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Effect of Teaching Instructions for Mothers about Diphtheria, Pertussis, and Tetanus Vaccine on Its Side Effects and Management

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Abstract: ***Background:*** *Immunity Is The Balanced State Of Having Adequate Biological Defenses To Fight Infection, Disease, Or Other Unwanted Biological Invasion, While Having Adequate Tolerance To Avoid Allergy, And Autoimmune Diseases. It Is The Capability Of The Body To Resist Harmful Microorganisms Or Viruses From Entering It. Immunity Involves Both Specific And Nonspecific Components. The Nonspecific Components Act Either As Barriers Or As Eliminators Of Wide Range Of Pathogens Irrespective Of Antigenic Specificity.* ***The Aim Of The Study:*** *Was To Evaluate The Effect Of Teaching Instructions For Mothers About (DPT) Vaccine On Its Side Effects And Management.* ***Design:*** *Pre-Posttest Quasi-Experimental Research Design Was Utilized To Achieve The Aim Of The Current Study.* ***Setting****: Conducted In The Vaccination Out-Patient Clinic At The Preventive Medicine And Social Center, Affiliated To Cairo University Hospitals.* ***Sample:*** *A Convenient Sample Of 60 Mothers Having Infants Taking DPT Vaccine Was Participated In The Current Study. Those Participants Divided Into Two Equal Groups: 30 As A Control Group And 30 As A Study Group.* ***Data Collection Tool:*** *Developed And Collected By Researchers , It Included* ***Structured Interview Questionnaire Was*** *To Assess Personal Data For The Child, And Mother* ***Mother's Knowledge About DPT Vaccine Questionnaire Was*** *To Assess Mother's Knowledge About DPT Vaccine Itself And Care For Child After Vaccine And* ***DPT Vaccine's Side Effects Record*** *Include DPT Vaccine Side Effects As Fever, Pain, Redness, Tenderness And Others.* ***Results:*** *The Study Results Revealed That There Were Statistically Significant Differences Between Both Groups Regarding To DPT Vaccine's Side Effects (As Fever, Pain, Redness, Tenderness Or Swelling At Injection Site, Fatigue And Others) And Mothers Knowledge (Definition, Importance, Indication And Management).* ***Recommendation:*** *Raising The Awareness Of Mothers About DPT Vaccine And Management Of Their Children After Vaccine Administration Through Health Education Sessions.*

Keywords : *Teaching Guidelines - DPT - Vaccine 'S Side Effects*

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I Introduction

Vaccination Is The Essential Process In Any Health Organization To Control The Infectious Disease Within Different Countries. It Made Immune Or Resistant To An Infectious Disease, Typically By The Administration Of A Vaccine. Vaccines Stimulate The Body's Own Immune System To Protect The Child Against Subsequent Infection Or Disease **(WHO, 2015)**. Vaccination Prevents Illness, Disability And Death From Vaccine-Preventable Diseases Including Diphtheria, Hepatitis B, Measles, Mumps, Pertussis (Whooping Cough), Polio, Rubella And Tetanus. Vaccination Currently Averts An Estimated 2 To 3 Million Deaths Every Year. An Additional 1.5 Million Deaths Could Be Avoided, However, If Global Vaccination Coverage Improves **(UNICEF,2015)**. Childhood Vaccinations Are A Routine Part Of A Child's Medical Care. Vaccines Offer Protection From Serious Diseases. Most Vaccines Are Given With A Needle. This Can Be Painful And Frightening For Child. Some Parents And Children Delay Or Stop Vaccinations Because Of Pain And Fear. This Can Leave Children Without Protection From Serious Diseases **(Arvicn, 2015)**.

But An Estimated 18.7 Million Infants Worldwide Are Still Missing Out On Basic Vaccines **(WHO, 2015)**. The Routine Vaccination Program For Egypt Has Made Vaccination Against Diphtheria, Tetanus And Pertussis, Oral Polio Vaccine, Measles, Mumps, Rubella, BCG, HBV Mandatory And More Recently Homophiles Influenza Are Recommended By Ministries Of Health. A Child Is Considered To Be Fully Immunized If The Child Has Received BCG, Measles Or MMR Vaccination, Three DPT Vaccinations, And Three Doses Of Polio Vaccine **(UNICEF,2015)**.

Vaccination Prevent Millions Of Death Every Year By Controlling And Eliminating Life-Threatening Infectious Diseases **(WHO, 2014)**. Vaccination Is A Proven Tool For Controlling And Eliminating Life-Threatening Infectious Diseases. It Is One Of The Most Cost-Effective Health Investments, With Proven

Strategies That Make It Accessible To Even The Most Hard-To-Reach And Vulnerable Populations. It Has Clearly Defined Target Groups; It Can Be Delivered Effectively Through Outreach Activities; And Vaccination Does Not Require Any Major Lifestyle Change **(Ackermann, 2013**).

Previous Studies Have Shown That Uptake Of Vaccination Services Dependent Not Only On Provision Of These Services But Also On Other Factors Including Knowledge And Attitude Of Mothers , Density Of Health Workers, Accessibility To Vaccination Clinics, Availability Of Safe Needles And Syringes And The Opportunity Costs Incurred By Mothers **(Ball & Bindler, 2015**). Countries Are Aiming To Achieve Vaccination Coverage Of At Least 90% Nationally And At Least 80% In Every District By 2020. While The GVAP Should Accelerate Control Of All Vaccine-Preventable Diseases It Also Aims To Spur Research And Development For The Next Generation Of Vaccines.

