

Intellectual and Developmental Disabilities

Nurses training program for early detection of children with developmental disabilities in Assiut governorate.

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Effect of nurses training program on early detection of children with developmental disabilities in Assiut governorate: A quasi experimental study

Abstract

The study aimed to determine the effectiveness of a designed training program for nurses toward early detection of physical and developmental disabilities among children (0-3y). A group of 21 licensed nurses with professional experience ranged from 5-11 years participated in the study. The Participants completed the measurements to evaluate their current knowledge, practice and perception pre – post and follow –up of training program in relation to early detection of disabilities. The results showed highly statistically significant difference between the studied nurses' total knowledge, perception, and practice in pre, post, program application ($p = 0.01$) and there was no statistically significant difference between post and follow up program application ($p = 0.180$).

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Abstract

The study aimed to determine the effectiveness of a designed training program for nurses toward early detection of developmental disabilities among children (0-3y). A group of twenty-one licensed nurses with professional experience ranging from 5-11 years participated in the study. The Participants completed the measurements to evaluate their current knowledge, practice, and perception pre – post and follow –up of training program in relation to early detection of disabilities. The results showed highly statistically significant difference between the studied nurses' total knowledge, perception, and practice in pre, post, program application ($p = 0.01$) and there was no statistically significant difference between post and follow up program application ($p = 0.180$).

Key words

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Introduction

Developmental disability (DD) is a serious physical, mental, and/or sensory impairment that can impede important life activities in various combinations of visual-perceptual-motor, language, or behavior. These disabilities are typically caused by central nervous system malfunction induced by uncommon or stressful biologic circumstances during pregnancy, labor, or shortly after birth. Socioeconomic and environmental factors can elicit latent physiological characteristics (El Meliegy & El Sabbagh, 2004; Denhoff & Feldman,1981). Due to the complexity of identifying developmental delay, early diagnosis of such problems remains

challenging; nevertheless, government initiatives in many countries have lately been undertaken to promote early identification and intervention, thereby reducing long-term handicap. Because developmental delays in most young children are not connected with a precise diagnosis, conclusive therapy, or cure, some may dispute the need for early detection. There is growing evidence, however, that even in the lack of an etiologic explanation, early identification benefits both children and their parents.

Children with developmental disabilities have chronic, lifelong disability due to one or more developmental domains that significantly limit their ability to perform daily tasks such as self-care, learning, mobility, social interaction, independent living, and self-direction. Children with developmental delays might be diagnosed with disabilities. There are 200 million handicapped children under the age of five worldwide (American Association on Intellectual and Developmental Disabilities, 2020). Nearly, 14.2% of children in Egypt have developmental delays, while nearly 2.72% of children in Assiut city are impaired (Central Agency for Public Mobilization and Statistics, 2019).

The most critical time for motor, speech, and social development occurs during the first three years of life, when the child's brain is altering and maturing (National Institutes of Health, 2010). As a result, most countries use developmental testing and monitoring to aid in the early discovery of developmental problems at this age. The initiative of child development monitoring and screening is critical to promoting the execution of early diagnosis of developmental conditions (WHO, 2012). Early intervention and functional physical therapy for the initial treatment and prevention of contracture in children with cerebral palsy reduces further complications in the management of spasticity, emphasizing the importance of an interdisciplinary approach to spasticity and early motor development (Jahan & Ateeq, 2022).

