

Quality of Life Based Education Program for Mothers regarding Their Obese Children with Intellectual Disabilities

Khadiga Mohamed Said¹ Rawia Abd El-ghany Mohammed², Safaa F. Draz³

¹Assistant Professor of Pediatric Nursing, Faculty of Nursing Benha University, Egypt.

²Lecturer of Pediatric Nursing, Faculty of Nursing Benha University, Egypt.

³Assistant professor of Pediatric Nursing, Faculty of Nursing, Ain Shams University, Egypt.

khadiga_eltamry@yahoo.com

Abstract: Obesity is a major health concern due to its increasing prevalence particularly in children with intellectual disabilities, increasing morbidity and mortality. **Aim of the study:** This study aimed to evaluate the effect of quality of life based education program for mothers regarding their obese children with intellectual disabilities. **Design:** A quasi-experimental research design was utilized to conduct the current study. **Settings:** This study was conducted at outpatient clinics affiliated to Benha Specialized Pediatric Hospital and Benha University Hospital and obesity outpatient clinic at Ain Shams University hospital. **Sample:** A purposive random sample of 60 mothers and their obese children with intellectual disabilities was included from the previously mentioned settings. **Tools of data collection:** five tools were used; the 1st tool: A structured interviewing questionnaire sheet to collect personal data of mothers, family history and mothers' knowledge. The 2nd tool: child medical assessment sheet to collect personal characteristics and anthropometric measurement of the studied children. The 3rd tool: Mothers' attitude toward their children's diet and physical activity. The 4th tool: Mothers' Comprehensive Feeding Practices Questionnaire (CFPQ). The 5th tool: The Pediatric Quality of Life Inventory (PedsQL) scale. **Results:** The study results revealed that, quality of life of obese children with intellectual disabilities improved after implementing an educational program for their mothers ($p < 0.001$). **Conclusion:** Based on the result of the present study it can be concluded that, the research hypothesis is accepted, an educational program for mothers improving quality of life of their children. **Recommendations:** The study recommended that emphasizing the importance of implementing an educational program for mothers for improving their quality of life, which is effective.

Keywords: Quality of Life Based Education Program, Mothers, Obese Children with Intellectual Disabilities.

1. INTRODUCTION

Obesity is an increasingly common condition that is characterized by an increase in the number and size of fat cells in the body (William, Christine and James, 2017). Obesity is considered an important health issue among children with intellectual disabilities. The National Health Surveys report that the prevalence of obesity is higher in the disabled children than in other children (Hankey & Whelan, 2018).

Intellectual disability often referred to as a mental, cognitive or mental retardation and it is considered a lifelong condition that affects intellectual functioning and adaptive behaviors. Furthermore, several complications have been found to be more prevalent among the intellectually disabled than among normal children (Gopalan, Sharma & Unnikrishnan, 2014).

The Centers for Disease Control and Prevention (CDC) reported that children with disabilities were 38% more likely to be obese than other children (Centers for Disease Control and Prevention Overweight and Obesity, 2017) The overall prevalence

levels of children and adolescents with intellectual disabilities (IDs) have been found to range from 11% to 24.5% for overweight and from 7% to 36% for obesity. Moreover, obesity is a significant health concern for children with disabilities, and many children with disabilities grow into obese adults with all the associated chronic health problems, such as diabetes, hypertension and cardiovascular diseases (*Lee et al., 2017*).

There are several types of intellectual disabilities which includes; mental retardation, autism, adaptive behavior; emotional disturbance involves significant problems in the social and emotional area to a degree that learning is negatively affected. Additionally, learning disability is a disorder related to processing information that leads to difficulties in reading, writing, and computing (*Goldman & Maurer, 2016*).

Obesity increases the risk for diabetes, cancer and cardiovascular diseases. Intellectual disability is a significantly reduced ability to understand new or complex information, to learn new skills (impaired intelligence), with a reduced ability to cope independently (impaired social functioning); which started before adulthood, with a lasting effect on development (*Biswas, Hiremath & Shaherbano, 2016*).

Children with intellectual disabilities are at a higher risk for obesity for a variety of reasons, genetic disorders such as Prader-Willi syndrome or Bardet-Biedl syndrome, which include obesity as a clinical feature, environmental factors such as a sedentary lifestyle and ingestion of excess calories, secondary cause of obesity can result from certain medications as; antidepressants and anticonvulsants, which are associated with weight gain and neuroendocrine disorders like Cushing's syndrome and hypothyroidism. Moreover, children with cerebral palsy, spinal cord injury, muscular dystrophy, or spina bifida experience significant mobility limitations that limit physical activity (*Cantone et al., 2018*).

Children with disabilities are less likely to participate in school and other social activities. Children with intellectual disability are more likely to be obese compared to children without disability due to a complex mix of behavioral, environmental and biological factors. Identifying the role of family in supporting the child with intellectual disability, enabling them to make quality of life changes to prevent obesity. Factors contributing obesity include proportionately high calorific intake, lower physical activity and exercise, greater use of psychotropic medication, limited availability of appropriate community leisure facilities, lack of dietary advice and lifestyle changes and sometimes a genetic predisposition (*Biswas, Hiremath & Shaherbano, 2016*).

Children with disability may possess non-modifiable risk factors for obesity, such as mobility limitations or factors related to the child's diagnosis. Secondary risk factors, such as barriers to physical activity, lack of social support, higher levels of food insecurity, limited access to proper nutrition, medications that may influence weight, and transportation, may also increase susceptibility to obesity for a child with disability (*Hsieh, Heller, Bershadsky & Taub, 2015*).

Obesity in childhood is causative for many chronic diseases, including type II diabetes, cardiovascular diseases, hypertension, osteoporosis, and some carcinomas. It also has psychosocial consequences and may contribute to a delay in academic and social functioning as well as poor self-esteem and depression. The interventions for preventing and controlling obesity are mainly aimed at limiting the intake of sugar and high calorie snacks with higher consumption of vegetable- and fruit-based diet. This includes eating calcium-rich high-fiber diet with balanced micronutrients, daily healthy breakfasts and home cooked family meals, smaller portion size, and a curtailment in eating-out. Last but not least, decreasing the duration of "screen time", especially television, and increasing the level of physical activity are vital for preventing childhood obesity (*Jospe, Brown, Roy & Taylor, 2015*).

On the other hand, children who participate in regular physical activity, including those with ID can potentially reduce the risk of incurring high blood pressure, heart attack, depression and anxiety, improve their bone and muscle strength, as well as their ability to function physically, increase their energy supply, and reduce fatigue, as well as excess weight, and body fat, lower the number of doctor visits they need, promote their psychological well-being, self-esteem, and quality of life, promote their academic performance, improve their self-discipline, and socialization skills (*Collins & Staples 2017*).

In addition, mothers of the intellectual disability child may not realize the following methods that increased risk for the early onset of childhood obesity such as social media when used for excessive periods, soft drinks and fruit juices can be calorie laden and sugar can be addictive, high salt intake too is associated with increased overweight risk, medications used to treat intellectual disability problems are often appetite altering, some genetic disorders render movement difficult and distort eating habits (*Marks, 2017*).