DTP Vaccine Conveys Immunity To Three Different Infectious Diseases: Diphtheria Is A Potentially Fatal Disease That Usually Involves The Nose, Throat, And Air Passages, But May Also Infect The Skin. Its Most Striking Feature Is The Formation Of A Grayish Membrane Covering The Tonsils And Upper Part Of The Throat. It Is Caused By Corynebacterium Diphtheriae . Routine Vaccination Has Almost Eradicated Diphtheria From The United States, But It Is Still Seen In Many Parts Of The World. Tetanus, Sometimes Called Lockjaw, Is A Disease Caused By The Toxin Of Clostridium Tetani . The Disease Affects The Central Nervous System And Causes Painful Muscle Contractions. Food Is Not Given By Mouth To Those With Muscle Spasm But May Be Given Via Nasogastric Tube Or Intravenously. Pertussis, Also Called Whooping Cough, Is A Respiratory Disease Caused By Bordatella Pertussis . The Name Comes From A Typical Cough Which Starts With A Deep Inhalation, Followed By A Series Of Quick, Short Coughs That Continues Until The Air Is Expelled From The Lungs, And Ends With A Long Shrill, Whooping Inhalation. Pertussis Is Very Contagious And Usually Affects Young Children **(UNICEF,2015)**.

According To The **Berkowitz At 2017**, In Most Cases DPT Vaccine Side Effects Are Minor And Go Away Within A Few Days. Side Effects Vary According To Vaccine Type, But Generally Mild Side Effects May Include Pain, Redness, Tenderness Or Swelling At Injection Site, Fatigue, Itching At Injection Site, Nausea, Dizziness Or Fainting, Fever Or Mild Rash. Parents Should Keep An Eye Out For Any Unusual Condition, Such As A High Fever, Or Weakness. Signs Of A Serious Allergic Reaction Can Include Difficulty Breathing, Hoarseness Or Wheezing, Paleness, Weakness, A Fast Heartbeat Or Dizziness. The Nurse Has Curial Role During Vaccination Specially Observation For Adverse Reactions. The Mother Should Remain In The Vicinity Of The Place Of Vaccination For Up To 15 Minutes As Typically Onset Of Anaphylaxis Occurs Within Minutes. It Is Necessary To Know If The Child Has Any Minor Local Reaction Or Mild Fever Or Be Irritable Post DPT Vaccination, No Need To Rub The Injection Site Post Vaccination. Mothers Should Be Advised To Administer Cold Compresses Or Ibuprofen In Accordance With Manufactures Guidance, Ensure That The Child Drinks Plenty Of Fluids And That Clothes Are Not Rubbing Against The Injection Site, Use Cotton Clothes, Increase Fluid Intake, Enhance Breast Feeding And Clean The Injection Site.

Teaching Is Essential For The Caregivers, Who Had Children To Be Vaccinated. Health Education And Emotional Support Were Indicated As An Effective Method To Improve Vaccination Coverage Through Increasing Their Knowledge, Attitude And Practice Towards Vaccination **(Jackson & Vessey, 2015)**. **Ganzale, Adams, And Anderson (2013)** Conducted A Community-Based Randomized-Controlled Trial On Health Education Intervention Of Vaccination Among 366 Mother-Infant Pairs. After A Three-Month Intervention Period, They Found The Coverage For All Three Doses Of DPT Vaccine Was 72.1% And 51.7% In Intervention Group And Control Group, Respectively. There Were Some Reports Of The Evaluation Of The Impact On The Health Education Intervention For Increasing The Parental Knowledge Of Vaccination Worldwide **Wong, (2015)** & **Muscari (2015**). These Reports Indicated That A Health Education Program Is Essential To Enhance The Mothers Knowledge, Attitude And Practice Towards Vaccination So It's Crucial To Suggest This Strategy Should Be Focused On The Mothers With Lower Education Level Or With Misinformation/Poor Perception Of Vaccination And Should Be Integrated Into The Vaccination Program. Therefore, This Present Study Was Carried Out To Evaluate Effect Of Teaching Instructions For Mothers About DPT On Vaccine's Side Effects.

II Significance Of The Study:

Vaccination Averts An Estimated 2 To 3 Million Deaths Every Year From Diphtheria, Tetanus, Pertussis (Whooping Cough), And Measles; However, An Additional 1.5 Million Deaths Could Be Avoided If Global Vaccination Coverage Improves. Global Vaccination Coverage – The Proportion Of The World's Children Who Receive Recommended Vaccines – Has Remained Steady For The Past Few Years **(WHO, 2015**).

The **UNICF, (2015)** Reported That, About 86% (116 Million) Of Infants Worldwide Received 3 Doses Of Diphtheria-Tetanus-Pertussis (DTP3) Vaccine, Protecting Them Against Infectious Diseases That Can Cause Serious Illness And Disability Or Be Fatal. By 2015, 126 Countries Had Reached At Least 90% Coverage Of

DTP3 Vaccine. Vaccinations Today Save More Than Three Million Lives A Year. However, Millions Of Children Still Do Not Have Access To Basic Vaccination And Die From Diseases That Can Be Prevented By Available Vaccines. Mother's Knowledge, Attitude And Practices Play A Major Role In Achieving Complete Vaccination During Childhood.

