Assessment of Maternal and Child Health Nurses Performance in Early Detection of Mental Retardation During Childhood

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Abstract: **Early detection of child with mental retardation is important in maternal and child health care centers, because it helps in early treatment, rehabilitation and management of these cases. This study aimed to assess maternal and child health nurses' performance in early detection of mental retardation during childhood. Design: A descriptive research design was used. Settings: This study, conducted in all eleven maternal and child health centers in Helwan district. Sample: Convenient sample will consist of the 148 nurses. Tools: Two tools were used for data collection: I- A structured interview questionnaire sheet includes demographic characteristics and nurses knowledge about mental retardation. II- An observational checklist such as history taking of child, determine risk factor, performing general physical examination. Results: The study finding revealed that more than one half of nurses had a satisfactory level of total knowledge, more than three quarters of nurses had adequate level of total performance with a highly statistically significant relation (p= < 0.001). There were highly statistically significant relation between total knowledge and years of experience (p = < 0.001). Conclusion: About more than two fifths of nurses had an unsatisfactory level of total knowledge, and more than three quarters of nurses had adequate level of total performance. Also, there were highly statistically significant relation between total knowledge and total performance and years of experience for maternal and child health nurses about mental retardation. Recommendations: Implement educational programs for nurses working at maternal and child health centers on early detection and prevention of mental retardation during childhood**

Keywords: **Maternal and child health, nurses' performance, early detection, and mental retardation.**

I.   INTRODUCTION

Mental retardation (MR) is one of the most important public health problems. It is a world- wide problem causing much human suffering both to the individual and to his family. Mental retardation is disorder manifested in significantly below average overall intellectual functioning and deficits in adaptive behavior [1]. Mental retardation is neuro-psychiatric disorders among children. Its prevalence among young children is about 1%, however, some researchers report rates of 2 to 3%, and others estimates it up to 10% [2]. The World Health Organization **(WHO)** [3], 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.

1.1 Significance of the study

 It is estimated that the prevalence of MR between 1-3% of children in the world. And it is more common in developing countries because of higher incidence of injuries and deprivation of oxygen at birth and early childhood brain infections

[4]. **According to Central Agency for Public Mobilization and Statistics (CAPMAS), (2018)** [5]. The total number of children in childhood age from (1-5 years) was 23.429.592 child from total number of population, the total incidence rates in Egypt for mental retardation was 1.1%, in Cairo Governorate was 0.30% and in Helwan district was 0.20%. So we need a study to assess early detection of mental retardation during childhood.

1.2 Aim of the study

This study aims to assess maternal and child health nurses performance in early detection of mental retardation during childhood through:-

1. Assess of the nurses knowledge regarding early detection of mental retardation during childhood.

2. Assess of the nurses performance regarding early detection of mental retardation during childhood.

Research questions:

- What are the level of knowledge of MCH nurses about mental retardation?

- What are the level of nurses performance at MCH nurses about mental retardation?

- Is there are relation between nurses knowledge, performance at MCH and years of experience?

II. SUBJECTS AND METHODS

2.1 Research design:

A descriptive research design was used to conduct the present study.

2.2 Research setting:

This study was conducted in all eleven maternal and child health (MCH) centers in Helwan district.

2.3 Subjects:

The actual sample was 148 nurses.

2.4 Sampling technique:

Convenience sampling of the total number was 165 nurses 17 of them excluded as a pilot study. There for the actual sample size were 148 nurses. The sample will consist of all nurses in maternal and child health centers Helwan district.

2.5 Tools of data collection:

The data were collected through using the following tools:

Tool I: Structured Interviewing Questionnaire:

The sheet will be utilized for collecting the data of this study that include two parts:-

Part 1. Demographic data such as: age, sex, level of education, marital status, years of experiences, training courses and workplace of nurses.

Part 2. Assessment nurses' knowledge regarding childhood mental retardation, including: Meaning, causes, risk factors, signs, early detection, diagnosis, ways that prevent MR, The couple must conduct a genetic consultation, tests used in early detection for children.

