EFFECT OF POSTOPERATIVE IMMOBILITY ON CHILDREN WITH MUSCULOSKELETAL DISORDERS

By

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Abstract

Musculoskeletal Disorders or MSDs are injuries and disorders that affect the human body's movement or musculoskeletal system. Immobility is a state in which the individual experiences or is at risk of experiencing limitation of physical movement,purposeful physical movement of the body or of one or more extremities. Immobility has serious consequences on children; physically, socially and psychologically. The aim of the current study was to assess the effects of post operative immobility on children with musculoskeletal disorders. A descriptive exploratory research design was utilized to fit the aim of the study. The study was conducted at pediatric orthopedic surgical specialty ward and orthopedic surgical outpatient clinic at Cairo University Specialized Pediatric Hospital. A convenient sample of 100 children with MSDs and their caregiver participated in the study. Tools of data collection were structured interview schedule. Tools included socio-demographic data about child, his /her parents, observational checklist to evaluate the effects of postoperative immobility on children with musculoskeletal disorders physically and psychosocially. The study results revealed that, more than two fifth of children' age ranged from 3- <6 years, and more than half of children were males. More than two fifth of the children with MSDs stayed in cast for 2 months. More than half of children had impaired coping abilities and hostility postoperatively. There was highly statistical significant difference that the postoperative immobility affected the child physically can be noted in the most of body systems and psychosocially and the immobilized child impacted on his/her family. There was statically significant correlation between surgical treatment and presence of complications. The study concluded that, based on the results the effects of postoperative immobility increased than preoperative physically (each system can affected as a result of immobility) psychosocially on children and his/her family. The study recommended that, Comprehensive nursing care program for children with immobilization is very important in both pre and postoperative periods to minimize the effects of immobility on children and their families physically and psychosocially.

Keywords: Children, Musculoskeletal Disorders, Postoperative, Immobility.

Introduction

Musculoskeletal Disorders (MSDs) are injuries and disorders that affect the human body's movement or musculoskeletal system (i.e. bones, muscles, tendons, ligaments, nerves, discs, blood vessels, etc.). In children, a wide variety of disorders affect the muscles, joints, and bones. These disorders may be caused by heredity, injury, inflammation, or infection. MSDs can be classified to traumatic injury, congenital defects, and acquired defects, infections of bones and joints, bone and soft tissue tumors and disorders of joints (Hockenberry & Wilson, 2012). The American Academy of Orthopedic Surgeons (AAOS), (2015) considers childhood musculoskeletal injuries and conditions a major problem around the world. Many thousands of children and adolescents nationwide suffer from musculoskeletal conditions each year. In fact, for children younger than age 19, abnormal musculoskeletal conditions accounted for 427,000 hospitalizations and more than 9.5 million physician visits in 2008 alone.

Surgeries serve an important role in the treatment of musculoskeletal conditions and are used to heal injuries, improve function and ease pain. Orthopedic surgeons turn to surgical solutions for approximately half of their patients (Hill, 2012). The most frequent reason of immobility is due to congenital defects, or acquired MSDs itself and/or the therapies such as traction, casts (Hockenberry &Wilson, 2013)

Impaired physical mobility is defined as the state in which an individual has a limitation in independency, purposeful physical movement of the body or of one or more extremities (Beevi, 2012). One of the most difficult aspects of illness is the immobility, it often imposes on child. Children's natural tendency to be mobile influences all elements of growth and development physical, social, psychological, and emotional. Immobility restricts expression and causes anxiety and frustration. The most frequent reasons of immobility are either from the disorders in musculoskeletal itself or from treatment such as cast are responsible for prolonged immobilization (Hockenberry, Wilson, 2013).

Physiological effects of immobilization, functional and metabolic responses to restricted movement can be noted in the most of body systems, all of which have a direct influence on the child's growth and development. Most of pathologic changes that take place during immobilization arise from decreased muscle strength and mass, decreased metabolism, and bone demineralization which are closely interrelated. Immobility are related directly or indirectly to decreased muscle activity, which produces numerous primary changes in both muscular and bone structure with secondary alternation in the cardiovascular, respiratory, metabolic, Integumentary, nervous, and renal systems (Ricci &Kyle,2012).