Quality of life (QoL) was defined by WHO as the individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns. QoL being a subjective and multidimensional concept, that is, how the individual perceives himself within certain contexts and in different dimensions. In this context, QoL can be determined through aspects related to physical, social, mental health, general perception of health and functional capacity (*WHO, 2018*).

Significance of the study

Children with ID are vulnerable to being overweight or obese (*Wang, Gao, Kwok, Huang & Li, 2018*). Children and adolescents with intellectual disabilities make up a group which is in urgent need of an adequate operationalization of the quality of life construct, not only to improve individual personal outcomes but also to develop and implement evidence based practices (*Gómez et al., 2016*). The prevalence of obesity in children with ID from around the world ranges from 3% to 37% (*Must, et al., 2014*). Childhood obesity constitutes one of the most serious health concerns, both in the developed and developing countries. Disabled children currently face multiple barriers, making it more difficult for them to achieve the outcomes their peers expect (*Buxton, 2018*).

Globally, the prevalence of overweight is expected to increase from 6.7% in 2010 to more than 9% in 2020 compared to the increase from 8.5% to 12.7% in Africa within the same span of time. More than one-fifth of overweight and obese children were from developing countries (*Njelekela et al., 2015*).

Children with IDs have difficulty recognizing and reporting early signs and symptoms of their own health problems, which may lead to delays in treatment (*United Nations Children's Fund Children and Young People with Disabilities, 2017*). Thus, obesity adds an additional layer of difficulty for both them and their parents. This has significant implications for their health and well-being as they age, which is why early intervention to reduce further complications associated with obesity is very important in healthcare planning (*Centers for Disease Control and Prevention Overweight and Obesity, 2017*).

Aim of the study

This study aimed to evaluate the effect of quality of life based education program for mothers regarding their obese children with intellectual disabilities through:

- 1- Assessing mothers' knowledge, practices and attitude regarding their obese children with intellectual disabilities.
- 2- Designing and implementing quality of life based education program for mothers regarding their obese children with intellectual disabilities.
- 3- Evaluating the effect of quality of life based education program for mothers regarding their obese children with intellectual disabilities.

Research hypothesis:

- 1- Mothers will display improvement of their knowledge, practice and attitude regarding care of their children with intellectual disabilities after receiving quality of life based education program.
- 2- Children with intellectual disabilities will have better life.

2. SUBJECTS AND METHOD

Research Design:

A quasi-experimental research design has been utilized in this study (one group pre/post-test) design was used to conduct the current study. Quasi-experimental studies have been known widely and used in the social sciences for several years. It shares similarities with the traditional experimental design or randomized controlled trial, but it definitely lacks the elements of random assignment for treatment or control (*Bärnighausen et al., 2017*).

Settings:

The study was conducted at outpatient clinics affiliated to Benha University Hospital and Benha Specialized Pediatric Hospital which affiliated to Egyptian Ministry of Health and Population. Outpatient clinics located at the first floor and containing one room

International Journal of Novel Research in Healthcare and Nursing

Vol. 7, Issue 2, pp: (244-259), Month: May - August 2020, Available at: www.noveltyjournals.com

in each setting. The study was also conducted at obesity outpatient clinic affiliated to Ain shams University Hospital which affiliated to Egyptian Ministry of Health and Population. Obesity outpatient clinic located at the third floor and containing one room.

Subjects:

A purposive random sample of 60 mothers and their obese children with intellectual disabilities was included from the previously mentioned study settings, through six months period under the following inclusion criteria:

- Obese children with intellectual disabilities.
- Age from 6 to 18 years.

Tools of data collection

Five tools were used for data collection

Tool I: A structured Interviewing Questionnaire:

This tool was designed by the researchers after reviewing related literature, it was written in a simple Arabic language and it composed of three parts:

Part 1: Personal characteristics of the studied mothers such as; age, educational level, occupation and residence.

Part 2: Family history about intellectual disabilities such as; consanguinity relation between the father and the mother and presence of family members' relatives suffering form.

Part 3: Mothers' knowledge regarding intellectual disabilities (7 items), obesity (7 items), food awareness and healthy nutrition (6 items), as well as healthy physical activity (5 items). Total items were 25 multiple-choice questions.

Mothers' knowledge regarding intellectual disabilities. It included definition, predisposing factors, complications, how to deal with the current problems accompanied with intellectual disability, prevention of complication, effect of intellectual disability on the child's quality of life, treatment. It encompassed seven multiple-choice questions.

Mothers' knowledge regarding obesity. It included definition, causes and predisposing factors, complications, methods for controlling obesity symptoms of obesity, effect of obesity on the child health and quality of life. It encompassed seven multiple-choice questions.

Mothers' knowledge regarding food awareness and healthy nutrition. It included the basic nutrients for the child, foods that the child should not have more than once, what foods contain fiber, what foods are saturated fats, what is a healthy eating dish for child, what are healthy eating habits for child. It encompassed six multiple-choice questions

Mothers' knowledge regarding healthy physical activity. It included the sports activities, time of child exercise, duration for exercise per day, sleeping hours/day, faulty practices that affect body weight. It encompassed five multiple-choice questions.

Scoring system for knowledge:

Mothers' knowledge evaluated upon completion of the interviewing questionnaire as the studied mothers' knowledge checked with a model key answer. Accordingly, the complete, correct answer scored (2) scores, the incomplete correct answer was given (1) score and (0) for incorrect or do not know answers. The total score ranged from 0-50 (25 questions ×2). Then, the subtotal score for each knowledge part and total knowledge categorized as a score of 75%, and more considered good, a score between 50% to less than 75% was considered average, while a score below 50% was considered poor.

Tool II: Child Medical Assessment Sheet:

It was composed of two parts as follow:

Part 1: Personal characteristics of the studied children such as; age, gender, medical diagnosis, level of education, child rank, IQ level, number of day meals and type of food and other accompanied disabilities

Part 2: Anthropometric measurements of the child: It includes body weight, height and body mass index (BMI). BMI was determined by dividing body weight in kilograms by height in meters squared (kg/m) according to gender- and age-specific growth charts produced by the Center for Disease Control (CDC). Children with a BMI greater than the 95th percentile were classified as obese.

Tool III: Mothers' attitude toward their children's diet and physical activity, adapted from *Oli, Vaidya, Pahkala, Eiben & Krettek, (2018)*, included three dimensions named (agree, disagree, don't know) it consisted of 17 items for diet and 7 items for physical activity, total items 24 items.

Tool IV: Mothers' Comprehensive Feeding Practices Questionnaire (CFPQ), adapted from *Musher-Eizenman & Holub, (2007)* focused primarily on mothers' control of their child feeding, on a 5-point ordinal scale (never, rarely, sometimes, mostly, always) it consisted of 12 subscales. These subscales named: **Child Control** (3 items), **Emotion regulation** (2 items), **Encourage balance and variety food intake** (2 items), **Environment** (2 items), **Food as reward** (1 item), **Involvement** (1 item), **Modeling** (2 items), **Monitoring** (1 item), **Parents pressure the child to consume more food at meals** (1 item), **Restriction for Health** (1 item), **Restriction for weight control** (2 items), and **Teaching about nutrition** (1 item).