Scares Research Studies Were Conducted Nationally To Help Mothers Caring For Their Children After DPT Vaccine. Hence, The Current Study Is Undertaken To Evaluate Effect Of Teaching Instructions For Mothers About DPT On Vaccine's Side Effects Occurrence And Management. Eventually, The Results Of The Current Study Might Generate An Attention And Motivation For Further Researches In The Field Of Pediatric Health Promotion. As Well As Providing Guidance And Recommendations That Should Be Reflected In Pediatric Nursing Education, Practice And Research.

The Aim Of The Study:

The Aim Of The Current Study Was To Evaluate The Effect Of Teaching Instructions For Mothers About DPT On Vaccine's Side Effects And Management.

Research Hypotheses:

H1: Mothers Who Will Receive The Teaching Instructions Will Have Higher Mean Score Of Knowledge Than The Control Group.

H2: Children Of The Mothers Who Receive The Teaching Instructions Will Have Lower Vaccine's Side Effects Than The Control Group And Better Management.

III Subjects And Methods:

Research Design:

Pre-Posttest Quasi-Experimental Research Design, Was Utilized To Achieve The Aim Of The Current Study. A Quasi Experimental Design Is One Type Of Experimental Design That Is Very Similar To The True Experimental Design Except There Is Lose One Criteria As Randomization **(Burns & Grove, 2015 & Polit & Beck, 2017).**

Setting:

The Study Was Conducted In The Vaccination Out-Patient Clinic At The Preventive Medicine And Social Center, Affiliated To Cairo University Hospitals. The Center Provides Preventive, Therapeutic And Socials Services. The Center Includes Various Out-Patients Clinics And Vaccination Clinic. Vaccination Clinic Located At The First Floor And Provide Children With Vaccination According To Their Vaccination Schedule.

Subjects:

A Convenient Sample Of 60 Mothers Having Infants Taking Vaccine Was Participated In The Current Study. The Sample Size Was Calculated Based On Formula. Those Participants Divided Into Two Equal Groups Randomly: 30 As A Control Group Who Received The Hospital Routine Care And 30 As A Study Group Who Received The Teaching Instructions.

Inclusion Criteria

- Children Aged Until Six Months Undergoing DPT Vaccine.
- The Mother Is The Main Caregiver Accompanied With The Child
- The Mother Is Commitment Follow Egyptian Vaccine Schedule At The Same Sitting

Exclusion Criteria

- Children Have Any Congenital Anomalies, Or Chronic Illness

Data Collection Tool:

The Required Tools Developed And Collected By Researchers After Reviewing The Related Literature Through The Following Tools:

1- **Structured Interview Questionnaire:** It Included The Following Three Parts To Assess Personal Data For The Child, Mother And The Family:

Part I: Personal Data About Mother: Age, Level Of Education, Occupation, Place Of Residence, And Numbers Of Children.

Part II: Characteristics Of Children Including Age, Gender, Rank, Time Of Previous And Recent DPT Vaccine, Side Effects And Management.

2- **Mother's Knowledge About DPT Vaccine Questionnaire:** It Included The Following Two Parts To Assess Mother's Knowledge About DPT Vaccine And Care For Child After Vaccination:

Part I: Mother's Knowledge About DPT Including: Definition, Importance, Indications, Component, And Side Effects.

Part II: Mother's Reported Management After Vaccination Including Bathing, Feeding, Activity, And Care For DPT Vaccine 'S Side Effects.

3- **DPT Vaccine's Side Effects Record:** It Was Developed By The Researcher In English Language After Reviewing The Related Literature. It Included DPT Vaccine Side Effects Fever, Pain, Redness, Tenderness

Or Swelling At Injection Site, Fatigue, Itching At Injection Site, Nausea, Dizziness Or Fainting, Mild Rash, Weakness, Signs Of A Serious Allergic Reaction Included Difficulty Breathing, Hoarseness , Wheezing, Paleness, A Fast Heartbeat Or Convulsion.

Scoring System:

Scoring System For **Mother's Knowledge Assessment** Was 100 Scores. Fifty Scores Were For Each Mother's Knowledge About DPT Vaccine And Mother's Reported Management To Care For Child After DPT Vaccine Administration, Each Complete Answer Took Two Scores, Incomplete One Took One Score And The Wrong Answer Or No Response Took Zero. The Total Score Will Be Converted To 100% (100 Score), And Then Categorized As Following: The Total Score Less Than 50% (Less Than 50 Score) Was Considered As Unsatisfactory While Score Of 50% And More (50 Score) Was Considered As Satisfactory Level.

Validity And Reliability:

The Tools Were Reviewing By 5 Experts In Pediatric Nursing And Pediatric Medicine To Test The Content Validity Of Tools. Reliability Of The Tools Was Performed To Confirm Its Consistency Tools. The Reliability Coefficients' Alpha Between Questions Was 0.72.

Pilot Study:

Pilot Study Was Conducted On 7 Mothers Of Children Undergoing DPT Vaccine To Ensure The Clarity Of Content Of Tools And To Assess The Time Needed To Fill The Tools. Minor Modifications Were Done Such As Restate Some Wards. Based On The Results Of The Pilot Study, Mothers Of Children Who Participated In The Pilot Study Was Included In The Total Study Sample.