Throughout childhood, physical activity helps the children to deal with a variety of feeling and impulses and provide a mechanism by which they can exert control over inner tensions. Activity serves children as an instrument for communication, expression, learning and understanding of world. When children are immobilized they experience diminished environmental stimuli with loss of tactile input and altered perceptions of themselves and their environment. Sensory deprivation frequently leads to feelings of isolation, boredom and restlessness. Children with MSDs suffer from regression e.g., bed-wetting, fear of darkness, depression and inability to discharge anger (Mercer, 2013)

Living with a disabled child can have profound effects on the entire family– parents, siblings, and extended family members. It is a unique shared experience for families and can affect all aspects of family functioning. On the positive side, it can broaden horizons, increase family members' awareness of their inner strength, enhance family cohesion, and encourage connections to community groups or religious institutions. On the negative side, the time and financial costs, physical and emotional demands, and logistical complexities associated with raising a disabled child can have far-reaching effects. Family needs must be met by services of a multidisciplinary team (Jones, 2014).

Nurses' responsibility is to identify the impact of physical immobility on children and their families either physically, socially and psychologically. Assessment should focus on not only the injured part (e.g. fracture) but also the functioning of other systems that may be affected secondarily the circulatory, renal, respiratory, muscular and gastrointestinal systems. With long-term immobility some neurologic impairment and electrolytes disturbances, psychological impact of immobilization should be assessed and the impact of child's immobilization on family (Hockenberry, Wilson, 2013).

Orthopedic postoperative nurse is responsible for the majority of child care following any orthopedic surgical procedure. Specific responsibilities include close supervision and care immediately following surgery, daily routine, and monitoring and care plan management. Care of wound, cast, fixation and traction care according to the treatment. Pain management is depending upon the severity of the surgical procedure. Frequent positions changes, nutritional support & adequate hydration is needed (Media & Reid, 2013).

Significance of the study

In Egypt, there are scarce researches about the effect of postoperative immobility among children with MSDs at Cairo University Specialized Pediatric Hospital (CUSPH). Moreover, it has been observed during the researcher clinical experience that postoperative children with MSDs are suffering from immobility. This immobility has its effects physically on the child wellbeing and can be noted in the most of the body systems and each has a direct influence on child growth and development. Also psychosocial wellbeing of child will be affected by immobility. When the child is immobilized by the disease or as a part of treatment regimen, Sudden or gradual immobilization narrows the amount and the variety of environmental stimuli of children by means of all their senses, this sensory deprivation frequently leads to feel feeling of isolation, boredom, helplessness ,unwanted and being forgotten especially by beers. Effect of immobilized child on families is a unique shared experience for families and can affect all aspects of family functioning, the time and financial costs, physical and emotional demands, and logistical complexities associated with raising a disabled child can have far-reaching effects. The impact of immobilized child will likely depend on the type of condition and severity. According to the medical records in CUSPH the incidences of children with MSDs in (2011) was 1040 child and in (2012) was 1284 child. So the current study aimed to assess the effects of immobility on children and their families to be able to provide a comprehensive nursing care program for children and their families based on the current study findings.

Aim of the study

The aim of the current study was to assess the effects of post operative immobility on children with musculoskeletal disorders.

Subjects &Methods

Research Design

A descriptive exploratory research design was utilized to study the effect of post operative immobility on children with musculoskeletal disorders.

Research Questions

To fulfill the aim of this the study, the following research questions were formulated:

Q1: What are the effects of post operative immobility on children with MSDs on physical wellbeing?

Q2: What are the effects of post operative immobility on children with MSDs on psychosocial wellbeing?

Setting

The study was conducted at pediatric orthopedic surgical specialty ward (4^{th} floor) bed capacity (12 beds) and orthopedic surgical outpatient clinic (2^{nd} floor) at Cairo University Specialized Pediatric Hospital (CUSPH).