Tool V: The Pediatric Quality of Life Inventory (PedsQL) scale (The Peds QL scale) adopted from *Varni, Seid, & Kurtin, (2001)* Contains 23 items and each item is measured on a 5-point Likert scale. For children aged 6–18 years and parent-proxy report formats, items are rated on a 5-point ordinal scale to indicate how much the child has problems with various areas of functioning, ranging from 0 (never) to 4 (almost always). 0 (“Never”) = 100, 1 (“Almost Never”) = 75, 2 (“Sometimes”) = 50, 3 (“Often”) = 25 and 4 (“Almost Always”) = 0, Generic Core Scales include Physical (8 items), Emotional (5 items), Social (5 items), and School Functioning (5 items) subscales, with alphas ranging from 0.70 to 0.89. They were specifically designed by the World Health Organization to inquire about the problems related to child health, activities, feelings, getting along with others, and school. The Chinese version of the Pediatric Quality of Life scale (PedsQLTM 4.0) is a measurement model for the pediatric quality of life inventory. It was used in this study as it has achieved adequate internal consistency for its total scale score, and the Cronbach's alpha is 0.89.

Operational Design:

Preparatory phase:

Before beginning the study, the researchers equipped themselves with extensive reviewing the background, components and essential elements of the program and the past and currently available literatures related to the research problem using books, evidence-based articles, periodicals, and magazines were done to be acquainted with all aspects of the study problem and also in order to develop relevant tools for data collection.

Tools validity and reliability

The researchers reviewed the past, current regional and international related literature covering all aspects of the study using textbooks, articles, journal and scientific magazines. This helped the researchers to be acquainted with the research problem and guided them in developing the study tools. To measure content validity of the study tools, the researchers assure that items of the tools were adequately represent what are supposed to measure by presented it to three experts in pediatric nursing field for review and validation. Then the researchers performed two separate assessments at two different times; these two data sets from the same researchers and then compared with each other. Test retest method was used to determine the reliability of the tool, and the reliability score was 0.86.

Ethical and legal considerations:

An informed oral consent was obtained from every mother recruited in the study after explanation of the nature and the aim of the study. The mothers were assured that all data are used only for research purpose. Each mother was informed that participation is voluntary and each mother has the right to refuse or withdraw at any time with no consequences. Participants' anonymity and confidentiality were secured.

Pilot Study

The pilot study was carried out on 10.0% of the overall sample (6 mother and their children) over a period of one month (January, 2019). The purpose was to ascertain the feasibility of the study, the clarity and applicability of the tools. It also helped to estimate the time needed for filling out the forms. Based on the results of the pilot study, the necessary modifications were done in the form of editing, and some minor language changes. The pilot study subjects were excluded from the actual study sample.

Field Work

The study was carried out from beginning March 2019 to the end of August 2019 to collect data by the researchers, covering a period of six months. An official approval to conduct this study was obtained from the Dean of Faculty of Nursing Benha and Ain Shams universities to directors of Benha University Hospital, Benha Specialized Pediatric Hospital and Ain Shams university hospital. The title and aim of the study were illustrated as well as the main data items to be covered and the study was carried out after gaining the necessary permissions. The researchers visited the previously mentioned study settings twice/week (Sunday and Monday for Benha outpatient clinics, while Tuesday for obesity outpatient clinic at Ain Shams university hospital) from 9.00 a.m. to 1.00 p.m. The current study was carried out through the following phases:-

Assessment phase:

At the beginning, the researchers introduce themselves to mothers and their children. Explained the aim of the study and their approval has taken to participate in the study prior data collection. Each mother was interviewed individually to fill out the structured interviewing questionnaire sheet (Tool I). Then, the researcher fill child medical assessment sheet (Tool II). The researchers clarified and answered any related questions. Then, discuss with each mother regarding mothers' attitude toward their children's diet and physical activity (Tool III). Then, the researchers ask each mother regarding Comprehensive Feeding Practices Questionnaire (Tool IV). Finally discuss with each mother peds QL scale (Tool V). The average time for completion of all tools was around 60-75 minutes for each mother, divided as (15-20 minutes) for each tool, ensuring complete privacy and total confidentiality.

The planning phase

Quality of life based program was designed by the researchers after an extensive review of related literatures, periodicals, textbooks and the needs identified in the assessment phase. An Arabic booklet concerning improving quality of life was prepared based on their needs after the pre-test.

Implementation phase.

The researchers interviewed and introduced themselves to each mother included in the study, explained all information about the study aim, duration, and activities then oral consent was obtained. Mothers were asked to feel free to ask any questions. The total number of the subjects was 60 mothers and their obese children with intellectual disabilities; they were divided into 10 groups, each group contains 6 mothers and their children to acquire the related information, and the researcher continued to reinforce the gained information, answered any raised questions and gave feedback. A schedule for sessions was developed, and each participant selected the suitable time. The program contents included knowledge related to intellectual disabilities, obesity, food awareness and healthy nutrition as well as healthy physical activity, attitude toward their children's diet and physical activity to improve quality of life of their children, and feeding practice. Each session takes from 20-30 minutes. The sessions were presented to each group separately. At the beginning of each session, the researchers started by a summary about what was given through the previous session and objectives of the new one, taking into considerations using simple and clear language to suit the mothers. Different teaching strategies were used for implementation of the program such as; lectures, small group discussion, brain storming, role play, demonstration and re-demonstration. Suitable teaching aids as booklet, colored posters and videos. Mothers were motivated to cooperate and participate actively in different stages of the study. At the end of each session, 10-15 minutes were allowed for discussion to correct any misunderstanding. Also they were informed about the time of next session. At the end of the program implemented, an Arabic booklet of the program was given to each mother participated in the study as a reference.

Evaluation Phase:

After the completion of the program contents; mothers' knowledge, attitude and their practices were evaluated immediately after implementing the program, the post tests were administered by using same pretest tools. Additionally, the researchers evaluated the peds QL scale for children to assess the effect of program implementation on their quality of life.

Statistical analysis

The collected data were categorized, analyzed and tabulated using the SPSS (Statistical Package for the Social Science Software) computer program Version 21. Numerical data were expressed as the mean and standard deviation. Qualitative data were expressed as frequency and percentage. A comparison between qualitative variables carried out by using a parametric Chi-square test. A statistically significant difference was considered at p -value < 0.05 , a highly statistically significant difference was considered at p -value < 0.001 and no statistically significant difference was considered at p -value > 0.05 .

3. RESULTS

Table 1 displays distribution of mothers according to their personal characteristics. It was found that more than half of mothers (55%) were between 30 -> 35 years and their mean age were (32.0167±4.62672). Also this table showed that more than half (51.7%) of them with secondary education and less than two thirds (65%) not occupied. Also, more than half of them (58.3%) were from rural.