Procedure:

Official Permissions From The Preventive Medicine And Social Center Affiliated To Cairo University Hospitals And Pediatric Out-Patient Clinic Obtained. Mothers Who Met The Inclusion Criteria Invited To Participate In The Study. The Purpose And The Nature Of Study Explained To Each Mother Individually. An Oral Consent Obtained From Each Mother To Get Her Acceptance As Well As To Gain Her Cooperation. The Interview Conducted For All Mothers And Their Children To Fill Structured Interview Questionnaire Which Covered Personal Data About Mother: Age, Level Of Education, Occupation, Place Of Residence, And Numbers Of Children And The Characteristics Of Children Including Age, Gender, Rank, Time Of Previous And Recent DPT Vaccine, Side Effects And Management. At The Same Time, The Researchers Obtained Mothers' Knowledge About DPT Vaccine As A Pre Test Using Mother's Knowledge About DPT Vaccine Questionnaire To Assess Mother's Knowledge About DPT Including: Definition, Importance, Indications, Component, And Side Effects And Mother's Reported Management After Vaccination Including Bathing, Feeding, Activity, And Care For DPT Vaccine 'S Side Effects. This Interview Took Place In The Waiting Area In The Out-Patient Clinic As A First Interview. After DPT Administration, The Researchers Gave One Session Teaching Instructions For Participated Mothers (20 - 30mins) About DPT Vaccine Including (Definition, Importance, Indications, Component, And DPT Vaccine Side Effects As Fever, Pain, Redness, Tenderness Or Swelling At Injection Site, Fatigue, Itching At Injection Site, Nausea, Dizziness Or Fainting, Mild Rash. Weakness, Signs Of A Serious Allergic Reaction Can Include Difficulty Breathing, Hoarseness Or Wheezing, Paleness, A Fast Heartbeat Or Convulsion And Their Managements. At The Second Time, The Participated Mothers Came To Receive The Second Dose Of DPT Vaccine. The Researchers Met The Participated Mothers To Fill Mother's Knowledge About DPT Vaccine Questionnaire As Post Test To Assess Mothers' Knowledge About DPT Vaccine In 15-25 Mins At And Fill DPT Vaccine's Side Effects Record. The First Thirty Mothers Were Considered As Study Group And The Next Thirty Mothers Were Control Group Who Didn't Receive The Teaching Instructions About DPT Vaccine At First Interview. Data Collection Started At January 2017 And Finished January 2018**.** The Researchers Prepared Arabic Teaching Instructions In Form Of Flayer And Gave It To The Mothers Who Participated In The Study Group And Control Group After Finishing The Data Collection. It Included Simple Information About DPT Vaccine Including (Definition, Importance, Indications, Component, And DPT Vaccine Side Effects As Fever, Pain, Redness, Tenderness Or Swelling At Injection Site, Fatigue, Itching At Injection Site, Nausea, Dizziness Or Fainting, Mild Rash. Weakness, Signs Of A Serious Allergic Reaction Can Include Difficulty Breathing, Hoarseness Or Wheezing, Paleness, A Fast Heartbeat Or Convulsion And Their Managements**).**

Ethical Consideration:

Official Permissions From The Directors Of The Preventive Medicine And Social Center Affiliated To Cairo University Hospitals And Pediatric Out-Patient Clinic Obtained To Approve The Study. The Oral Consent Obtained From The Mothers Of Children After Complete Description Of The Purpose And The Nature Of The

Study. Mothers Were Informed That Participation In The Study Is Voluntary. The Researchers Informed The Mothers About Their Rights To Withdraw From The Study At Any Time Without Giving Any Reason And Without Any Effect On The Care Of Their Children. Confidentiality Assured To Each Child And Their Mothers. The Researchers Were Commitment To Give All Mothers Who Were Participated In Control Group One Session Teaching Instructions For (20 - 30mins.) About DPT Vaccine Including (Definition, Importance, Indications, Complications, Component, And DPT Vaccine Side Effects As Fever, Pain, Redness, Tenderness Or Swelling At Injection Site, Fatigue, Itching At Injection Site, Nausea, Dizziness Or Fainting, Mild Rash, Weakness, Signs Of A Serious Allergic Reaction Can Include Difficulty Breathing, Hoarseness Or Wheezing, Paleness, A Fast Heartbeat Or Convulsion And Their Managements) At The Second Visit After Filling Mother's Knowledge About DPT Vaccine Questionnaire As Post Test And DPT Vaccine's Side Effects Record.

Statistical Analysis:

A Compatible Personal Computer (PC) Was Used To Store And Analyze Data. The Statistical Package For Social Studies (SPSS), Version 11.0 Was Used. Data Were Coded And Summarized Using Mean, Standard Deviation And Crosstabs For Quantitative Variables, And Percent For Qualitative Variables. The Collected Data Tabulated, And Summarized. Data Was Computerized And Analyzed Using Appropriate Descriptive And Inferential Statistical Tests. Qualitative Data Were Expressed As Frequency And Percentage. A Comparison Between Qualitative Variables Carried Out By Using Parametric Chi Square Test. Comparison Of Means Was Performed Using Paired-Sample T-Test. Correlation Among Variables Was Done Using Pearson Correlation Coefficient. Level Of Significance At $P<0.05$, 0.001 Were Used As The Cut Of Value For Statistical Significance.