According to the UNICEF 2022 technical brief of early detection tools for children with developmental delays and disabilities in the Middle East and North Africa MENA, the health sector is the primary entry point for conducting early detection using the tools because they are the first and earliest point of contact with children and families during routine checkups, immunization sessions, and/or growth monitoring. Healthcare providers (general practitioners, pediatricians, and Primary Health Care [PHC] healthcare providers, as well as nurses) are responsible for screening for motor, communication, social-emotional, and cognitive skills at various intervals from 1 month to 6 years (UNICEF,2022) The identification of developmental delays and impairments is lower than their actual prevalence, implying that activities done to detect developmental delays are insufficient. Late detection of developmental delays in the Middle East and North Africa MENA is due to (1) a lack of policies and strategies for early detection, (2) a lack of data on developmental delays and disabilities to build evidence-based policies and strategies, (3) a scarcity of validated screening tools in the region's languages, including Arabic (Charafeddine et al.,2019), Farsi, and French, and (4) a scarcity of socially and culturally adapted tools according to context(Faruk et al.,2020), and (5) the gaps in the availability and capacity of specialized resources and skilled service providers to assist children and families with early diagnosis and intervention once a delay and disability are detected (UNICEF,2022).

In developing countries with elevated levels of poverty, poorly maintained health, and education systems, as well as a lack of information, early detection of developmental delays may not be a priority (Charema, 2012). Furthermore, poor countries continue to face a slew of health issues, including infectious diseases, maternal and newborn mortality rates, under-five mortality rates, malnutrition, and severe growth stunting. As a result, early intervention for disabled children may be less of a concern and less readily available (Ministry of Health, 2015, 2019). In

low-income nations, most health-care settings treat children for specific need-based illnesses or routine immunizations. However, developmental appropriateness is not monitored until the parents express such specific health problems (Duby et al.,2006).

Even with increased financing and government support for challenged children with delays, creating, and maintaining programs with uniform practices has proven problematic due to health workers' lack of knowledge and training (Gallagher et al., 2006; Houston et al., 2011). The ability of screeners to deliver accurate information to parents is critical to the early intervention process (Laugen, 2013). A study conducted in the governorate of Assiut Of Egypt examined the impact of early childhood developmental support services on carers (mothers) in terms of children's motor, social, and cognitive development, as well as the factors that may influence normal child development. They indicated that there was little knowledge of the problem of delayed development and that there was no strategy in place to improve the development of disadvantaged children or to provide mothers with necessary early childhood development skills (Mohammed et al.,2019). Potential explanations for the limited effectiveness of early intervention on child outcomes include the types of interventions provided, insufficient intervention doses, and/or more recently the concern that the intervention was not delivered early enough to significantly alter the developmental trajectory (Damiano& Longo,2021).

The aim of this study was to document the efficacy of using a training program on nurses' skills in early detection of developmental problems in children (0-3 years).

Research hypotheses

- 1- There is statistically significant difference in nurses' screening and referral knowledge of all types of developmental disabilities between the pre-test and immediate post-test application.

- 2- There is statistically significant difference in nurses' perception of disability pre and post program application.
- 3- There is statistically significant difference in nurses' monitoring practices pre and post the program application.
- 4- There is no statistically significant difference between total nurses' knowledge, perception, and practice score about early detection of developmental disabilities post / follow-up the program application.

Materials and Methods

Study Design, Study Population, and Time

This study used a single group quasi-experimental research design with pre-post and follow-up evaluations. Seven primary health centers in the Assiut governorate countryside (Sahelselim, Elfateh, Elnekhela, Magrees, Sadafa, Elghanayem, and Derelganadela) were used to gather a group of 21 out of 24 licensed female nurses. Their experience ranged from 5 to 11 years, and the mean age of the respondents was 25.7 ± 2.3 years. The study was carried out during a six-month period, from January 2021 to September 2021, in cooperation with the Together Association for Development training facility in Assiut city- Egypt.

Inclusion criteria

The study was conducted in selected health units in Assiut, an Upper Egypt Governorate, in selected villages far from the main government services, without access to public or subsidised transportation to and from the selected villages, and without the presence of any allied health professionals (physical therapists, occupational therapists, speech and language therapists, psychologists), who do not offer any of these medical services. The selected nurses should be

employed by the village health department in the public sector, locals of the village where the health unit is located, and untrained in the early identification or examination of disabled children.