Table 2 portrays distribution of the studied mothers according to their family history. It was found that consanguinity relation between the father and the mother was less than three quarters (73.3%) and the presence of family members relatives suffering from considered more than one third (35%).

Table 3 shows distribution of the studied mothers according to their total level of knowledge regarding intellectual disabilities pre and post program implementation. It was found that 60% of them had good knowledge post program implementation and there was highly statistical significant difference ($p < 0.001$) pre and post program implementation.

Table 4 shows distribution of the studied children according to their personal characteristics. It was found that slightly more than two fifth (41.7%) of studied children were between 6 to less than 9 years with the mean age (10.8667±4.03572) and exactly three quarters of them (75.0%) diagnosed with down syndrome. As regards educational level, more than half (51.7%) of children attained primary education. As regards child rank, more than one third (36.7%) were first child.

Table 5 views distribution of the studied children according to their anthropometric measurement. It was found that females having body weight and body mass index higher than males, while height is more in males than females.

Table 6 shows distribution of the studied mothers according to their attitude toward their children's diet and physical activity pre and post program implementation. It was found that more than two fifth (43.4%) of them agree about diet items pre-program implementation compared with 93.3% post program implementation. Regarding physical activity, there was a highly statistical significant difference ($P < 0.001$) pre and post program implementation.

Table 7 views distribution of the studied mothers according to Mothers' Comprehensive Feeding Practices Questionnaire (CFPQ) pre and post program implementation. It was found that, there was highly statistical significant difference pre and post program implementation.

Table 8 portrays distribution of the studied children according to the Peds quality of life scale pre and post program implementation. It was found that there was a statistical significant difference pre and post program implementation regarding sports or exercise.

Figure 1 reveals distribution of the studied children according to their gender. It was found that more than half (52%) of children were females.

Figure 2 shows distribution of the studied children according to their IQ level. It was found that more than half (58.3%) of children were border line 70-84.

Figure 3 demonstrates distribution of the studied children according to other accompanied disabilities. It was found that more than half (55%) of children have no accompanied disabilities

Figure 4 illustrates distribution of the studied children regarding their day meals. It was found that more than half (55%) take more than three meals per day.

Figure 5 displays distribution of the studied children according to their type of food. It was found that more than half (53.3%) take family food.

Table (1): Frequency distribution of mothers according to their personal characteristics (n=60)

Personal characteristics	No	%
Age in years		
25 -< 30	15	25.0
30 -< 35	33	55.0
≥ 35	12	20.0
Mean ±S	32.0167±4.62672	
Level of education		
Illiterate / Read and write	2	3.3
Primary education	5	8.3
Preparatory education	3	5.0
Secondary education	31	51.7
Bachelor education	19	31.7
Occupation		
Occupied	21	35.0
Not occupied	39	65.0
Residence		
Rural	35	58.3
Urban	25	41.7

Table (2): Frequency distribution of the studied mothers according to their family history (n=60).

Items	No	%
Consanguinity relation between the father and the mother		
- Yes	44	73.3
- No	16	26.7
Presence of family members relatives suffering form		
- Yes	21	35.0
- No	39	65.0
The relation in case of yes (n=21)		
- Sibling	7	11.7
- Uncles/Aunts	11	18.3
- Others	3	5.0

Table (3): Distribution of the studied mothers according to their total level of knowledge regarding Obese Children with Intellectual Disabilities pre and post program implementation (n=60).

Knowledge items	Pre-program implementation (n=60)						Post program implementation (n=60)						X ²	P value
	Good		Average		Poor		Good		Average		Poor			
	No	%	No	%	No	%	No	%	No	%	No	%		
- Intellectual disability	18	30.0	12	20.0	30	50.0	44	73.3	11	18.3	5	8.3	65.72	P<0.000**
- Obesity	20	33.3	14	23.3	26	43.3	48	80.0	8	13.3	4	6.6	68.93	P<0.000**
- Food awareness and healthy nutrition	25	41.7	17	28.3	18	30.0	52	86.6	6	10.0	2	3.3	78.57	P<0.000**
- Healthy physical activity	23	38.3	16	26.7	21	35.0	52	86.6	7	11.6	1	1.6	89.19	P<0.000**
Total	4	6.6	37	61.7	19	31.7	36	60.0	19	31.7	5	8.3	22.71	<0.001**

Table 4: Frequency distribution of the studied children according to their personal characteristics

Personal characteristics	No	%
Age in years		
- 6 -> 9	25	41.7
- 9 -> 12	4	6.7
- 12 -> 15	16	26.7
- 15 ≥ 18	15	25.0
Mean ±SD	10.8667±4.03572	
Level of education		
- Not educated	11	18.3
- Primary education	31	51.7
- Preparatory education	12	20.0
- Secondary education	6	10.0
Medical diagnosis		
- Down's syndrome	45	75.0
- Cerebral palsy	6	10.0
- Klinefelter syndrome	1	1.6
- Microcephaly	5	8.3
- Acquired brain injury (ABI)	3	5.0
Child rank		
- First	22	36.7
- Second	20	33.3
- Third	18	30.0

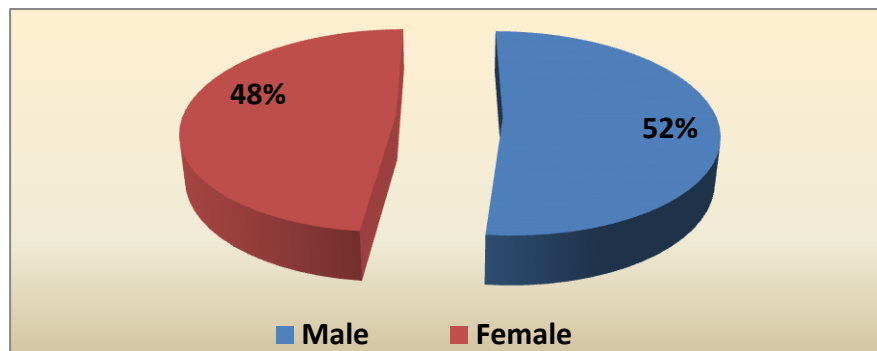


Figure 1. Distribution of the studied children according to their gender (n= 60).

