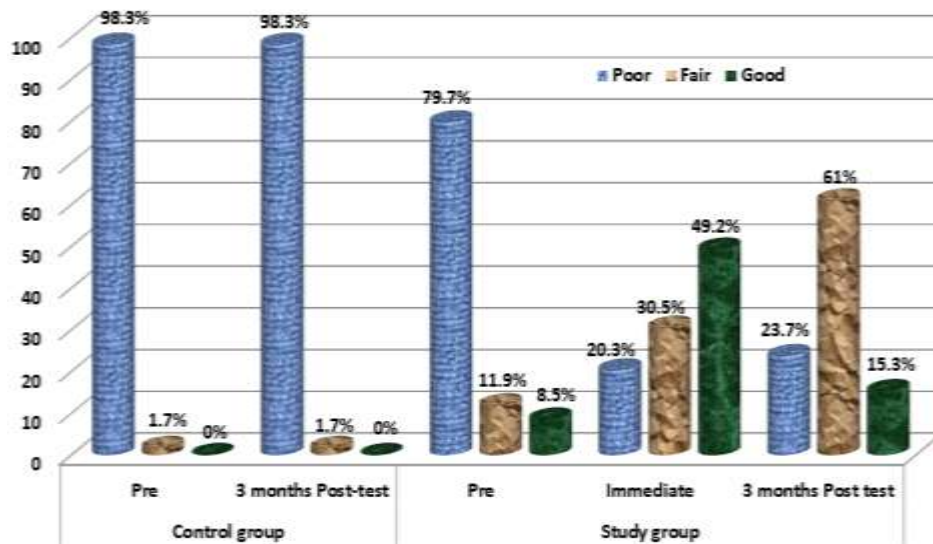

Figure (2): Distribution of nurses according to their total performance score throughout periods of study.
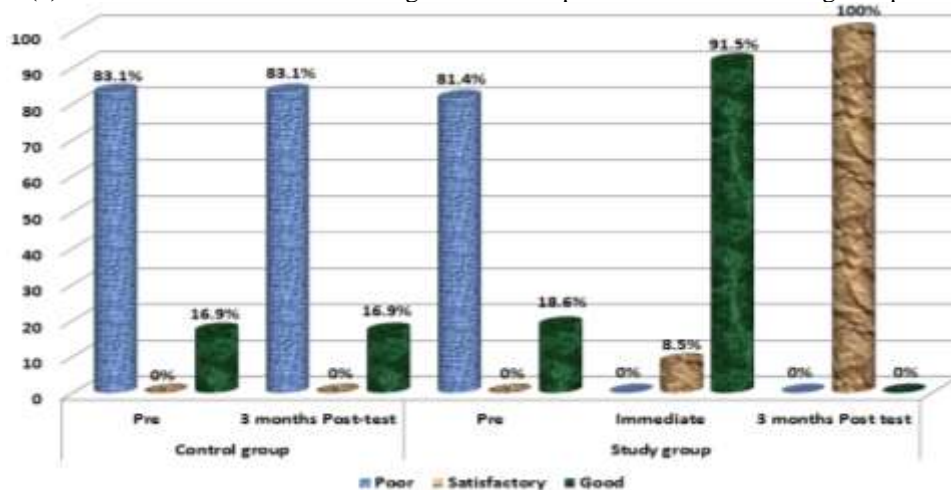
Table (3): Relationship between nurses' total knowledge score and their total performance score before the educational program.

Total Performance score		Total knowledge score						χ^2	P
		Poor		Fair		Good			
		N	%	N	%	N	%		
Control group (n=59)	Poor(n=49)	49	100.0	0	0.0	0	0.0	4.984	**0.026***
	Good(n=10)	9	90.0	1	10.0	0	0.0		
Study group (n=59)	Poor(n=48)	42	87.5	4	8.3	2	4.2	10.329	**0.006***
	Good(n=11)	5	45.5	3	27.3	3	27.3		

* Significant at P < 0.05

Table (4): Correlation between socio-demographic, years of experience, experience in child's health and work place of the studied groups with the total score of knowledge throughout periods of study.