Study Procedure

The health centre administrators of the aforementioned settings granted official authorization after being fully informed of the study's goals and data gathering techniques. The study's purpose was explained to the nurses by the researchers. They were told the trial is risk-free. The researcher ensured that all information was secret and utilised just for that reason. The nurses were made aware of their opportunity to engage voluntarily in the study and their freedom to withdraw at any time and provided a written consent .

From January 2021 to September 2021, this study was carried out over a 6-month period. Data were gathered throughout the course of three evaluation rounds. First, in the presence of the researchers, nurses completed an individual questionnaire designed to gauge their knowledge, practise, and perceptions of early detection of developmental abnormalities in children (ages 0–3 years). Following the deployment of the educational programme for 12 sessions, a second phase of evaluation was conducted using the same technique to assess the program's impact. After one month, a third phase of follow-up evaluation was undertaken using the same technique to measure the program's long-term learning effect. To identify the key findings, the results of these surveys were compared across the participants.

For Evaluation Measures

Early detection of developmental disabilities questionnaire (EDDDQ) (pre/ post and follow up assessment); it was designed in simple Arabic language by the researchers based on the relevant literature review. The questionnaire was designed for six developmental disabilities

(mental, autism, auditory, visual, motor, down syndrome). It consisted of three sections composed of forty-five of multiple-choice questions to test the following:

1. **Screening and referral knowledge:** it is composed of 25 questions to test nurses' knowledge about early detection methods (10Q) counseling and guidance (10Q) and referral pathway (5Q).
2. **Disability Perception:** it is composed of 10 questions about needs of children with developmental delays and importance of early intervention (10Q).
3. **Monitoring Practices:** it is composed of 10 questions to test nurses' practices about developmental delays monitoring and assessment. The researchers train the nurses on how to perform the assessment (10Q).

Scoring system of the questionnaire: The nurses answers were compared with the model key answer, where one point score was given for correct/ positive answer, zero score was given for incorrect / negative and unknown answer. According to the nurses' responses, their total level score was calculated (total questionnaire score = 45).

Validity and reliability.

The questionnaire was revised by a panel of three experts in the field of pediatric / community nursing to test face and content validity. Modifications of the study tools were done according to the panel judgment on clarity of sentences, appropriateness of content and sequence of items. The internal ten reliability of all items of the questionnaire was assessed using Cronbach's co-efficiency alpha, it was (0.79) for the whole questionnaire which showed its reliability.

For Intervention

Nurses training program on early detection of disability. It included four main elements, which are (a booklet defining different disabilities, a list of the guidelines for early detection, a guide for family guidance for families of children with disabilities, a monitoring and follow-up form for

cases of children with disabilities). The program consisted of twelve training sessions with a total of 48 hours (4 hours per session), and was based on the techniques of lecture, dialogue, working groups, cooperative learning techniques and participatory learning.

Ethics

The institutional ethical committee gave its approval to the procedures, and informed written consent was obtained. The investigator held the written, informed consent for everyone in the strictest confidentiality. Nurses gave their consent to participate. N.P.T.REC/012/004142 has received ethical approval. Faculty of Physical therapy- Cairo University.

Statistical analysis

Using SPSS (Statistical Package for the Social Science Software) statistical package version 20 on an IBM compatible computer, the acquired data was edited, arranged, tabulated, and analysed. Tables containing numerical data (quantitative data) were created utilising Mean, Standard Deviation ($X \pm SD$), and t-test analysis for normally distributed variables. Wilcoxon test of significance was used for comparing sample means. P-values greater than 0.05 are not statistically significant, which was utilised to establish their significance. Highly statistically significant is a P-value of 001.

Results

Results of the study revealed a statistically significant increase in the total mean numbers of correct answers between the pre-test and immediate post-test in screening and referral knowledge of all types of developmental disabilities (Table 1), disability perception (Table 2) and monitoring practices (Table 3).

Results also revealed no statistically significant differences in total nurses screening and referral knowledge, disability perception and monitoring practices, overall mean score post-program and follow up- program application (Table 4).