IV Results

Table (1) Percentage Distribution Of Personal Data Related To Mothers In Study And Control Group. N 60

Personal Data	Study		Control		X^2	P
	N	%	N	%		
Mothers 'Age/Years:-					23.067	.574
< 20	2	6.7	1	3.3		
20 ≤ 25	5	16.7	10	33.4		
25 ≤ 30	12	40	12	40		
30 ≤ 35	6	20	4	13.3		
35 ≤ 40	4	13.3	2	6.7		
40 And More	1	3.3	1	3.3		
Mothers' Level Of Education:-					33.579	.117
No Read Or Write	15	50	7	23.4		
Read And Write	1	3.3	1	3.3		
Basic Education	7	23.4	11	36.7		
Secondary School	4	13.3	7	23.4		
University Education	3	10	4	13.3		
Mothers 'Occupation:-					16.133	P < 0.01*
Working	26	86.7	0	0		
House Wife	3	13.3	30	100		

* Significant At $P < 0.01$

** Significant At $P < 0.001$

Table (1) Clarified That 40% Respectively Of Mothers In Both Groups Their Age Ranged From 25 To Less Than 30 Years. Regarding Mothers' Level Of Education; It Was Found That Half Of Mothers (50%) In The Study Group Were Not Read Or Write While 36.7% Of Mothers In The Control Group Had Basic Education. In Relation To Mothers 'Occupation, It Was Found That, The Majority Of Mothers In The Study Group (87.7%) Were Working Outside Home. On The Other Hand, All Mothers In The Control Group (100%) Were House Wives. There Was No Statistically Significant Difference Between Mothers In Both Groups Regarding Age And Level Of Education. Moreover, There Was Statistically Significant Difference Between Both Groups Regarding Mothers 'Occupation (X^2= 16.133, P= < 0.01). Figure (1) Illustrated That The Highest Percentage Of Mothers Live In Rural Areas In Both Groups (60%, 76.7% Respectively).There Was No Statistically Significant Difference Between Mothers In Both Groups Regarding Mothers' Place Of Residence.

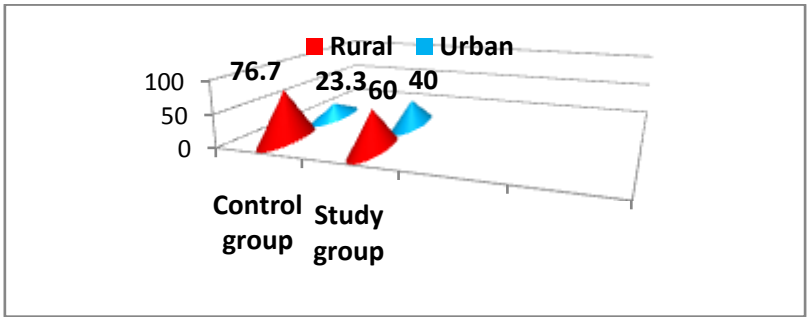

Figure (1) Mothers' Place Of Residence In Study And Control Group (N 60).

Table (2) Percentage Distribution Of Personal Characteristics Of Children In Study And Control Group.

Child's Characteristics	Study		Control		X^2	P
	N	%	N	%		
Child's Age:						
Two Months	11	36.7	2	6.6	2.589	.629
More Than 2 To 4 Months	9	30	11	36.7		
More Than 4 To 6 Months	10	33.3	15	50.0		
Joined Nursery:						
Yes	9	30	9	30	0.370	.543
No	21	70	21	70		
Child's Rank:						
First	12	40	12	40	14.694	.100
Second	5	16.7	11	36.7		
Third	6	20	5	16.7		
More Than Third	7	23.3	2	6.6		

It Was Evident From Table (2) That 36.7% Of Children In Study Group Were Aged Two Months While Half Presentence Of Control Group Were Aged More Than 4 To 6 Months. The Current Study Results Proved That, More Than Two Thirds Of Children (70%) Didn't Join Kindergarten In Both Groups. The Same Table Reflected That 40% Of Children In Both Groups Ranked As The First Child In Their Families. There Was No Statistically Significant Difference Between Children In Both Groups Regarding Age, Joined Kindergarten And Children's Rank In The Family. Figure (2) Revealed That A Relatively High Percentage Of Vaccination Knowledge Of Mothers In Both Groups (56.7%, 63.3%, Respectively). There Was No Statistically Significant Difference Between Mothers Knowledge In Both Groups.

Figure (2) DPT Vaccine Knowledge Among Mothers In Both Study And Control Groups.

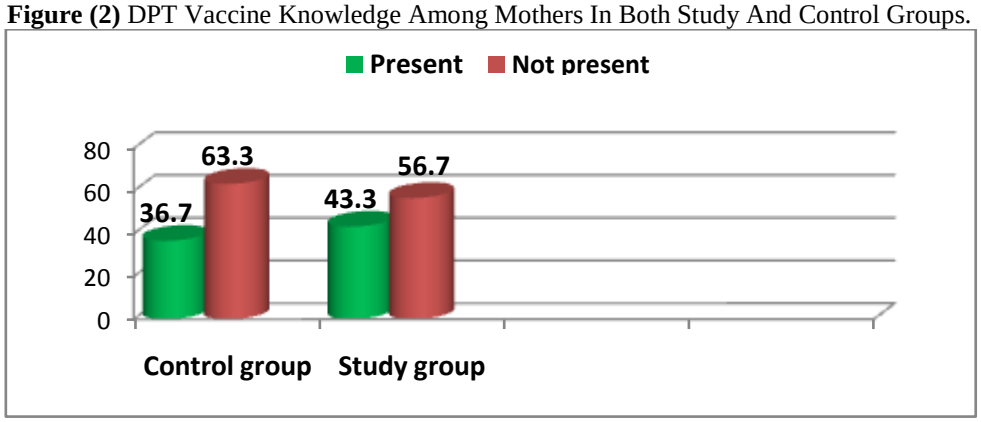

Table (3) Comparison Between Total Mean Score Of Pre Test Mothers Knowledge About DPT Vaccine Among Study And Control Group (N=60).