Characteristics	Total knowledge score							
	Control group				Study group			
	Pre		3 months Posttest		Pre		3 months Posttest	
	r	P	r	P	r	P	r	P
Age: (in years)	-0.324	**0.012***	-0.103	0.439	**-0.319**	**0.014***	**-0.430**	**0.001****
Marital status								
married	-0.156	0.237	0.111	0.403	0.136	0.305	**0.410**	**0.001****
Divorced	0.099	0.455	-0.215	0.103	-0.099	0.456	**-0.334**	**0.010****
widowed	0.118	0.372	0.061	0.649	-0.018	0.892	0.00	1.00
Years of experience	**-0.334**	**0.010****	-0.102	0.441	**-0.315**	**0.015***	**-0.427**	**0.001****
Experience in child's health	**-0.244**	0.063	-0.121	0.363	**-0.266**	**0.042***	**-0.328**	**0.011***
Work place								
Medical center in Botros	-0.048	0.717	0.007	0.955	-0.094	0.480	0.022	0.871
Second child care center in El-Embaby	0.329	**0.011***	0.350	**0.007****	0.358	**0.005****	0.333	**0.010****
Medical center in Segar	-0.599	**0.00****	-0.552	**0.00****	-0.542	**0.000****	-0.544	**0.00****
Fifth child care center in El-Agezy	0.391	**0.002****	0.270	**0.039***	0.358	**0.005****	0.273	**0.037***

**. Correlation is significant at the 0.01 level.

*. Correlation is significant at the 0.05 level.

III. Discussion

Mental retardation is a serious health problem as it characterized by significantly sub average intellectual functioning, and existing related limitations in two or more of the following applicable adaptive skills areas: communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure, and work. Signs of mental retardation may appear during infancy, or they may not be noticeable until a child reaches school age. It often depends on the severity of the disability [23].

Early detection of children with mental retardation is important in maternal and child health care settings. It helps in early treatment , rehabilitation and management of cases. Nurses working in the field of maternal and child health care can help in delivering these preventive interventions. Therefore, the aim of this study was to evaluate health education program for nurses working at Maternal and Child Health centers on early detection and prevention of mental retardation [24].

As noted by Gilbert N, (2008), that educational programs proved to be an important aspect of continually improving nursing practice by providing nurses with the theoretical and technical information needed to acquire new skills. They also help nurses to accept the responsibility for their professional development [25]. The present study revealed that there were statistically significant improvements in the total mean scores of both the knowledge and performance of the study group regarding early detection and prevention of mental retardation from pre-program to immediate and three months post implementation of the program. It is obvious from the present study that nurses' performance was poor for the majority of nurses of the study group before implementation of the program, while immediately after program implementation the majority of them gained good performance score. Three months after program implementation all the nurses gained satisfactory score. Meanwhile, there was no significant improvement in the total mean knowledge and performance scores of the control group throughout the study periods. The improvement in the total mean scores of both knowledge and performance of the study group from pre-program to immediate and three months post implementation of the program may be related to the conducted in-service educational program about mental retardation.

These findings are similar to the results of Abdel-Hamid A. (2011) who studied the development of skills of Primary Health Care nurses in early detection of mental retardation during childhood in Ain Shams University, in Egypt, and reported that only small percentage of the nurses in the pretest gained satisfactory score in all the studied items of mental retardation, and there were improvements after implementation of the program and in the follow up test [26]. Similarly Edris S, (2016) in Egypt who studied the effect of health education program on primary health care nurses about early detection and prevention of Phynelketoneurea (PKU) as a cause of mental retardation, and reported that the majority of nurses gave incorrect answer or didn't know the meaning of PKU, causes, characteristics, the responsible enzyme, the most vulnerable groups, the onset of sings, and the early and permanent symptoms of the disease [27]. Also, Mc Cartney (2003), in UK who studied the education and training needs of qualified mental health nurses working in acute adult mental health services, and reported that training and education for nursing staff were often seen as the key to raising standards, and added that ultimately, knowledge is the synthesis of information to identify the relationships that provide further insight regarding a particular issue or subject area [28].