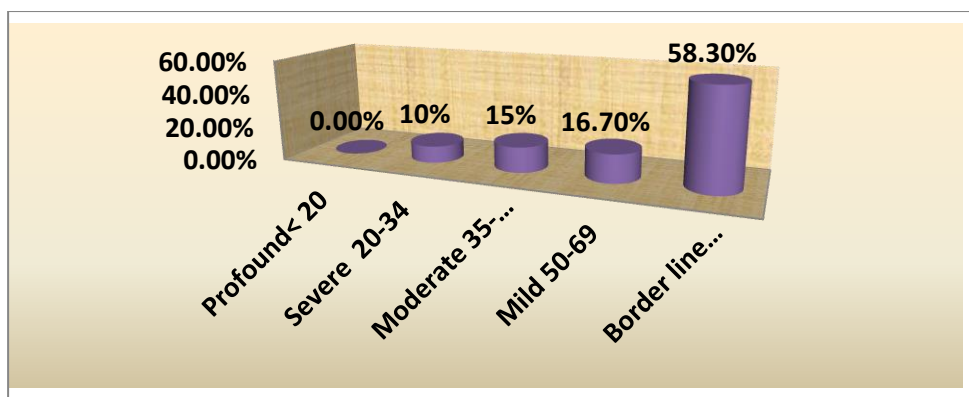


Figure 2. Distribution of the studied children according to their IQ level (n= 60)

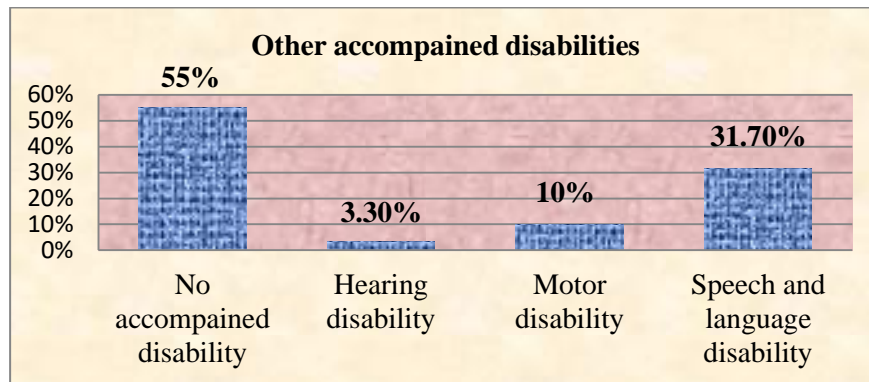


Figure 3. Distribution of the studied children according to other accompanied disabilities (n= 60).

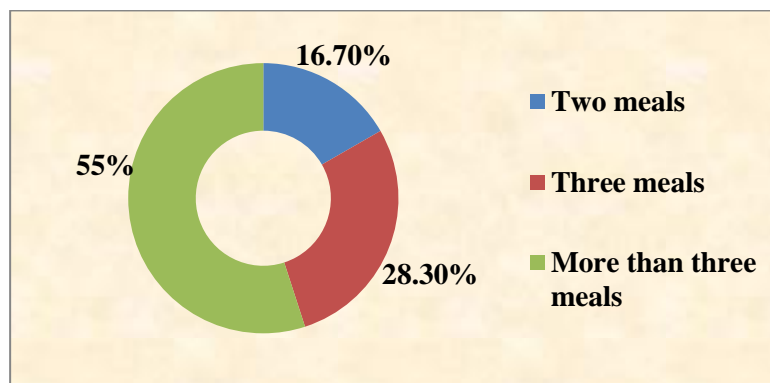


Figure 4. Distribution of the studied children regarding their day meals (n= 60).

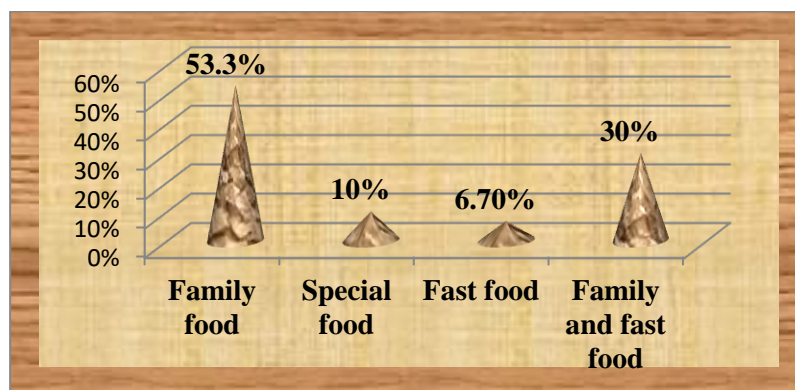


Figure 5. Distribution of the studied children according to their type of food (n= 60)

Table (5): Frequency distribution of the studied children according to their anthropometric measurement (n=60).

Age	Items	Mean ±SD	
		Males	Females
6>12 years	Body weight in kgm	45.8 ±10.95	48.1 ±11.82
	Height in cm	133.1± 7.52	131.7±6.85
	Body mass index (kg/m2)	21.7 ±4.9	26.4 ±4.4
12≥18 years	Body weight in kgm	79.52±15.7	82.66±14.3
	Height in cm	161.36±11.51	158.51±10.24
	Body mass index (kg/m2)	25.21±6.4	29.33±7

Table (6): Distribution of the studied mothers according to their attitude toward their children’s diet and physical activity pre and post program implementation (n=60).

Attitude items	Pre-program implementation (n=60)						Post program implementation (n=60)						X ²	P value
	Agree		Disagree		Don't know		Agree		Disagree		Don't know			
	No	%	No	%	No	%	No	%	No	%	No	%		
- Diet	26	43.4	14	23.3	20	33.3	56	93.3	4	6.6	0	0.0	58.63	P<0.000**
- Physical activity	30	50.0	17	21.7	13	21.7	55	91.6	5	8.3	0	0.0	54.33	P<0.000**

Table (7): Distribution of the studied mothers according to Mothers’ Comprehensive Feeding Practices Questionnaire (CFPQ) pre and post program implementation (n=60).

items	Pre-program implementation (n=60)										Post program implementation (n=60)										X ²	P value
	Never		rarely		Some times		mostly		always		Never		rarely		Some times		mostly		always			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%		
Child Control	5	8.3	10	16.7	11	18.3	15	25.0	19	31.7	16	26.7	18	30.0	10	16.7	12	20.0	4	6.6	32.26	0.05*
Emotion regulation	9	15.0	12	20.0	15	25.0	8	13.3	16	26.7	20	33.3	25	41.7	15	25.0	0	0.0	0	0.0	46.94	0.000
Encourage balance	8	13.3	12	20.0	18	30.0	12	20.0	10	16.7	0	0.0	0	0.0	22	36.7	20	33.3	18	30.0	36.55	0.05*
Environment	4	6.6	6	10.0	14	23.3	16	26.7	20	33.3	8	13.3	10	16.7	14	23.3	15	25.0	13	21.7	31.39	0.05*
Food as reward	8	13.3	10	16.7	15	25.0	12	20.0	15	25.0	10	16.7	12	20.0	16	26.7	12	20.0	10	16.7	28.51	0.05*
Involvement	17	21.7	18	30.0	12	20.0	8	13.3	5	8.3	5	8.3	8	13.3	24	40.0	16	26.7	7	11.7	43.64	0.000
Modeling Parents actively	4	6.6	10	16.7	18	30.0	16	26.7	12	20.0	0	0.0	0	0.0	22	36.7	20	33.3	18	30.0	35.62	0.05*
Monitoring	4	6.6	14	23.3	24	40.0	12	20.0	6	10.0	0	0.0	0	0.0	20	33.3	25	41.7	15	25.0	48.66	0.000
Pressure	5	8.3	10	16.7	23	38.3	20	33.3	12	20.0	15	25.0	15	25.0	14	23.3	10	16.7	6	10.0	52.82	0.000
Restriction for Health	5	8.3	12	20.0	20	33.3	19	31.7	14	23.3	0	0.0	0	0.0	15	25.0	25	41.7	20	33.3	48.44	0.000
Restriction weight control	8	13.3	10	16.7	17	21.7	15	25.0	10	16.7	0	0.0	0	0.0	20	33.3	26	43.3	14	23.3	43.94	0.000
Teaching/nutrition	10	16.7	13	21.7	18	30.0	10	16.7	9	15.0	0	0.0	0	0.0	27	45.0	21	35.0	12	20.0	47.38	0.000

Table (8): Distribution of the studied children according to the Peds quality of life scale pre and post program implementation (n=60).