Discussion

Early intervention in cases of developmental delay or disability can have an impact on outcomes for both the child and the family. Even though, most children with developmental delays are not discovered until starting school. The overall rates of early detection and access to intervention before entering school may be improved by training health care providers to do developmental monitoring and/or screening (Chödrön et al., 2019; Ilkhani et al, 2015) and pediatric nurses can be very effective in this process (Guevara et al., 2012; Macy et al., 2014). The present study was conducted to explore the effectiveness a training program on Egyptian nurses' skills in early detection of developmental disabilities among children(0-3y).

The current study found that nurses had a poor mean score in all developmental domains prior to implementing an educational program to measure nurses' understanding of several types of child developmental delays. This could be explained by a lack of developmental disability information in nursing programs and gaps in current curricula. According to Ilkhani et al. (2015) only six research articles out of seventy-eight retrieved articles contained all the keywords 'education, disability, and curriculum; no articles contained all the keywords nursing education, children with disabilities, and curriculum. Smeltzer et al. (2005) advised that disability content in nursing courses be updated to be more relevant to children with disabilities. This is consistent with Sowney & Barr (2007) report that found a lack of understanding regarding learning problems among many nurses.

According to the current findings, the assessment of the nurses before educational training revealed insufficient levels of knowledge regarding early detections and counselling in relation to primary prevention of child developmental disability. This conclusion could be attributed to participants initially reporting that they were uncomfortable doing counselling regarding various types of impairment due to insufficient training courses and nursing educational level. This study confirmed previous findings that health care providers routinely monitor development, but in ways that are better suited to providing care than recognizing risk for developmental disability (Chödrön et al.,2019). This conclusion could be linked to the fact that children with impairments do not receive proper attention in paediatric nursing care due to lack of training programs, particularly in remote areas at primary care health settings. Similarly, in Egypt, a study looked at the impact of a health education program on primary health care nurses regarding the early detection and prevention of Phenylketonuria as a cause of mental retardation and found that most nurses gave inaccurate or incorrect answers (Edris, 2016).

For the past decade, there has been clear and consistent guidance indicating that health care providers should conduct developmental surveillance and developmental screening for all young children at regular intervals (Hagan, Shaw, &Duncan, 2017); additionally, developmental screening and surveillance when applied together in a population had identified most children at risk for developmental delays (Ramu et al., 2020).

Even children with moderate to severe disabilities were referred late for specialized treatment and primary care personnel lacked appropriate monitoring knowledge and practices (Figueiras et al., 2003). Similarly, 50 % of nurses reported barriers to providing care for people with neurodevelopmental disabilities due to a lack of familiarity with community-based support and resources, as well as a lack of familiarity with appropriate or available specialist consults and

referrals (Ford et al., 2017). Knowledge and access to referral channels, as well as services for challenged children, were identified as significant hurdles for health care practitioners in this context (Garg et al., 2018).

The current study also found that nurses who participated in the educational program improved significantly in their knowledge of referral pathways for children with disabilities. In this regard, a substantial risk stems from health providers' lack of knowledge and awareness of the needs of people with disabilities, which has an impact on nursing competence and confidence in care (Merrifield, 2011). Furthermore, for children in care outside the home, nurses can play an important role in this informed referral network (Chödrönet et al., 2019).

The current study's findings revealed that nurses had a completely low mean score in their perception of needs and how to cope with impaired children prior to program application. However, there was a highly statistically significant increase in favorable perception mean score following program deployment. This conclusion could be attributable to the training effect, which helps nurses learn to modulate their perception to succeed at work. In this context, it was suggested that universities design courses with the goal of increasing knowledge and strengthening nurses' positive attitudes towards people with impairments (Seccombe, 2007).

Finally, there was no significant variation in the total level score of nurses' skills between the post and follow up program applications. This explains how training courses and programs can increase nurses' knowledge for a long period, emphasizing the significance of ongoing education and training to assure offering up-to-date health care services in line with the current evidence for more effective nursing care. This may also be related to the booklet's effect as a beneficial tool in assisting nurses to maximize their potential and improve their performance, and it can be utilized for staff development.