Findings of the present study revealed that there was a statistically significant relationship between the total knowledge score of nurses in the control group and their total performance scores three months post educational program, where poor knowledge was associated with poor performance. This is similar to the results of Abdella SH, (2015) in El-Minufia University, Egypt, who studied the capacity building of primary health care nurses regarding early detection of phenylketonuria (PKU) disease as a cause of mental retardation, and reported that when nurses were provided with the basic knowledge about mental retardation, they practiced perfectly [29]. Similarly, Melville et al., (2013), in UK who studied enhancing primary health care for adults with intellectual disabilities reported that nurses practice scores were low when knowledge scores were particularly low [30].

This study points to the fact that there are deficiencies in the mental health services provided by nurses in maternal and child health care centers. Maternal and Child Health care centers, in general, focus their services mainly on the physical health of both mothers and the children like immunization for the mother and child, child treatment, family planning, prenatal, natal, and postnatal services. Thus, promoting mental health and preventing mental retardation and illness are not yet within the focus aspect of MCH services. There was a serious lacking of nurses' knowledge about mental retardation. These findings may be attributed to unavailability of an organized structured health education program about mental retardation to maternal and child health care nurses. These findings should open a window to build an advocacy effort to spot the light on the mental services in MCH centers.

Daily D et al., (2002) [31], noted that the first and most important step in the diagnosis of mental retardation is to take a comprehensive patient and family history. Nurses' practices regarding history taking was also assessed in the present study revealed that there was a noticeable poor performance scores regarding history tacking of control group before and three months after program implementation. However, a significant improvement was observed in the total performance scores of the study group regarding history tacking, as well as examining new born in pre, immediate and three months post implementation of program. This agrees with Mohamed A (2014), in Egypt, who reported that before program implementation it was found that only 11% of the nurses took the child history [32]. The findings of the present study may be related to that most of the nurses were used to take these data carelessness, just to file it, or write it incomplete in most cases. It seems that they weren't recognizing the importance of these data in detecting mental retardation. Moreover, the heavy daily work load in MCH centers as nurses mostly

take care of a large number of children could be the cause of not paying much attention to history taking, as well as the child health record includes too many questions. Another important item is that nurses didn't know how to ask certain questions, especially those embarrassing ones, for example the question about family history of mental retardation or malformation, only few numbers of the nurses asked such questions.

Findings of the present study are supported by Abdel-Raouf (2014), who studied genetic services in MCH centers in Egypt: current situation and needs assessment, Cairo, Egypt, and found that all of the participants' performance in the study about genetics was unsatisfactory in the pretest results, and they gained good performance in the post test. Meanwhile, 97% of them had unsatisfactory knowledge in the pretest, and their knowledge score was good in the post test [33].

In accordance with the present study, WHO (2004) found that there was a gap in the basic and specialized education of medical professionals in the care of people with mental disabilities. WHO recommended that training of all health care providers who are serving people with mental retardation is very important. Emphasizing the importance of continuous education and training to ensure providing up to date health care service in the line of the available evidence for more effective nursing care [34].

Recommendations

1-Periodic refreshment in-service education and training, seminars/ workshops should be regularly organized in MCH centers for nurses in order to equip them with adequate knowledge and performance on early detection and prevention of mental retardation.

2-Nurses can help in providing pre marital care, education and counseling and provide the expected couples with the needed information, to develop healthy marital life styles.

3-Nurses need to assume their role in educating pregnant mothers about risk factors of MR in order to prevent the occurrence of mental retardation.

4-It is a necessity to provide nurses who are working in all MCH centers with a community directory (including names, telephone numbers, and sites) for disability services to be used for referral and helping families to start early intervention and rehabilitation programs.

5- Maternal and Child Health care centers need to be equipped with the needed equipment and materials used in early detection of mental retardation.

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