Sample

A convenient sample of 100 children with MSDs and their caregivers were participated in the study. Children with post operative MSDs regardless the causes. Children aged from 2 to10 years of both genders.

The study excluded children who have other congenital anomalies and/ or chronic illness and children who had other physical disabilities.

Data Collection Tools

The tool was developed by the researcher on Arabic language based on extensive review of related literature and after testing its validity and reliability.

The required data was collected through the following tools:

Part (1). Structured interview schedule which include social and personal data about the child's and his/her family, the past medical history of the child, history of the disease, signs and symptom experienced by the child and treatment.

Part (2). Observational checklist to assess the effects of preoperative immobility on children with musculoskeletal disorders. It composed of three sections:

-First Section: It was composed of the effects of preoperative immobility physically effects on children with MSDs on each system affected; it includes 8 questions to assess musculoskeletal system, respiratory system, cardiovascular system,

gastrointestinal system, genitourinary system, integumentary system and neurosensory system.

-Second Section: To evaluate the preoperative immobility psychosocial effects on children with MSDs it contained 44 questions as an example (diminished environmental stimuli, inability to concentrate, depression, regression, egocentrism, increased anxiety/frustration/helplessness, and social isolation).

Third Section: Effects of immobilization on the child and family preoperative. It contained19 items included as an example (wasted of the time and financial costs of the family, altered coping abilities of the family, and divert attention from other aspects of family functioning).

Part (3): Observational checklist to assess the effects of postoperative immobility on children with musculoskeletal disorders. It composed of three sections:

-First Section: It includes postoperative immobility physical effects on children with MSDs on system affected; it is composed contained 8 questions to assess musculoskeletal system, respiratory system, cardiovascular system, gastrointestinal system, genitourinary system, integumentary system and neurosensory system.

-Second Section: To evaluate postoperative immobility psychosocial effects on children with MSDs it contained 44 questions as an example (Diminished environmental stimuli, inability to concentrate, depression, regression, egocentrism, increased anxiety/frustration/helplessness, and social isolation).

-Third Section: Effects of immobilization on child and his family postoperatively. It contained 19 items include for example (wasted of the time and financial costs of the family, altered in coping abilities of the family, and alteration of the family process and functioning).

Data Collection Procedure

An official permission to conduct the study was obtained from the directors of CUSPH as well as permission from the heads of pediatric surgery department and outpatient clinic of surgery. The consent was obtained from the caregivers of children with MSDs. Complete description of the purpose, nature of the study, tool, duration of the study, confidentiality, and the right to withdraw from the study was explained to each caregiver. The research investigator was filling the questionnaire sheet from the caregivers who had children fulfilling study criteria through interview schedule. The time spent to fill the questionnaire ranged between 15 to 20 minutes for each caregiver. Data was collected using retrospective method by asking the caregivers about past and current medical history. The research investigators observed the effect of the immobility preoperatively and check on the checklist. The time spent to fill the observational checklist ranged from 15 to 20 minutes for each caregiver in the orthopedic surgery ward and surgery outpatient clinic. Another observational checklist was done postoperatively about the effect of immobility on children with MSDs and monitoring the effect of immobility postoperatively until removing of cast and healing. The data collection procedure took six months (three days per week) from February to July 2014.

Pilot study

The pilot study was carried out on 10 children with MSDs and their caregivers who attended in the pediatric surgical unit and outpatient clinic in CUSPH to test the study tools in terms of its applicability and clarity of questions, time required to fulfill it and to add or omit questions were done. Some modifications for questions were done.

Tool Validity

Tools of data collection were submitted to five experts in pediatric surgery, pediatric orthopedic specialist and pediatric nursing to test the content and face validity of tools. Modifications of the tool were done according to the panel judgment on clarity of the sentences, appropriateness of the content and sequence of items.

Tool Reliability

The internal consistency was measured to identify the extent to which the items of tools measure the concept and correlate with each other. Internal consistency estimates reliability by grouping questions in questionnaire that measure the concept. Reliability of tools was performed to confirm its reliability of tools accepted coefficient alpha between questions to be accepted at 0.79.by using Test- Retest reliability.