Scoring system for knowledge:

Knowledge questions from 9 to 22, this part included 14 questions which were scored as the following: Yes = one point No = zero point. This includes knowledge of maternal and child health nurses about causes and risk factors of mental retardation = 36 points. Maternal and child health nurses' knowledge about signs and early detection of mental retardation = 17 points. Maternal and child health nurses' knowledge about diagnosis of mental retardation = 24 points. The total knowledge score was calculated for each MCH nurse by adding the score of all items of the questionnaire sheet and the

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nurse who took less than 60% was considered unsatisfactory level of knowledge and who had 60% or more was considered a satisfactory level of knowledge.

Observational checklist:- Designed and used to assess the performance of the nurses regarding to early detection of mental retardation during childhood. It will include observation of performance such as taking child history, detect risk factor, general physical examination, abnormalities or malformation and make looking referral for child.

Scoring system for performance:

Part III: Included 22 main questions scored as the following: Done =one point, Not done =zero point. The total performance scored as the following: Calculated for each MCH nurses by adding the score of all items of the observational checklist. The nurse who took less than 60% was considered inadequate level of performance and who had 60% or more was considered adequate level of performance.

2.6 Validity

The revision of the tools for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of five experts four in Community Health Nursing and one of Pediatric Nursing specialties. The expertise recommended some modifications in content validity of some items of knowledge tools.

2.7 Reliability

Reliability of the tools was tested to determine the extent to which the questionnaire items are related to each other. The internal consistency Cronbach's alpha in this study found to be the reliability of this questionnaire was 0.829.

2.8 Pilot study

A pilot study was carried out with 10% (17 nurses) of the sample under study to test the applicability, clarity and efficiency of the tools, as well as, to determine the time allowed to fulfill the developed tools. The number of the pilot study was excluded from the study sample.

2.9 Field work

Data collection of this study was carried out once permission was granted to proceed with the study. After establishing a trustful relationship, the investigator started data collection by introducing herself to the MCH nurses and explained the aim of the study and its importance. They were assured that the information collected would be treated confidentially and would be used only for the purpose of the study.

Permission has been obtained written from each participant prior to data collection after explanation aim of the study. Data pertinent to the study variable were collected through structured face to face interview and all the tools filled by the investigator. Interviewing the MCH nurses was carried out in the waiting area of clinics. Data collection was done within the given period of 6 months in the morning shift 2 days / week in maternal and child health centers using the development tools. I take about 20-30 minutes to be fully filled.

2.10 Ethical considerations:

An official permission to conduct the proposed study will be obtained from the Scientific Research Ethics Committee. Participation in the study is voluntary and subjects will be given complete full information about the study and their role before signing the informed consent. The ethical considerations will include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it will not be accessed by any other party without taking the permission of the participants. Ethics, values, culture and beliefs will be respected.

2.11 Data management:-

Up on completion of data collection, data will be computed and analyzed using Statistical Package for the Social Science (SPSS), version 24 for analysis. The P value will be set at 0.05. Descriptive statistical tests as numbers, percentage, mean ± standard deviation (± SD), will be used to describe the results.