Items	Study Group Mean ± SD	Control Group Mean ± SD	T-Test	P Value
Definition (20 Marks)	11.3±2.1	10.3±3.2	0. 813	0.154
Importance (20 Marks)	9.3±1.7	8.2±1.2	0.221	0.207
Side Effects (20 Marks)	6.3±2.3	7.3±3.6	0. 515	0.62
Indications (20 Marks)	11.3±1.4	10.2±1.2	0.863	0.45
Management (20 Marks)	6.3±2.1	7.3±3.2	0. 119	0.7

Statistical Significant At $P \leq 0.01$

Table (3) Highlighted That, The Total Mean Scores Of Mothers Knowledge Before Getting The Teaching Instructions (Pre Test) In Study Group Were 11.3±2.1, 9.3±1.7, 6.3± 2.3, 11.3±1.4, And 6.3±2.1 Respectively As Regards DPT Definition, Importance, Side Effects, Indication And Management. While, The Same Items In Control Group Were 10.3±3.2, 8.2±1.2, 7.3±3.6, 10.2±1.2, And 7.3±3.2 Respectively. There Were No Statistically Significant Differences Between Total Mean Score Of Mother's Knowledge In Both Groups (P- < 0.05).

Table (4) Comparison Between Total Mean Score Of Post Test Mothers Knowledge About DPT Vaccine (N=60).

Items	Study Group	Control Group	T-Test	P Value
	Mean ± SD	Mean ± SD		
Definition (20 Marks)	14.3±3.1	11.3±3.2	0. 73	0.01*
Importance (20 Marks)	15.1±1.9	8.8±1.2	0.61	0.02*
Side Effects (20 Marks)	10.3±3.8	9.3±3.6	0. 55	0.062
Indications (20 Marks)	13.3±1.4	11.2±1.2	0.88	0.02*
Management (20 Marks)	13.3±2.5	9.3±3.2	0. 9	0.01*

Statistical Significant At P ≤ 0.01

Table (4) Illustrated That, The Total Mean Scores Of Mothers Knowledge After Getting The Teaching Instructions (Post Test) In Study Group Were 14.3±3.1, 15.1±1.9, 10.3±3.8, 13.3±1.4, And 13.3±2.5 Respectively As Regards DPT Definition, Importance, Side Effects, Indication And Management, While The Same Items In The Control Group As Post Test Were 11.3+3.2, 8.8+1.2, 9.3+3.6, 11.2+1.2, And 9.3+3.2 Respectively. There Were Statistically Significant Differences Between Total Mean Score Of Mother's Knowledge In Post Test For Both Groups In Relation To DPT Definition, Importance, Indication And Management.

Table (*5*) Percentage Distribution Source Of Mother's Knowledge In Study And Control Group:

Source Of Knowledge About Vaccination	Control Group		Study Group		X^2	P
	No	%	No	%		
Health Center Family Or, Doctors	8	26.7	10	3.3	23.067	.574
TV Or, Radio	17	56.7	13	43.3	0.370	.543
Relatives Or Friends	5	16.6	7	23.3	14.694	.100

The Previous Table Showed That, The Highest Percentages Of Mothers In Both Groups Stated That The Television And Radio Considered The Main Source Of Their Knowledge (56.7 %, 43.3 % Respectively). Figure (3) Illustrated That The Highest Percentage Of Children(Suffered From Tenderness, Swelling, Sore, Skin Allergy, And Fever, In Control Group Compared To Study Group, Not More Than 23% Of Children Suffered From Vaccine's Side Effects. There Were Statistically Significant Differences Were Detected Between Both Groups Regarding To DPT Vaccine Side Effects (Definition, Importance, Indication And Management X^2= 2.516, P= 0.01, 0.01, 0.01, 0.05, 0.03, 0.00, And 0.00).

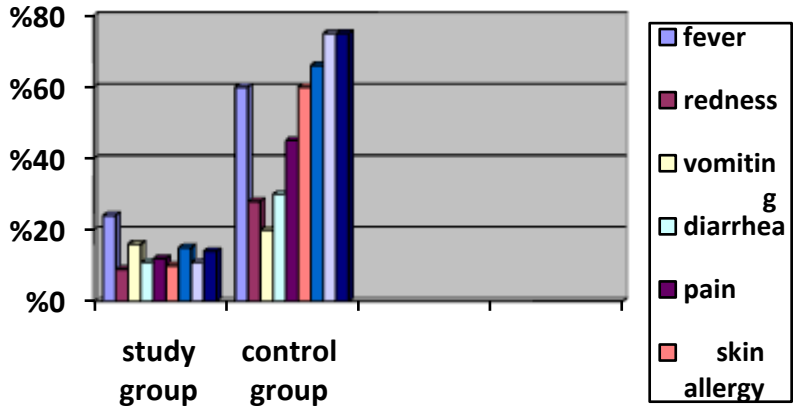

Figure (3) Compression Between Study And Control Groups Regarding To DPT Vaccine's Side Effects
Table (6) Comparison Between Mothers Level Of Knowledge Before And After Teaching Instructions In Study Group (N=30)