Ethical consideration

Final ethical approval was obtained from the research ethical committee in the Faculty of Nursing, Cairo-University, to approve the research. A written formal consent was obtained from the mothers/ caregiver of children after explaining to them the aim of the study, its benefits and risks, duration of the study and the data collection tools. The researcher informed the parents that all data gathered during the study is considered confidential. The researcher informed the parents 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.

Statistical analysis

The collected data was tabulated and analyzed by personal computer using statistical package for the social science (SPSS) program version 20.Descriptive statistics will be utilized as frequency, mean and standard deviation. Inferential statistics will include T test and chi squire. A compatible personal computer (PC) was used to store and analyze data, and to produce graphic presentation for some important results. Data were coded and summarized using mean and standard deviation for quantitative variables and percent for qualitative variables, Pearson correlation coefficient, The p-value < 0.05 and p-value<0.001 was considered statistically significant.

Results

Table (1) showed that, the studied sample consisted of 100 children who diagnosed as MSDs. As regards age less than half of children' (46%) age ranged from 3- <6 years and the mean age of the children was7.39±4.97 years. Regarding to sex more than half of children (56%) were males. With reference to residence less than half of children (48%) came from urban areas. In relation to presence of consanguinity more than half the children' parents (54%) had negative consanguinity between parents and 46%of them had positive consanguinity.

Table (2) represented that, nearly two thirds of children (65%) had congenital disorders as a cause of MSDs. More than sixty percent of children (61%) did not do orthopedic surgery before while 38% did orthopedic surgery at different stages. More than two fifth (46%) of children with MSDs stayed in cast for 2 months. Most of children (98%) with MSDs had post operative complications.

As regards the effects of preoperative and postoperative immobility in children with MSDs **table (3)** showed that; there was statistically significant difference between the effect pre and postoperative in reducing strength and coordination of the muscles (X^2 = 5.553, p =0.018). There was highly statistically significant difference between the effect pre and postoperative in loss of joint mobility and contracture formation(X^2 =75.000, p =0.000). There was no statistical significant relation between the effect pre and postoperative in decreasing exercises intolerance. (X^2 =1.541, p =0.214). On gastrointestinal tract (GIT), there was statistically significant difference between the effect of pre and postoperative in underweight related to poor appetite (X^2 =4.110, p =0.043).There was highly statistically significant relations between the effect of pre and postoperative regarding inadequate hydration and nutritional status and distention caused by poor abdominal muscle tone (p =0.000). Regarding urinary system, there was highly statistical significant difference between the effect of pre and postoperative in urinary retention (bladder doesn't empty completely, decreased muscle tone) and urinary tract infection (p =0.000). For integumentary system there was highly statistical significant difference between the effect of pre and postoperative in reducing skin turgor, ulcers or necrosis and edema on the effected site (p<0.005).

Table (4) illustrated that there was a highly statistically significant difference between pre and post operative feeling depression, suffering from regression, feeling egocentrism and sluggish intellectual and psychomotor responses. There was statistically significant difference between pre and post operative feeling of frustration and helplessness, mood swings and listlessness and diminished ability to perform self-care (p<0.05).

Table (5) demonstrated highly statistical significant difference between pre and post operative as regard to social isolation, and altered perceptions of themselves and their environment (p=0.000). There were no statistical significant difference between pre and post operative regarding experience diminished environmental stimuli, alteration in level of activity and passive and aggressive verbal and nonverbal communication (p>0.05).

Table (6) showed a highly statistically significant difference between pre and post operative in encouraging family connections to community groups or religious institutions, wasted of the time and financial costs of the family, difficult to find

appropriate and affordable child care, affect decisions about work, education/training, having additional children, feeling of confusion, support from their families and feeling guilt, blame, or reduced self-esteem ($p < 0.001$). There were statistically significant differences between pre and post operative in increased family members' awareness of their inner strength and enhance family cohesion, altered coping abilities of the family, increase stress in the family, fear of the unknown more than they fear the known ($p<0.05$).