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III.   RESULTS

Table 1:   This table shows that 56.76% of nurses were aged ≥40 years of age, and the mean age was 42.64±6 .23 according to sex 84.5% were female. While only 6.08% were aged 20- years. Related to level of education it was observed that 78.4% of nurses had a diploma education. 58.8% were married. More than one tenth (10.1, 10.1, and 10.8) respectively, of them worked in Elmasaken medical center, El set khadra medical center and Arab ghoneim medical center. **Figure 1:** Shows that 56.7% of maternal and child health nurses working in the child growth and development clinic. **Figure 2:** Shows that 56.8% of nurses had 5< 10 years of experience while only 13.5% of them had 10 or more years of experience. **Figure 3:** Illustrates that 69.6% of maternal and child health nurses not attending training courses about mental retardation. **Table 2:** Reveals that 65.5% of nurses have incomplete correct answer about meaning of mental retardation. 50% of them have an incomplete correct answer about causes of mental retardation during pregnancy. 45.3% of them have complete correct answer about risk factors associated with mental retardation, 48.6 of them have incomplete correct answer about signs should the nurse observe during a child's examination that help in early detection of mentally retarded children. Concerning ways that prevent mental retardation of children 41.2% of nurses have complete correct answer. 59.5% of them have incomplete correct answer about diagnoses of mental retardation during pregnancy. Also, 64.9% of them have incomplete correct answer about diagnoses of mental retardation in neonates. 56.1% of them have incomplete correct answer about tests used in the early detection of mental retardation. There were highly statistically significant relation in all knowledge items (p= <0.001), except the reason of the early detection of mentally retarded children were statistically significant (p= 0.017). **Table (3):** Revels that 59.5% of the nurses had a satisfactory level of total knowledge, while 40.5% of them had an unsatisfactory level of total knowledge with a highly statistically significant difference (p= < 0.001). **Table 4:** Displays that 79.1% of nurses not done detect risk factors for mother has a child with a malformation or disability, and 85.1% of them not done performance related family member suffer from mental retardation or malformation. All of them (100%) measuring the child's length, weight and head circumference. Also, there were highly statistically significant difference in all items of the performance (p= <0.001). **Table 5:** Shows highly statistically significant difference between total knowledge and years of experience (p = < 0.001) and also there were statistically significant between total performance and years of experience for maternal and child health nurses about mental retardation (p = 0.004).

IV.   DISCUSSION

Mental retardation is a serious public health problems world- wide. Children with mental retardation are seen as a burden to others and to their families **(Nemerimana et al., 2018)** [6] **.** Community health nurse as a primary health care nurse plays an important role in prevention, early detection and referral for treatment of disease. She provides health education to the population about the disease, the importance of the national program of screening in the early detection and the importance of nutritional management for affected children in order to prevent disease consequences **(Khaton, 2016)** [7] **.**

Part 1: Demographic characteristics of maternal and child health nurses:

Regarding the nurses' demographic characteristics, the results of the current study revealed that more than half of the nurses were aged ≥40 years with mean age 42.64±6.23 years. These findings supported by **Esmaiel et al. (2017)** [8] in Tanta, Egypt, about "Health Education Program for Nurses Working at Maternal and Child Health Centers on Early Detection and Prevention of Mental Retardation During Childhood", who, reported that nearly half of the nurses were aged ≥40 years but with mean age 43.86±7.238 years. This may be due to decrease the numbers of nurses who distributed to work at MCH centers.

The results of the current study illustrated that the majority of the nurses were female, and more than half of them were married. These findings were in agreement with **Abdel-Hamid, (2011)** [9] in Ain Shamas, Egypt, about "The Development of Skills of Primary Health Care Nurses in Early Detection of Mental Retardation During Childhood", who reported that the majority of the nurses were female, and more than half of them were married. From the investigator point of view, this may be due to the studying nursing was exclusive for females only till few years ago, so the profession of nursing in Egypt was mostly feminine.

The current study illustrated that, more than two thirds of maternal and child health nurses not attending training courses about mental retardation. This result was inconsistent with **Esmaiel et al. (2017)** [8] who reported that, the majority of them had not attended training courses about the mental retardation disease.

This may be related to those older nurses not have the initiation to explore knowledge and the majority of them express that training courses or any knowledge must give to younger nurses.

The results of the current study indicated that more than half of nurses had 5< 10 years of experience. This result supported by **Damane, (2018)** [10] in the South Africa, about " Nurses' Knowledge, Attitudes and Practices Towards Mental Illness", who reported that more than half of the studied subject had > 5 years of experience.

According to the research question (1): What are the level of knowledge of MCH nurses about mental retardation?

Part II: Maternal and child health nurses' knowledge:

The results of the present study pointed to the maternal and child health nurses knowledge about meaning of mental retardation, the majority of nurse's stated mental retardation is children with moderate mental retardation often need semi-continuous help in self-care, Their results were in agreement with **Abdel-Hamid, (2011)** [9] who determined that minority of the nurses had satisfactory knowledge related to means of mental retardation.