The Peds QL scale items	Pre-program implementation (n=60)										Post program implementation (n=60)										X ²	P value
	Never		Almost Never		Some times		Often		Almost always		Never		Almost Never		Some times		Often		Almost always			
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%		
Physical items	3	5.0	6	10.0	18	30.0	19	31.7	14	23.3	14	23.3	12	20.0	11	18.3	15	25.0	8	13.3	43.2	0.000*
Emotional items	5	8.3	8	13.3	24	40.0	20	33.3	13	21.7	8	13.3	10	16.7	22	36.6	12	20.0	8	13.3	36.4	0.05*
Social items	8	13.3	10	16.7	14	23.3	13	21.7	16	26.7	10	16.7	15	25.0	18	30.0	10	16.7	7	11.7	35.4	0.05*
School Functioning	4	6.6	9	15.0	20	33.3	25	41.7	2	3.3	6	10.0	8	13.3	20	33.3	22	36.6	2	3.3	15.9	0.05

4. DISCUSSION

Intellectual Disability (ID) is the most common developmental disability. Moreover, children with ID have significant difficulties in both intellectual functioning and adaptive behavior as communicating, learning and problem solving, everyday social skills, routines, hygiene (*American Academy of Pediatrics, 2015*). Children with intellectual disabilities were significantly more likely to be obese than other children. So, interventions to reduce the prevalence and inequities in the distribution of child obesity will need to take account of the specific situation of this group of children (*Emerson, Robertson, Baines & Hatton, 2016*).

The present study was quasi-experimental included 60 mothers having obese children with intellectual disabilities from outpatient clinics' affiliated to Benha University Hospital and Benha Specialized Pediatric Hospital. This study aimed to evaluate the effect of quality of life based education program for mothers regarding their obese children with intellectual disabilities.

Regarding the characteristics of the studied mothers, the results of the present study revealed that the mean age of the studied mothers was 32.0167±4.62672 years. This result supported by *Gopalan et al., (2014)* in a study about "Socio-Demographic and Clinical Features of Children with Intellectual Disability and Their Parents-an Indian Study," who

found that the mean age of the studied mothers was 34.27 ± 5.85 . This result supported by *Hatta, Abd El- Rahman, & Haque, (2017)* in a study about the "Knowledge, Attitude and Practices among Mothers Regarding Childhood Obesity at Kuantan, Malaysia" who found that the mean age of the studied mothers was 33.05 ± 6.784 years old. In contrast with *Pisula, (2007)* in a study about the "A Comparative Study of Stress Profiles in Mothers of Children with Autism and those of Children with Down's syndrome." The study found that the mean age of the studied mothers was 38.00 years.

Regarding mothers' level of education, the present study revealed that less than one third of them had Bachelor education. This finding agree with *Hatta et al., (2017)* who found that less than one third of the studied mothers 32% had a high educational level. This finding disagree with *Dykens, Fisher, Taylor, Lambert & Miodrag (2014)*, who found that 44.7% had college education. A mother's education level has a long-lasting effect on her children, *Way (2017)* a mother's education level impacts her child's life, Mothers with a college education are more likely to expose their children to activities that stimulate their cognitive development, College educated mothers also create social capital for their children because they are more likely to have family, friends and co-workers that also have a higher level of education, A high mother's education level clearly benefits children

Regarding mothers' occupation, the present study revealed that less than one third occupied. This result was disagree with the result of *Dykens et al., (2014)* in a study about "Reducing Distress in Mothers of Children with Autism and Other Disabilities: A Randomized Trial" who found that less than half 47.5% of the studied mothers employed outside home. *Reddy, 2016* mention that a working woman is not able to devote quality time to their children. These way children are not able to share their feelings and remain quite over the important matters. This makes them introvert and are not able to express their feeling with parents. But this problem can be solved if they gain time management skills. Mothers have to keep their children in child care centers as there is no one to take care of them. Those children remain void of love and motherly affection. One thing a woman should keep in mind is that she should not get angry or irritated over children rather should try and tackle children with love, affection and patience.

The finding of the present study revealed that the majority of the studied mothers had good level of knowledge after program implementation regarding complication of obesity. This result agrees with *Babela et al., (2016)* in a study about "Knowledge, Attitudes, and Practices of Parents Facing Child and Adolescent Obesity in Brazzaville, Congo" who found that the majority of the studied mothers in case group had correct answer regarding complication of obesity.

The finding of the present study revealed that the majority of the studied mothers had good knowledge regarding obesity. This finding supported by *Hatta et al., (2017)*, who reflected that the majority of studied mothers had correct answers regarding childhood obesity post-program implementation.

As regard mother's knowledge regarding causes of obesity among children the majority of the studied mothers had good knowledge. This finding supported by *Al Harthi & El-Araby, (2019)* in a study about "Assessment of Knowledge of Saudi Mothers Regarding Causes of Obesity among Children, Riyadh, Saudi Arabia" who reflected that mothers in this study conveyed a relatively good level of knowledge regarding causes of obesity among children.

Regarding total knowledge of studied mothers, the result of the present study showed that less than two-thirds of the studied mothers had good knowledge after program implementation compared to less than one third had poor knowledge pre-program with a highly statistical significant difference between the two phases. This result agreed with *Babela et al., (2016)* who found that the studied mothers had good total knowledge. This finding differing with *Hatta et al., (2017)*, who reflected that, the majority of the studied mothers had moderate knowledge regarding childhood obesity

According to the personal characteristics of the studied children the present study found that the mean age of them was 10.8667 ± 4.03572 and more than half had primary education. This finding agreed with *Wang et al., (2018)*, in a study about "Children with Intellectual Disability Are Vulnerable to Overweight and Obesity: A Cross-Sectional Study among Chinese Children " who reflected that the mean age of the studied children was 12.2 years. This finding also supported by *Gopalan et al., (2014)* who reported that mean age of the studied children the studied children was 9.48 ± 2.76 . *Dykens et al., (2014)* also reported that the mean age of the studied children was 10.85 ± 7.53 .

The finding of the present study demonstrated that less than half of the studied children were males. This result disagreed with *Wang et al., (2018)*, who found that more than two thirds (68.9%), of the studied children were males. *Emerson et al., (2016)* stated that girls with intellectual disability were at significantly increased risk of obesity, when compared to girls without intellectual disability. *Chaloux, (2017)* stated that young girls are far more interested in a sedentary lifestyle (even more than boys) and spend most of their time on their cell phones, computers and watching TV. Obesity should be brought to the attention of mothers. It is important to make the mothers in particular aware of the problem and some key steps keep their girls to stay healthy.