Discussion

The aim of the current study was to assess the effects of post operative immobility on children with musculoskeletal disorders. The first part of the current study dealt with data related to analysis of sociodemographic characteristics of children and their families, it was shown that, more than fifth of children age ranged from 3- <6 years while more than one third had 6-10 years old. These results were supported by Ricci and Kyle (2012) who found that, musculoskeletal disorders in children may occur as a congenital malformation or a genetic disorder that present from birth but may not be identified until later in childhood and adolescence**.**

Regarding the child's gender, the study's results showed that, nearly more than half of children were males. These findings in accordance with the study carried out by Gunz, Canizares, MacKay and Badley(2012) who found that, overall more boys than girls presented to physicians with MSD complaints (girl/boy ratio 0.9). It is evident from the current study that, less than half of children came from urban areas which have increased risk for congenital MSDs. These results were supported by Padula, Tager, Carmichael, Hammond, Lurmann and Shaw (2013) who concluded that, their results extend the limited body of evidence regarding air pollution exposure and adverse birth outcomes.

The results of the current study indicated that, more than two fifth of parents had positive consanguinity which was increased incidence of musculoskeletal congenital anomalies. This finding was in accordance with the study carried out by Marwah, Sharma, Kaur, Gupta, Goraya (2014) who evaluated the incidence of congenital malformations in their population was 4.44%: frequently associated with consanguineous marriage and these finding also supported by WHO (2014) that indicated, there are some known causes or risk factors one of them consanguinity (relationship by blood) which increases the prevalence of congenital anomalies.

The results of the current study revealed that, less than two thirds of the studied children had congenital disorders, more than twenty percent of children the cause of the MSDs were traumatic disorder, more than ten percent of children the cause of MSDs were acquired. These results supported by AAOS (2015) who concluded that, abnormal musculoskeletal conditions which require orthopedic care can range from congenital conditions and include other musculoskeletal infections and diseases.
In addition, approximately five million children younger than age 19 sustained musculoskeletal injuries in 2008.

Regarding to the line of management utilized with children, the results of the current study revealed that, the highest percentage of children had surgical treatment, these results supported by Gunz, Canizares, MacKay and Badley(2012) who reported that, the majority of children presented to surgical specialists (22.3% saw surgical specialists, mainly orthopedic surgeons. The current study proved that, more than two fifth of children stayed in cast for 2 months; which is stressful for children and limits their activity and decrease their energy level. These finding was in accordance with the study carried out by Mannheim (2014) who concluded that, children older than 2 years may require an "open surgery" to realign the hip, followed by spica cast. The spica cast is worn for approximately three to six months. The cast is changed from time to time to accommodate the baby's growth and to ensure the cast's rigidity. On the other hand, the current study's results showed that, number of orthopedic surgery was fifteen percentof children did orthopedic surgery before once and eleven percent had more than three times. In the same field Jacobs, King, Klippel, Berven, Burr, Caskey, Elderkin, Esposito and etal (2013) mentioned that, Limb deficiency, either acquired or congenital, requires lifelong medical attention and frequent surgical services.

The results of the current study indicated that, most of children with MSDs had complications. In this respect Halanski and Noonan (2014) stated that, internal fixation has become increasingly popular for fracture management and limb reconstruction. Casting is not without risks and complications (eg, stiffness, pressure sores, compartment syndrome).

The results of the current study indicated that, each system in the body affected by immobility postoperatively. The finding goes on the same line with Brooker and Waugh (2013) who found that, body systems that can be affected by immobility are integumentary, respiratory, cardiovascular, metabolic, elimination, musculoskeletal and neurological systems. The previous results are in accordance with those of other studies carried out by Manière (2012) who studied complications of immobility and bed rest (Prevention and Management) and stated that, according to prolonged immobilization affects almost every organ system. Anorexia, constipation, decreased basal metabolic rate, increased genitourinary problems include renal stones and more frequent urinary tract infections. Herman, Martinek and Abzug (2014) supported this finding as they mentioned that, diminished range of motion is identified in 60% of patients who are treated for tibial eminence fractures. The most important risk factors for significant knee stiffness include prolonged immobilization. Rachel, Judith**,** David, Timothy and Travis (2011) who concluded that, spica cast treatment are associated with numerous skin complications.