The current study revealed that, the majority of them stated that causes of mental retardation during pregnancy caused by DNA, and more than two thirds of them reported that causes of mental retardation during childbirth and immediately after birth were caused by severe pressure on the head of the baby at birth. Also more than three quarters said that the cause related to infection of the child. This results in consistent with **Abdel-Hamid, (2011)** [9] who stated that only a quarter of the nurses correct answer about causes of MR. As well, disagreement with study done by **Girimaji and Pradeep, (2018)** [11] inidia about the intellectual disability in international classification of diseases, who reported that about two thirds of nurses stated the correct answer as the most of the cases have genetic causes.

The results of the current study represented that majority of nurses said that signs of mental retardation in children delay in overall growth and the persistence of childlike behavior and the majority of them stated that non-exposure to radiation during the first months of pregnancy and avoid alcohol, cigarettes and medication during the first months of pregnancy, and vaccination against measles are from the ways that prevent MR children. This result similar to **Abd El-Aziz, (2015)** [12] in Assuit, Egypt, about "The Effect of Educational Program on Nurses' Knowledge and Skills about Care for Mentally Retarded Patients" who stated that the majority of nurses has satisfactory results about signs and early detection of mental retardation.

This result supported by **Kishore et al. (2019)** [13] in Bengaluru, Karnataka, India about "The clinical Practice Guidelines for Assessment and Management of Intellectual Disability" and **Ahmed, (2016)** [14] in Mansoura, Egypt, about "The Impact of a Designed Mental Retard Nursing Management Protocol on Nurses' Knowledge and performance at Maternal Child Health Centers" they reported that according to the guidelines based on the rights of Persons with disabilities, disability assessment is done through three stages such as screening, diagnosis, and disability calculation.

Also the study findings were supported by **Abdel-Raouf, (2014)** [15] in Cairo, Egypt, about "genetic services in MCH centers in Egypt: Current situation and needs assessment "who found that all of the participants' knowledge in the study about genetics services in MCH centers was unsatisfactory, and 97% of them had unsatisfactory knowledge in the pretest. From the investigator point of view, 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. Also, don't identify the importance of these data in detecting mental retardation.

The results of the current study illustrated more than half of the nurses had a satisfactory level of total knowledge related to MR. These findings disagree with **Esmaiel et al. (2017)** [8], who reported that 98.3% of the study group had a poor scores of knowledge regarding mental retardation. From the investigator point of view, this reflects a lack of training courses and programs among primary health care nurses in many governorates in Egypt and they in need for conducting massive educational training courses from the Ministry of Health and population and Health Administrators to maintain improve their knowledge and performance.

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According to the research question (2): What are the level of nurses performance at MCH nurses about mental retardation?

Part III: Maternal and child health nurses performance:

Regarding the maternal and child health nurses performance about mental retardation, the results of the current study represented that more than three quarters of them not done performance take history from mothers about child with malformation or disability, and not done performance related take history about family member suffer from mental retardation or malformation. All of them measuring the child's length, weight and head circumference. Also, there were highly statistically significant difference in all items of the performance.

These findings are similar to the results of **Said, (2017)** [16] who stated that it is obvious from the study that nurses' performance was poor for the majority of nurses of the study group before implementation of the program. Also, pointed 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 is not yet within the focus aspect of MCH services.

Also, disagree with this result that presented by **Damane, (2018)** [10] who stated that nursing staffs' knowledge, attitude, and practice is not satisfied that there are deficiencies in the mental health services provided by nurses in maternal and child health care centers.

According to the research question (3): Is there are relations between nurses knowledge and performance at MCH and years of experience?

Part IV: Relation between knowledge and performance of nurses and years of experience:

The current study revealed that there was a highly statistically significant difference and positive correlation between total knowledge and total performance of maternal and child health nurses about mental retardation during the childhood and nurses' years of experience. The findings of the present study agree with **Esmaiel et al. (2017)** [8] who revealed that there was a statistically significant relationship between the total knowledge score of nurses, total performance scores, and their years of experience, where poor knowledge was associated with poor performance. Similarly, this is similar to the results of **Abdella, (2015)** [17] 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 .