The finding of the present study found that more than half of the studied children at primary education. This result disagreed with *Lee et al., (2017)*, in a study about "The Impact of a School-Based Weight Management Program Involving Parents via Health for Overweight and Obese Children and Adolescents with Intellectual Disability" who found that more than one third (34.9%) of the studied children at primary education.

The finding of the present study found that less than two thirds of the studied children from rural The result of the current study was supported by *Gopalan et al., (2014)* who found that less than two thirds (60.2%) of the studied children from rural. *Rural Health Information Hub (2018)* mention that rural areas experience higher rates of obesity and overweight than urban area, many rural communities does not have the resources to address this critical health concern. Rural healthcare facilities are less likely to have nutritionists, dietitians, or weight management experts available. Rural areas may lack exercise facilities Fewer opportunities for children to be physically active in afterschool sports or events. Lack of nutrition education and services, limited access to obesity prevention programs and weight management services,

The finding of the present study revealed that the mean weight of the studied female children aged from 6>12 years was 46.1 ± 11.82 . This result agree with *Emerson et al., (2016)* in a study about "Obesity in British children with and without intellectual disability: cohort study" who found that the mean weight of the studied female children with intellectual disability aged 11 years was 42.6 ± 11.0 .

The current study revealed that the mean body mass index (BMI) of the studied male children from 6 to less than 9 years 21.7 ± 4.9 kg/m², This result disagree with *Njelekela et al., (2015)* in a study about "Knowledge and attitudes towards obesity among primary school children in Dares Salaam, Tanzania" who found that the mean body mass index (BMI), was 16.6 ± 4.0 kg/m²

Regarding mothers' comprehensive feeding practice, the present study showed that there was improvement of mothers' feeding practices after the implementation of program. This finding agreed with *Babela et al., (2016)* who found that the practices were good in parents of obese children.

Regarding peds QL scale the present study revealed that there was improvement in children's quality of life after the implementation of program. This finding agreed with *O'Connor et al., (2017)* in a study about "Screening for Obesity and Intervention for Weight Management in Children and Adolescents" who found that there was improvement in children's quality of life.

5. CONCLUSION

Based on the results of the present study, it can be concluded that the research hypotheses were accepted. Also, the studied mothers had good total knowledge after program implementation compared to pre-program implementation with a highly statistical significant difference between the two phases.

6. RECOMMENDATIONS

Based on the results of the present study, the following recommendations can be suggested:

- Promoting healthy weight and addressing health behaviors can contribute to favorable health outcomes and quality of life in children with intellectual disabilities.
- The positive effects of physical activity are even more important for children and adolescents with intellectual disabilities, as they have more health and motor problems
- The importance of providing good standards of care for children and their families with intellectual disabilities.

International Journal of Novel Research in Healthcare and Nursing

Vol. 7, Issue 2, pp: (244-259), Month: May - August 2020, Available at: www.noveltyjournals.com

- Providing families with easy-to-understand information about family advocacy; group interventions for families; formal evaluation of the perceived impact on families of the family member's behavior that challenges; parental skills training to manage such behaviors; and an inclusive approach to ensure that family members are active role players in the decision-making process and implementation of strategies to manage behavior that challenges.
- Further study can be proliferated on other outpatient clinics using a large sample size to simplify the findings.

ACKNOWLEDGMENTS

The researchers thank first Allah and would like to express thankfulness and indebtedness to the hospital administrators for their agreement, cooperation, and kind help during the work. We express our appreciations and gratitude to the studied mothers and their children for their cooperation and arrangements to achieve the research methodology as designed.

REFERENCES

- [1] *Al Harthi I B. & El-Araby M., (2019):* Assessment of Knowledge of Saudi Mothers Regarding Causes of Obesity Among Children, Riyadh, Saudi Arabia, Journal of Health, Medicine and Nursing, Vol.61, 2019, DOI: 10.7176/JHMN.
- [2] *American Academy of Pediatrics, (2015):* Children with Intellectual Disabilities, Section on Developmental and Behavioral Pediatrics (SODBP), available at: <https://www.healthychildren.org/English/healthissues/conditions/developmental-disabilities/Pages/Intellectual-Disability.aspx>.
- [3] *Babela J.R.M., Nika E.R, Cléona K.G., Milandou N., Mandilou S.V.M., Bazolana S.B., Monabeka H.G., Moyon G., (2016):* Knowledge, Attitudes and Practices of Parents Facing Child and Adolescent Obesity in Brazzaville, Congo, Glob Pediatric Health, doi: 10.1177/2333794X16675546
- [4] *Bärnighausen, T., Tugwell, P., Ratinen, J. A., Shemilt, I., Rockers, P., Geldsetzer, P., & Bor, J. (2017).* Quasi-experimental study designs series—paper 4: uses and value. Journal of clinical epidemiology, 89, 21-29.
- [5] *Biswas A.B., Hiremath A. & Shaerbano S., (2016):* Obesity in People with Intellectual Disabilities: Possible Causes and Reduction Interventions, University of Hertfordshire, available at <http://www.intellectualdisability.info/physical-health/obesity-in-people-with-intellectual-disabilities>.
- [6] *Buxton P., (2018):* Metric Handbook: Planning and Design Data, 6th ed., Design Information and Dimensional Coordination, Elsevier Publisher, New York, P.44.
- [7] *Cantone M., Catalano M.A., Lanza G., La Delfa G., Ferri R., Pennisi M., Bella R., Pennisi G. & Bramanti A., (2018):* Motor and Perceptual Recovery in Adult Patients with Mild Intellectual Disability, Neural Plasticity Journal, 3273246, |<https://doi.org/10.1155/2018/3273246>, available at: <https://www.hindawi.com/journals/np/2018/3273246/>
- [8] *Centers for Disease Control and Prevention Overweight and Obesity, (2017):* [(Accessed on 8 August 2017)]; available at: <https://www.cdc.gov/ncbddd/disabilityandhealth/documents/obesityFactsheet2010.pdf>.
- [9] *Chaloux D., (2017):* Startling Facts about Obesity in Young Girls, available at: <https://hitchfit.com/unhealthy-eating/childhood-obesity/obesity-in-young-girls>.
- [10] *Collins K.& Staples K., (2017):* The Role of Physical Activity in Improving Physical Fitness in Children with Intellectual and Developmental Disabilities, Res. Developmental Disability 69: 49-60.
- [11] *Dykens E.M., Fisher M.H., Taylor J.L., Lambert W. & Miodrag N., (2014):* Reducing Distress in Mothers of Children With Autism and Other Disabilities: A Randomized Trial, Pediatrics, Official journal of the American Academy of Pediatrics, 134(2) e454e463; DOI: <https://doi.org/10.1542/peds>.
- [12] *Emerson E., Robertson J., Baines S. & Hatton C., (2016):* Obesity in British children with and without intellectual disability: cohort study, BMC Public Health, 16:644, available at: <http://europepmc.org/article/PMC/4962444>
- [13] *Goldman B.S. & Maurer E.W., (2016):* Types of Classifications of Children with a Disability, Available at <http://goldmanmaurer.com/special-education-law/types-of-classifications-of-children-with-a-disability>, 26-8-2018, 11.29PM.

