Effect of Educational Program on Mothers'Knowledge and Reported Practices regarding their Children Suffering from Short Stature

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Abstract

Background: Short stature is a low height for age of the child compared to the standard child of the same age. Short stature children experience impaired physical and mental development, low immunity, impaired nutrition and health, and low academic achievement, impact in productivity. **Aim of the study:** Evaluating the effect of educational program on Mothers 'Knowledge and Reported Practices regarding their Children suffering from Short Stature. **Research design:** Quasi-experimental design was utilized. **Settings:** The current study was performed in Outpatient of Endocrinology Clinic at Benha University Hospital and Health Insurance Hospital at benha city. **Sample:** A purposive sample of ٧٠ mothers and their children suffering from short stature. **Tools of data collection:** Three tools were used, **tool I:** A structured interview questionnaire sheet consisted of ٣ parts, part one: Mothers' characteristics, part two: Children characteristics and part three: Mothers'knowledge regarding short stature, **tool II:** Mother s' reported practice regarding short stature and **tool III:** Mothers' attitude towards short stature. **Results:** There was a highly statistical significant improvement was observed between total level of mothers' knowledge, reported practice and attitude score regarding their children with short stature in post when compared with pre-educational program implementation. **Conclusion:** The educational program were effective in improving mothers' knowledge, reported practice and attitude regarding their children with short stature post educational program implementation compared to pre- educational program implementation. **Recommendations:** Develop and implement health educational programs to maintain maternal health during pregnancy, stress management training program should be given to short stature children to relieve their psychological problems and future researches should be replicated on a large sample of mothers in different setting which are needed for generalization of the obtained results.

Keywords: Educational Program, Mothers'Knowledge, Reported Practices, Children، Short Stature.

Introduction

Children's first five years of life are a golden time for growth and development, as they experience rapid advances in their physical and cognitive development, which will support their future learning abilities as well as their social and emotional capacities. Children under the age of five make up a sizable group that is also at danger or susceptible for many problems like short stature (SS). Short stature, also known as chronic malnutrition, occurs when a child experiences stunted growth and their height does not match their age, it's one of the most frequent causes of referral to a pediatric endocrinologist. Children's height will not be the only thing affected; it will also cause

varied degrees of psychological issues. It affects all aspect of a child's life, including their emotional, social, and spiritual wellbeing in addition to their physical health **(Metwally et al., ٢٠٢٠).**

Factors contribute in the incidence of SS are low-income families, poverty, the number of family members and working mothers. Low-income families that have limited access to nutritious food, so their children need more nutrition, economic inequality exacerbates this situation as only a few people can access resources. Working mothers are one of the risk factors for delays in child development because of the amount of time spent by the mother to stimulates the growth and development of children is reduced **(Hamed et al., ٢٠٢٠).**

Sanitary and environmental conditions play an important role in the cause of SS. Also, infections and diseases, such as diarrhea and parasitic diseases, can affect a child's absorption of nutrients and growth. Poor sanitation and limited access to clean water and adequate sanitation facilities also contribute to the problem of SS, especially in rural areas. Limited access to health services is another source of problems that can hinder early identification and treatment of malnutrition in children. Lack of knowledge and awareness about the importance of routine nutrition checks also affects efforts to prevent and treat malnutrition **(Purnomo et al., ٢٠٢٢).**

Short stature may be either a variant of normal growth or the first manifestation of wide variety of underlying pathologic conditions which require early diagnosis and treatment. Variants of normal growth include familial short stature, constitutional delay of growth and puberty, idiopathic short stature and small for gestational age with catch-up growth. Pathological causes of abnormal growth include non-endocrine and endocrine disorders. Non-endocrine causes include: systemic diseases and their management, under-nutrition, metabolic disorders, and genetic syndromes such as Turner Syndrome and Noonan syndrome. Endocrine causes include growth hormone (GH) deficiency, hypothyroidism, and Cushing syndrome**)(Sheikhi et al., ٢٠٢٢).**

Children who are short in stature face irreversible short- and long-term effects, including impairments in cognitive, motor and language development. Furthermore, their learning abilities and academic achievements will be affected. As these children become adults, their work productivity could negatively impact a country's economy; they are prone to chronic illnesses that are costly to treat and increase mortality rates, including infection exposure and mortality; increased risk of chronic diseases related to nutrition, such as diabetes mellitus **(Matema, ٢٠٢١).**