This finding congruent with **Abdel-Hamid, (2011)** [9] who stated foundrelationships between nurses knowledge and skills and their years of experience and also, finding statistically significant between diploma & bachelor degree and older nurses with more years of experience.

V. CONCLUSION

In the light of the results of the current study result and answers of the research questions, it could be concluded that:

About more than two fifths of nurses had an unsatisfactory level of total knowledge, and more than three quarters of them had adequate level of total performance. There was a positive correlation between total knowledge and total performance of maternal and child health nurses about mental retardation. Highly statistically significant difference between total knowledge and years of experience and also there were statistically significant correlation between total performance and years of experience for maternal and child health nurses about mental retardation.

VI. RECOMMENDATIONS

In the light of the current study findings the following recommendations are suggested:

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

Table (1): Distribution of nurses according to their demographic characteristics (n=148)

| Demographic characteristics	No	%
Age (years)		
20-	9	6.08
30-	55	37.16
≥40	84	56.76
Mean ± SD 42.64±6.23		
Sex		
Female	125	84.5
Male	23	15.5
Level of education		
Nursing diploma	116	78.4
Technical institute of nursing	32	21.6
Marital status		
Single	19	12.8
Married	87	58.8
Divorced	18	12.2
Widowed	24	16.2
Work place of nurses		
- Helwan awel care	12	8.1
- Helwan tany care	12	8.1
- Ain helwan medical center	14	9.5
- Arab Rashed medical center	13	8.8
- Atlas medical center	11	7.4
- Elmothalth medical center	13	8.8
- Elmasaken medical center	15	10.1
- El set khadra medical center	15	10.1
- Kafr El Alou medical center	14	9.4
- Arab ghoneim medical center	16	10.8
- Ezbet El walda medical center	13	8.8
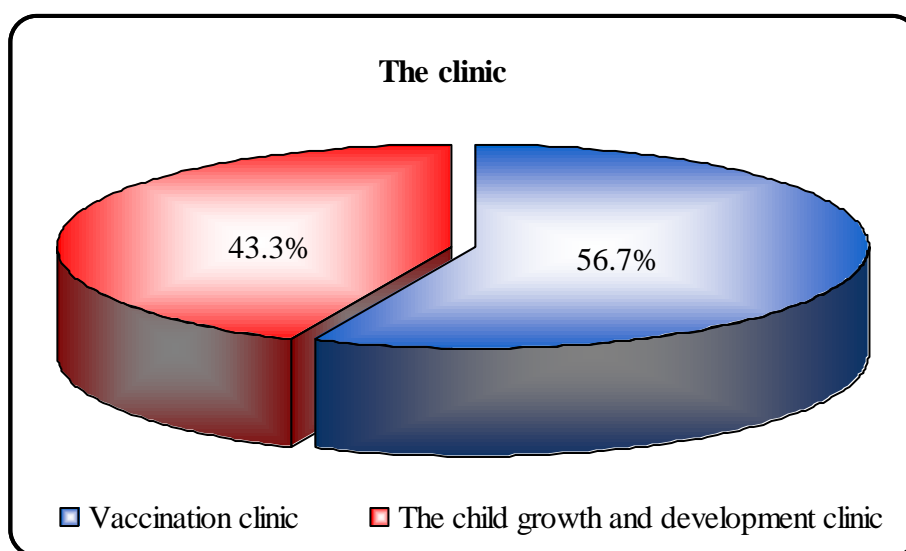
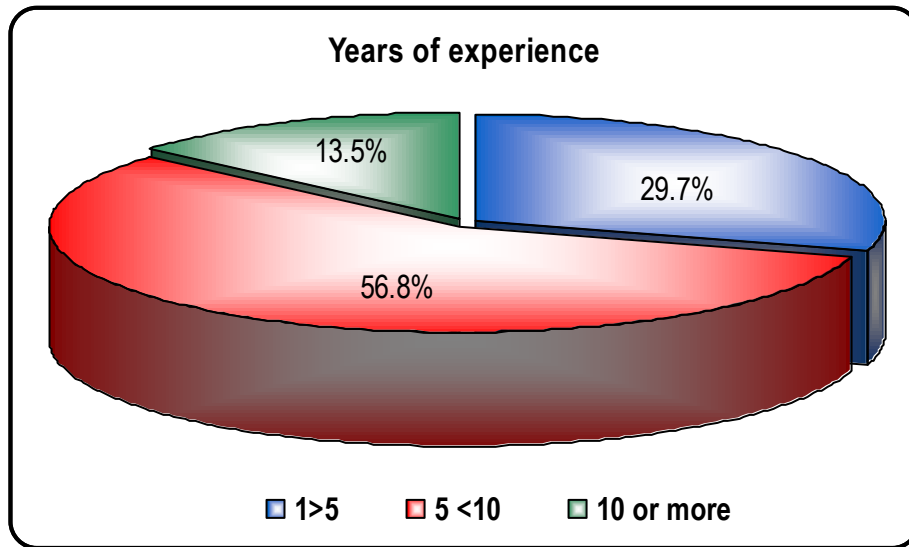**Figure (1): Working clinics of maternal and child health nurses**