Level Of Knowledge	Pre Test		Post Test		X^2	P Value
	No	%	No	%		
Satisfactory	8	26.7	16	53.3	0.29	0.00*
	50.3±2.1		57.3±3.2			
Unsatisfactory	22	73.3	14	46.7	0.33	0.00*
	34.3±1.7		47.2±1.2			

* Statistical Significant At $P \leq 0.01$

Table (6) Indicated That, 26.7% Of Mothers In The Study Had Unsatisfactory Level Of Knowledge Before Receiving The Teaching Instructions Compared To 53.3 % Of Mothers Had Unsatisfactory Level Of Knowledge After Getting The Instructions. There Was Statistically Significant Difference Was Detected Between Mothers' Level Of Knowledge Before And After Receiving Teaching Instructions.

Table (7) Management Of DPT Vaccine's Side Effect Before And After Teaching Instructions In Study Group (N=30)

Item	Before Teaching Instructions		After Teaching Instructions		X^2	P Value
	No	%	No	%		
- Applying Cold Compresses	6	20	15	50	1. 3	0.01*
- Measuring Temperature	4	13.3	18	60	0.51	0.00*
- Cleaning The Injection Site	2	6.7	20	66.7	1. 05	0.00*
- Increasing Breast Feeding	10	33.3	25	83.3	1.18	0.01*
- Reducing Pain	10	33.3	16	53.3	0. 9	0.01*
- Moving The Injected Limb Gently	5	16.6	20	66.7	0. 173	0.01*

* Statistical Significant At $P \leq 0.01$

Table (7) Highlighted That, There Was Statistically Significant Difference Before And After Receiving Teaching Instructions In The Study Group Regarding Mother's Knowledge About Management Of DPT Vaccine's Side Effect.

Table (8) Mothers Knowledge About Management Of DPT Vaccine's Side Effect Among Control Group (N=30)

Item	Before		After		X^2	P Value
	No	%	No	%		
- Applying Cold Compresses	2	6.7	5	16.6	1. 3	0.91
- Measuring Temperature	4	13.3	8	26.7	0.31	0.28
- Cleaning The Injection Site	2	6.7	2	6.7	1. 33	1.2
- Increasing Breast Feeding	9	30	5	16.6	0.018	0.34
- Reducing Pain	8	26.7	6	20	0. 19	0.41
- Moving The Injected Limb Gently	5	16.6	2	6.7	0. 63	0.25

* Statistical Significant At $P \leq 0.01$

Table (8) Indicated That, There Was No Statistically Significant Difference Before And After In The Control Group Regarding Mother's Knowledge About Management Of DPT Vaccine's Side Effect.

V Discussion

The Study Findings Indicate Deficient Knowledge Among Mothers Related To DPT Vaccine And Management Of Their Infants After Vaccine Administration Of The Study Settings. The Implementation Of Teaching Instructions To These Mothers Proved To Be Effective In Improving Their Knowledge, With A Lower Vaccine Side Effect Among Infants. This Leads To Acceptance Of The Set Research Hypotheses.

This Finding Clarifies That Forty Percent Of Mothers In Both Groups Their Age Ranged From 25 To Less Than 30 Years. Regarding Mothers' Level Of Education; It Was Found That Half Of Mothers In The Study Group Basic Education. The Majority Of Mothers Was Not Read Or Writes While One Third Of Mothers In The Control Group Had Basic Education Of Mothers In The Study Group. In Relation To Mothers 'Occupation, It Found That, Were Working Outside Home While In The Control Group Were House Wives. On The Same Line With, (Al- Lela.; 2014) Et Al, Who Study Factors Underlying Inadequate Awareness Parents' Regarding

Pediatrics Vaccination Found That The Majority Of Mothers' Ages Were 20–30 Years Of Age. The Education Level Of More Than Half Of Mothers Was Junior School; The Majority Of Mothers Were Migrant; And More The Results Illustrated That The Highest Percentage Of Mothers Live In Rural Areas In Both Groups. The Researchers Attributed This Point To The Ministry Of Health In Egypt Which Facilitates Vaccination Services For All Age Group From Birth To Adolescents In Different Residence Rural And Urban In Order To Improve Child Health By Decreasing Risk Mortality And Morbidity From Vaccines.

According To The Present Study Findings, There Was No Statistically Significant Difference Between The Total Means Pre Intervention Among Mothers In Both Groups. However, The Total Means Of The Post Intervention Scores Among Mothers In The Study Group Were Generally Higher Compared With Those Mothers Of The Control Group. The Foregoing Present Study Findings Are In Agreement With Those Of Yu And Hu. (2015) Who Showed Significant Improvements In The Posttest Mean Scores Of Mothers Exposed To Educational Seminar Intervention About Vaccination. The Author Concluded That The Health Education Intervention Adopted In This Study Focused On Improving The Vaccination Knowledge Level Of Caregivers In Yiwu And Made A Remarkable Increase In Their Vaccination Knowledge Compared With The Baseline Level. The Study Findings Highlighted That, No Significant Differences Between The Pre- Test Knowledge Mean Scores Among Mother's In Both Groups Regarding DPT Definition, Importance, Indication, Side Effects, And Management. In Accordance With This Findings, In A Study Done By Oche , Umar, Ibrahim, And Sabitu (2011) About An Assessment Of The Impact Of Health Education On Maternal Knowledge And Practice Of Childhood Vaccination, Found That At Baseline, More Than Half Of Mothers Had Adequate Knowledge Of Childhood Vaccination In The Intervention Community While In The Control Community About Half Of The Mothers Had Adequate Knowledge Of Vaccinations. Even Though The Proportion Of Mothers In The Two Communities Who Knew About Childhood Vaccination Differed, This Was However Not Statistically Significant.