Regarding the effect of postoperative immobility in psychological wellbeing of the studied children the current study revealed that, most of children had reduced independence and felt frustration and helplessness. Almost of children of children increased tension, acting out, felt guilt, protest and anger. The vast majority of children altered self image. Children had magical thinking might make them felt that it was their fault they got hurt and created a sense of loss. Children decreased self esteem and increased anxiety. The effect of immobility on studied children on social wellbeing that, almost of children altered in level of activity. Most of studied children diminished environmental stimuli. The majority of studied children had frightened facial expressions and excessive clinging with caregivers and fear of being separated from parents, crying and screaming and others effects of immobility appeared on children psychosocially in the current study. On the same line Benaroch and Nolet

(2011) who concluded that, psychosocial impacts of immobility alters self-image, feeling helpless, interrupts social development and interrupts education process. Child had difficult return today care/school and decreases socialization with others. Child wants to decreases socialization with others. Child wants to maintain autonomy and mobility maintain autonomy and mobility.

Regarding to the effects of postoperative on immobilized child with MSDs on the family in the current study revealed that, the majority of families the immobilized child affected them as majority of the studied children diverted attention from other aspects of family functioning. The majority of the studied children felt guilt, blame, or reduced self-esteem and felt disappointment and powerlessness. Most of families of families fear of the unknown more than they fear the known. The majority of families felt confusion. These results are supported by Benaroch and Nolet (2011) who showed that, burden of care to family and community and affects parents work schedule. The treatment also interrupted family routine and work routine.

Conclusion

Based on the results of the current study, it can be concluded that:

According to the result of the current study, it was concluded that, the main cause of MSDs was congenital disorders. Children aged from 3-6 years and did a series of surgical treatment. Children stayed in cast for at least one month. So the effects of postoperative immobility had negative effects on physical and psychosocial status of the children and their families than preoperative status.

Recommendation

Based on the findings of the current study, the following recommendations are suggested:

- Comprehensive nursing care program for children with immobilization is very important in both pre and postoperative periods to minimize the effects of immobility on children and their families physically and psychosocially.

-Designing a simple Arabic illustrated booklet about care of cast and immobilized child at home

-Educational programs for families about the effects of immobility and how to prevent it. Health care providers including nurses to ensure comprehensive care for parent and children.

-A multidisciplinary team consisting of pediatric orthopedist, play therapist, pediatric nurses and social workers should be involved in teaching and helping the mothers and their children to prevent the effects of immobility.

- Further researches are needed to evaluate the effect of immobility on children using large scale sample study should be assess children and their parents (physical, psychological, emotional and informational

Tables

Table (1) Percentage Distribution of Child socio-demographic Characteristics (n=100)

Items	No	Percent (%)
Ages(years):		
2-<3	16	16
3-<6	46	46
6-10	38	38
Mean±SD	7.39±4.97	
Sex:		
Male	56	56
Female	44	44
Child education:		
Did not go to school	55	55
Reasons for didn't go to school:		
Age of the child	16	29
Impact of the disease on the child	39	71
Child's place of resistance		
Urban	48	48
Rural	41	41
Suburban	11	11
Presence of Consanguinity		
Positive	54	54
Negative	46	46

Table (2) Percentage Distribution of Past Medical History (n=100)

Causes of MSDs		
Congenital	65	65
Trauma	21	21
Acquired	14	14
No. of orthopedic surgery:		
none	61	61
first	15	15
second	8	8
third	4	4
more than third	11	11
Period of cast		
1month	27	27
2month	46	46
3months	19	19
More than 3months	8	8
Presence of Complications		
Yes	98	98
No	2	2

Table (3) Percentage Distribution of the effects of preoperative and postoperative immobility on physical wellbeing in children with MSDs:

Effects of preoperative and postoperative immobility on	Preoperative		Postoperative		X^2	p-value
Musculoskeletal system:	No.	%	No.	%		
-Reduced strength and coordination of the muscles.	30	30	89	89	5.553	0.018*
-Loss of joint mobility and contracture formation.	20	20	25	25	75.000	0.000**
-Decreased exercises intolerance.	27	27	96	96	1.541	0.214
Gastrointestinal (GIT) system:						
-Underweight related to poor appetite.	10	10	73	73	4.110	0.043*
-Inadequate hydration and nutritional status.	13	13	50	50	14.943	0.000**
-Distention caused by poor abdominal muscle tone.	13	13	15	15	84.674	0.000**
Urinary system						
-Urinary Retention (bladder doesn't empty completely, decreased muscle tone).	8	8	26	26	24.749	0.000**
-Urinary tract Infection.	5	5	17	17	25.697	0.000**
Integumentary system						
-Reduced skin turgor	10	10	50	50	11.111	0.001**
-Ulcers or necrosis.	10	10	50	50	11.111	0.001**
-Edema on the effected site	8	8	20	20	34.783	0.000**

**Highly significant at p <0

Table (4) Percentage Distribution of the Effects of Preoperative and Postoperative immobility on Psychological Wellbeing in Children with MSDs:

Effects of preoperative and postoperative immobility on	Preoperative		Postoperative		X^2	p-value
Psychological wellbeing:	No.	%	No.	%		
-Feeling depression.	13	13	23	23	50.025	0.000**
-Suffering from regression	6	6	14	14	39.210	0.000**
-Feeling egocentrism.	8	8	24	24	27.536	0.000**
-Feeling frustration and helplessness.	30	30	92	92	3.727	0.045*
-Sluggish intellectual and psychomotor responses.	15	15	30	30	41.176	0.000**
-Mood swings and listlessness.	10	10	73	73	4.110	0.043*
-Diminished ability to perform self-care	20	20	84	84	4.762	0.029*

**Highly significant at p <0.001

Table (5) Percentage Distribution of the effects of preoperative and postoperative immobility on social wellbeing in children with MSDs:

Effects of preoperative and postoperative immobility on	Preoperative		Postoperative		X^2	P-value
Social wellbeing	No.	%	No.	%		
-Social isolation.	12	12	34	34	26.471	0.000**
-Altered perceptions of themselves and their environment.	22	22	38	38	46.019	0.000**
-Being forgotten especially by peers and Distorted peer relationships.	6	6	34	34	12.390	0.000**
-Experience diminished environmental stimuli.	13	13	92	92	1.299	0.254
-Alteration in level of activity.	19	19	97	97	0.725	0.394
-Passive and aggressive verbal and nonverbal communication.	2	2	54	54	1.738	0.187

**Highly significant at p <0.001

Table (6) Percentage Distribution of the effects of preoperative and postoperative immobilized child with MSDs on the family wellbeing:

Effects of preoperative and postoperative immobilized child with MSDs	Preoperative		Postoperative		X^2	P-value
On family wellbeing	No.	%	No.	%		
-Increased family members' awareness of their inner strength and enhance family cohesion.	40	40	94	94	4.255	0.039*
-Encouraged connections to community groups or religious institutions.	10	10	26	26	31.624	0.000**
-Wasted of the time and financial costs of the family.	36	36	83	83	11.521	0.001**
-Altered in coping abilities of the family.	35	35	89	89	6.655	0.010*
-Increase stress in the family.	49	49	96	96	4.003	0.045*
-Difficult to find appropriate and affordable child care.	26	26	61	61	22.463	0.000**
-Affect decisions about work, education/training, having additional children.	18	18	31	31	48.859	0.000**
-Fear of the unknown more than they fear the known.	36	36	92	92	4.891	0.027*
-Feeling of Confusion.	30	30	85	85	7.563	0.006**
-Support from their families	31	31	82	82	9.862	0.002**
-Feeling guilt, blame, or reduced self-esteem.	41	41	87	87	10.384	0.001**

**Highly significant at p <0.001

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