International Journal of Novel Research in Healthcare and Nursing

 Vol. 7, Issue 2, pp: (244-259), Month: May - August 2020, Available at: www.noveltyjournals.com

- [14] **Gómez L.E., Alcedo M.A., Arias B., Fontanil Y., Arias V.B., Monsalve A. and Verdug M.A., (2016):** A new Scale for the Measurement of Quality of Life in Children with Intellectual Disability, *Research in Developmental Disabilities*, Elsevier Ltd Publisher, Volumes 53–54, Pages 399-410.
- [15] **Gopalan R.T., Sharma R. & Unnikrishnan M.P., (2014):** Socio-Demographic and Clinical Features of Children with Intellectual Disability and Their Parents-an Indian Study, *International Neuropsychiatric Disease Journal* 2(6): 289-302, available at: www.sciencedomain.org.
- [16] **Hankey C. & Whelan K., (2018):** *Advanced Nutrition and Dietetics in Obesity*, 1st ed., Section 4: Weight management in adults, Chapter 4.14: Weight Loss Intervention in Specific Groups with Intellectual Disabilities and Obesity, John Wiley & Blackwell Publisher, Oxford, p.235.
- [17] **Hatta N.K., Abd El- Rahman N.A., & Haque M., (2017):** Knowledge, Attitude and Practices among Mothers Regarding Childhood Obesity at Kuantan, Malaysia, *International Medical Journal*, 24 (2). pp. 200-204.
- [18] **Hsieh K., Heller T., Bershadsky J., & Taub S., (2015):** Impact of Adulthood Stage and Social Environmental Context on Body Mass Index and Physical Activity of Individuals with Intellectual Disability, 53(2): p. 100-13.
- [19] **Jospe M.R., Brown R.C., Roy M. & Taylor R.W., (2015):** Adherence to Hunger Training using Blood Glucose Monitoring: A feasibility Study. *Nutrition. Metab. (Lond)* 2015; 12: 22.
- [20] **Lee R. L., Leung C., Chen H., Louie L.H., Brown M., Chen J., Cheung G., and Lee P.H., (2017):** The impact of A school-based Weight Management Program Involving Parents via m-health for Overweight and Obese Children and Adolescents with Intellectual Disability: A randomized Controlled Trial, *The International Journal of Environmental Research and Public Health*, 14(10): 1178, doi: 10.3390/ijerph14101178.
- [21] **Marks R., (2017):** *Intellectual Disability, Childhood Overweight and Obesity*, Crimson Publisher, *Degenerative Intellectual & Developmental Disabilities* 1(1):DIDD.000503, available at: <http://crimsonpublishers.com/>, p.1.
- [22] **Musher-Eizenman D. & Holub S., (2007):** Comprehensive Feeding Practices Questionnaire: Validation of a New Measure of Parental Feeding Practices, *Journal of Pediatric Psychology* 32(8) pp. 960–972, 2007, doi:10.1093/jpepsy/jsm037.
- [23] **Must A., Curtin C., Hubbard K., Sikich L., Bedford J.& Bandini L., (2014):** Obesity Prevention for Children with Developmental Disability, *Current Obesity Report*, 2014; 3(2):156-170.
- [24] **Njelekela M.A., Muhiti A., Mpembeni R.N., Anaeli A., Chillo O., Kubhoja S., Lujani B., Ngarashi D.& Maghembe M., (2015):** Knowledge and Attitudes Towards Obesity Among Primary School Children in Dar el Salaam, Tanzania, *Nigerian Medical Journal : Journal of the Nigeria Medical Association*, 56(2):103-108 DOI: 10.4103/0300-1652.150692.
- [25] **O'Connor E A. Evans C.V., Burda B.U., Walsh E.S., Eder M. & Lozano P., (2017):** Screening for Obesity and Intervention for Weight Management in Children and Adolescents, *JAMA | US Preventive Services Task Force*, Evidence Report.2427-2444.
- [26] **Oli N., Vaidya A., Pahkala K., Eiben G. & Krettek A., (2018):** Knowledge, Attitude and Practice on Diet and Physical Activity Among Mothers with Young Children in the Jhaukhel-Duwakot Health Demographic Surveillance Site, Nepal, *PLoS One*, A peer reviewed open access journal, 13(7): e0200329.2018 doi: 10.1371/journal.pone.
- [27] **Pisula E., (2007):** A Comparative Study of Stress Profiles in Mothers of Children with Autism and those of Children with Down's Syndrome, *Journal of Applied Research in Intellectual Disabilities*, 20(3), pp: 274-278, <https://doi.org/10.1111/j.1468-3148.2006.00342.x>
- [28] **Reddy C., (2016):** Advantage and Disadvantage of Working Mothers, available at <https://content.wisestep.com/top-advantages-and-disadvantages-of-working-mothers>.
- [29] **Rural Health Information Hub (2018):** Rural Obesity and Weight Control, <https://www.ruralhealthinfo.org/topics/obesity-and-weight-control>, 3/26/2018
- [30] **United Nations Children's Fund Children and Young People with Disabilities (2017):** accessed on 8 August 2017; Available online: https://www.unicef.org/disabilities/files/Factsheet_A5__Web_NEW.pdf.

International Journal of Novel Research in Healthcare and Nursing

Vol. 7, Issue 2, pp: (244-259), Month: May - August 2020, Available at: www.noveltyjournals.com

- [31] **Varni J.W., Seid, M. & Kurtin, P.S. (2001):** PedsQL, Reliability and Validity of the Pediatric Quality of Life Inventory Version 4.0 Generic Core Scales in Healthy and Patient Populations. *Medical Care*, 39(8), 800-812, available at <https://www.corc.uk.net/outcome-experience-measures/paediatric-quality-of-life/>
- [32] **Wang J., Gao Y., Kwok H.M., Huang W. & Li S., (2018):** Children with Intellectual Disability are Vulnerable to Being Overweight or Obese: Across sectional study among Chinese children, *Childhood Obesity*, Mary Ann Liebert Publisher, 5 Jul 2018, Doi: <https://doi.org/10.1089/chi.2018.0015>.
- [33] **Way A.L., (2017):** Edcor Data Services, A mother's Education Level Impacts her Children, available at: <https://www.edcor.com/a-mothers-education-level-impacts-her-children/>
- [34] **William H. N., Christine G., James H. R., (2017):** Obesity and Individuals with Intellectual and Developmental Disabilities: A Research to Policy Brief, University of Alabama at Birmingham and Lakeshore Foundation Research Collaborative P:1
- [35] **World Health Organization (2018):** Obesity: Preventing and Managing the Global Epidemic Geneva: World Health Organization (WHO Technical Report Series 894)