Figure (2): Percentage distribution for years of experience of maternal and child health nurses.
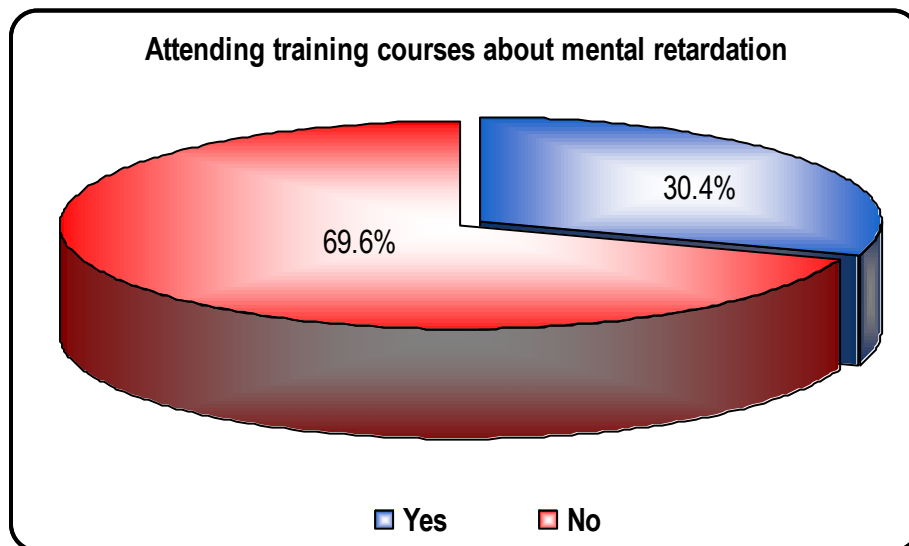

Figure (3): Percentage distribution for attending training courses about mental retardation for maternal and child health nurses

Table (2): Maternal and child health nurses knowledge about all items of mental retardation (n=148)

Items of knowledge about mental retardation	Completely correct		Incomplete correct		Incorrect or don't know		Chi-square	
	No	%	No	%	No	%	X^2	P-value
Meaning of mental retardation	17	11.5	97	65.5	34	23.0	108.02	<0.001**
Causes during pregnancy	39	26.4	74	50.0	35	23.6	27.99	<0.001**
Causes during childbirth and immediately after birth	53	35.8	69	46.6	26	17.6	28.72	<0.001**
Causes during early childhood	61	41.2	63	42.6	24	16.2	29.33	<0.001**
Risk factors associated with mental retardation	67	45.3	58	39.2	23	15.5	32.85	<0.001**