The Study Findings Significant Improvement Between Pre-Test And Post-Test Knowledge Mean Scores Of Study And Control Groups Also Between Pot-Test Of Both Groups Among Mothers Regarding DPT, Importance, Indication, Side Effect And Management. In Consistent With, Dutta , Mahato , Bose, Sil And Biswas (2016) , In A Study Of Evaluation Of Knowledge, Attitude And Practices On Vaccination Among Mothers Of Under Five Children In A Tertiary Care Hospital In Eastern India Who Highlighted That The Mean Posttest Knowledge Score Also Was Higher Than The Mean Pre-Test Score.

According To The Present Study Results, The Minority Of Mothers In The Study Group Had Satisfactory Knowledge About Vaccination And Related Management Care Before Implementation Of The Teaching Instruction. This Could Be Attributed To That Half Of Them Were Primary, Secondary School And University Education, Moreover, More Than Half Of Mothers In Both Groups Stated That The Television And Radio Considered The Main Source Of Their Knowledge. The Finding Is In Agreement With The Results Of A Study Conducted In Kaduna State Nigeria, Indicated That Mothers' Knowledge Was Below The Minimum Acceptable Level And The Majority Of Respondents Who Obtained Information On Routine Vaccination Acquired It From The Radio (Taiwo Et Al., 2017).

The Implementation Of The Teaching Instruction To The Mothers In The Present Study Led To Significant Improvements In Their Knowledge, And The Majority Of Them Had Satisfactory Knowledge After Receiving The Instruction .This Findings In Agreement With Finding By Varghese Etal, (2016) , In Villages Of Waghodia Taluka, Reported Significant Improvement In A Study Of The Effectiveness Of Planned Teaching Programme On Knowledge Regarding Vaccination Among Antenatal Mothers After Implementation Explained That There Were A Significant Relationship Between Mothers Of The Teaching Intervention. Similarly, In A Comparative Study In India And Pakistan Done By Uubsubhani, Yaseen, Khan, Jeelani, And Fatim (2015) Evaluate The Effect Of Mother's Education On Child Vaccination Education And Adoption Of Child Vaccination Program.

Concerning The Effect Of The Educational Intervention On The DPT Vaccine Side Effect Among Infants, The Present Study Results Indicated A Relatively Low Side Effect. The Incidence Rate Is Less Than A Half Of The Rate Reported In A Literature Review, Moreover, The Incidence Rate In The Present Study (23%) For The Study Group And 70% For The Control Group. According To WHO,(2015) Information Sheet Report Children Commonly Experience Mild Or Moderate Local Reactions (38%). However, Severe Pain At The Injection Site Was Reported In 20%.

The Present Study Results Have Also Demonstrated That The Children In The Control Group Had Higher Incidence Rate Of Vaccine Side Effect Than The Study Group As Tenderness 75 %, Swelling 75%, And Sore 60% At Injection Site, Skin Allergy 60 %, And Fever 60 %. In The Same Line, (WHO, 2014) Reported That Mild Adverse Events Following DTP When Administered For Both Primary And Booster Vaccinations In Infants And Children Are Common And Consist Of Local Reactions (50%) And Systemic Reactions Such As Fever Over 38°C And Irritability (40% To 75%), Drowsiness (33% To 62%), Loss Of Appetite (20% To 35%), And Vomiting (6% To 13%).

As Regard To Management Of DPT Vaccine's Side Effect There Was Statistically Significant Difference Before And After Receiving Teaching Instructions In The Study Group. While, There Was No Statistically Significant Difference Between Mothers Knowledge In The Control Group. In A Previous Study, Assessed By Oche , Umar, Ibrahim, And Sabitu (2011) Revealed That At Baseline, Half Of The Mothers In The Intervention Group Had Adequate Knowledge Of The Benefits, Side Effects Of Vaccination And Management. Following Intervention, The Proportion Of Mothers With Adequate Knowledge Increased.

VI Conclusion

The Current Study Results Concluded That Mothers Who Received The Teaching Instructions Had Higher Total Mean Score Of Knowledge Regarding DPT Vaccine And Management Of Their Children After Vaccine Administration. As Well As, Children Of The Mothers Who Received The Teaching Instructions Exhibit Better Outcomes As Regards DPT Vaccine's Side Effects And Its Management. These Results Support The Proposed Study Hypotheses.

Recommendations

Based On The Results Of The Current Study, It Was Recommended That:

- Raising The Awareness Of Mothers About DPT Vaccine And Management Of Their Children After Vaccine Administration Through Health Education Sessions.
- Simple Arabic Illustrated Booklet About DPT Vaccine And Management Of Their Children After Vaccine Administration Should Be Available And Distributed To Mothers In Vaccination Out-Patient Clinic At The Preventive Medicine And Social Center.

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