Consistent with Esmail et al (2017), this study found a considerable rise in nurses' knowledge mean score following program administration. Participants in this study reported significant changes in screening for developmental delays at the conclusion of the educational program. This enhancement could be attributed to the researchers' use of role-playing pedagogies during the program intervention, which helps nurses to gain practical skills quickly. This outcome was consistent with the findings of another study, which found that healthcare professionals who participated in the program performed better in terms of child development knowledge and practices (Figueiras et al., 2014). Others stated that insufficient knowledge about child development is not the only barrier to screening children for developmental delays among nurses; there are also systemic barriers such as role ambiguity, diverse practice settings, large caseloads, and a lack of time to perform screening assessments (Bagga, 2015).

Children under the age of five in low- and middle-income countries (LMICs) may be especially vulnerable to poor development due to poor health and nutrition (Smythe et al., 2020). In consistency with Black et al (2017) and Abdelbaky et al. (2022), the current study's findings emphasize the importance of early detection of developmental disabilities as the time that influences brain growth is critical as there are specific early windows of opportunity that, if not exploited, may prevent optimal brain development and lifelong well-being. It highlights the significance of nursing training in the early detection and screening of developmental disorders as the first line of health care professionals, alongside parents.

Conclusions

Nursing professionals are not confident in their current level of skills in connection to early detection of developmental delays. The scores of the participating nurses following training program intervention improved from pre- to post-testing. Improving nurses' knowledge and

training will result in better skills in early detection and referral of children with several types of disability. Overall, the study implies that nurses working in primary health care centers are well positioned to detect delays and make early referrals through developmental monitoring, but they require extra training and tools to do so effectively. Improving nurses' skills in early detection of developmental impairments in children (0-3 years) should be prioritized in children's nursing courses. Furthermore, the most successful nurse training approaches for improving knowledge and clinical skills include innovative ways that promote nurses' development, monitoring knowledge retention, and demonstration. It is necessary to raise nurses' awareness of developmental early detection standards and to construct an early identification system in rural areas.

Limitations and Future Directions

An important limitation of this study is that the sample is both small and is not representative of the population of all health care providers. Future research should include different geographical representations and larger sample sizes.

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Table 1

Comparison of the studied nurses' screening and referral knowledge pre and post the program application (n=21).

Types of disabilities	Pre- instruction		Post- instruction		Z	p- value	η^2
	Mean	SD	Mean	SD			
Mental	1.19	0.51	4.29	0.72	4.070	0.01	0.888
Autism	0.67	0.48	3.10	0.83	4.045	0.01	0.883
Audio	2.52	0.51	4.48	0.60	4.056	0.01	0.891
Visual	2.43	0.60	4.24	0.54	4.081	0.01	0.891
Motor	2.05	0.86	4.14	0.48	4.058	0.01	0.885
Down	0.52	0.60	2.33	0.58	4.117	0.01	0.898
Total	10.81	2.54	27.10	2.28	4.025	0.01	0.891

Table 2

Mean and SD of study sample scores in relation to disability perception pre-post program.

Disability perception	Pre- program		Post- program		Z	p- value	η^2
	Mean	SD	Mean	SD			
	1.38	0.59	4.52	0.51	4.117	0.01	0.898

Table 3

Mean and SD of study sample scores in relation to monitoring practices pre-post program.

Monitoring practices score	Pre- program		Post- program		Z	p- value	η^2
	Mean	SD	Mean	SD			
	2.00	1.30	6.90	1.57	3.875	0.01	0.845

Table 4

Total nurses' knowledge, perception, and practice scores post / follow-up the program application

Overall items score	post- program		Follow up- program		Z	p-value
	Mean	SD	Mean	SD		
	27.09	2.28	27.38	2.62	1.342	0.180