Signs in children	29	19.6	87	58.8	32	21.6	64.84	<0.001**
Signs should a nurse observe during a child's examination that help in early detection	57	38.5	72	48.6	19	12.8	45.38	<0.001**
Reason of early detection	51	34.5	60	40.5	37	25.0	8.16	0.017*
Ways that prevent mental retardation of children	61	41.2	56	37.8	31	20.9	15.70	<0.001**
Methods of diagnosis for mental retardation	21	14.2	85	57.4	42	28.4	64.72	<0.001**
Diagnoses during pregnancy	20	13.5	88	59.5	40	27.0	74.27	<0.001**
Diagnoses in neonates	35	23.6	96	64.9	17	11.5	104.25	<0.001**
When the couple must conduct a genetic consultation	18	12.2	95	64.2	35	23.6	99.50	<0.001**
Tests used in early detection for children	40	27.0	83	56.1	25	16.9	55.11	<0.001**
Total knowledge	41	27.7	77	52.0	30	20.3	36.75	<0.001**

*Statistically significant   ** Highly statistically significant

Table (3): Maternal and child health nurses total level of knowledge about mental retardation (n=148)

Total knowledge	No	%	Chi-square	
			X^2	P-value
Satisfactory (≥60%) ≥48	88	59.5		
Unsatisfactory (<60%) <48	60	40.5	10.595	<0.001**
Total	148	100		
Range	19-72			
Mean ±SD	49.57±5.33			

** highly statistically significance

Table (4): Maternal and child health nurses performance about mental retardation (n=148)

Items of performance	Done		Not done		Chi-square	
	No.	%	No.	%	X^2	P-value
History taking of the child	138	93.2	10	6.8	221.40	<0.001**
Detect risk factors for mental retardation						
Child's condition after delivery:	89	60.1	59	39.9	12.16	<0.001**
- Incubated more than 48 hours (need for an incubator, oxygen, or premature twins)	84	56.8	64	43.2	5.40	0.020*
- Jaundice that needed blood exchange Epileptic fit	75	50.7	73	49.3	0.05	0.816
Maternal health condition during pregnancy	113	76.4	35	23.6	82.21	<0.001**
Maternal obstetric history during pregnancy	120	81.1	28	18.9	114.37	<0.001**
The mother has a child with a malformation or disability Family member suffering from mental retardation, or malformation	31 22	20.9 14.9	117 126	79.1 85.1	99.94 146.16	<0.001** <0.001**
A child suffering from epilepsy	98	66.2	50	33.8	31.13	<0.001**

Items of performance	Done		Not done		Chi-square	
	No.	%	No.	%	X^2	P-value
Performing general physical examination of the child						
- -Jaundice.	134	90.5	14	9.5	194.59	<0.001**
-Cyanosis.	105	70.9	43	29.1	51.94	<0.001**
Regarding to any abnormalities or malformations including						
-Face	146	98.6	2	1.4	280.21	<0.001**
-Eyes	146	98.6	2	1.4	280.21	<0.001**
-Ears	146	98.6	2	1.4	280.21	<0.001**
-Mouth	146	98.6	2	1.4	280.2	<0.001**
Looking for any abnormalities or malformation including extremities:						
Shortness of extremities.	123	83.1	25	16.9	129.78	<0.001**
Hands, fingers, or feet	132	89.2	16	10.8	181.83	<0.001**
Looking for any abnormalities or malformation in spin (spinadefida)	127	85.8	21	14.2	151.83	<0.001**
Measuring the child's length\ height	148	100.0	0	0.0	296.00	<0.001**
Measuring the child's weight	148	100.0	0	0.0	296.00	<0.001**
Measuring the child's head circumference	148	100.0	0	0.0	296.00	<0.001**
Make referrals for child	127	85.8	21	14.2	151.83	<0.001**
Total practice	116	78.4	32	21.6	95.35	<0.001**

Table (5): Relation between total knowledge and total performance and years of experience for maternal and child health nurses about mental retardation (n=148)

Items	Years of experience							
	1- >5		5- <10		10 or more		Chi-square	
	N	%	N	%	N	%	X2	P-value
Total knowledge								
Satisfactory	14	31.8	57	67.9	17	85	21.810	<0.001**
Unsatisfactory	30	68.2	27	32.1	3	15		
Total performance								
Adequate	29	65.9	74	88.1	13	65	10.829	0.004*
Inadequate	15	34.1	10	11.9	7	35		

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