Prevention of SS can be achieved by healthy diet for mothers before, during, and after pregnancy, optimal breastfeeding during the first two years of life. Initiatives made through programs to increasing maternal knowledge about SS, knowledge could include knowing the diversity of nutrients found in the many food options available and being more conscious of appropriate feeding practices in order to create a healthy environment that includes opportunities for safe physical activity and access to basic health care **(Yorick et al., ٢٠٢١).**

Mothers have important role as the child's primary caregiver, they acquire knowledge and awareness about good nutrition, balanced diet, proper feeding practices, food diversity, learn their children

express feeling, impact their children in terms of self-esteem and social adjustment, so they seek out growth hormone treatment in the hopes that making their children taller will make them happier **(Dimo et al., ٢٠٢٢).**

Nurses are regarded as first-line healthcare providers who can provide mothers with the necessary knowledge regarding nutritional assessment, diagnosis, support, and care In addition to teaching and empowering upcoming mothers to make wise financial and health decisions for themselves and their children, nurses model positive behaviors in terms of enhancing maternal nutrition and health **(Yunitasari et al ., ٢٠٢٠).**

Significance of the study:

Globally, the affected children under five account for over ١٦٢ million. In Egypt, one child in five under five years old has short stature, while one in ten has very short stature **(Haidar et al., ٢٠١٩**). Approximately ٢٤٪ of children under the age of five worldwide were short in stature in ٢٠١٥. According to estimates, ١٤٤ million children (٢١.٣٪) under the age of five in ٢٠١٩ had short stature. While childhood short stature is common everywhere, it is more common in low- and middle-income nations **(Amoako, ٢٠٢٢).**

Short stature is an important issue that needs to be addressed. Short stature is even regarded as a disability as children suffer from impairments in cognitive, motor and language development. Furthermore, their learning abilities and academic achievements will be affected. As these children become adults, their work productivity could negatively impact a country's economy; they are prone to chronic illnesses such as diabetes mellitus **(Backeljauw et al., ٢٠٢١)**.

Aim of the study

Evaluate effect of educational program on mothers' knowledge, reported practice and attitude regarding their children suffering from short stature.

Research hypothesis:

The educational program will improve mothers' knowledge, reported practice and attitude regarding their children with short stature.

Subject and Method

Research design:

A Quasi- experimental design was utilized to conduct the current study.

Setting:

The current study was conducted at outpatient of Endocrinology Clinic at Benha University Hospital and Health Insurance Hospital at benha city.

Sample:

A purposive sample of (٧٠) mothers and their children with short stature which available during data collection (٤٠ mothers from Benha University Hospital and ٣٠ mothers from Health Insurance Hospital) were selected through (٦) months from beginning of the study, from the above-mentioned setting and willing to participate in the study after children fulfilling the following criteria.

Tools for data collection:

Tool I: A structured interviewing questionnaire: It was constructed by the researcher in an Arabic language after reviewing the recent relevant literature to gather data required to assess mothers' knowledge and it was composed of ٣ parts:

- **Part ١- Mothers' characteristics as:**

A- Age, level of education, occupation,

residence, number of family members, mother's length ،father's length, kinship between parents and history of short stature in the family .

B- Medical history of mother during pregnancy

-Part (٢). Children characteristics such as: as: age, gender, child ranking, weight and length at birth, current weight and height, child medical history.

-Part (٣). Mothers'knowledge regarding short stature: It was developed by the researcher after reviewing recent relevant literature, journals and periodicals. It was adapted from **Mirayanti& Juanamasta ,(٢٠٢٠) & Nasution et al., (٢٠١٩) & Leifer, (٢٠١٩) & Murano, (٢٠١٩) & Pritchard,(٢٠٢٠)** and modified by the researcher to suit the level of mothers education to assess mother's knowledge regarding their children with short stature, it included (١٢) questions.

Scoring system of mothers' knowledge: -

Scoring system for knowledge of the studied mothers was categorized as the following: The studied mothers' answers were compared with a model key answer and (٢) scores gave for completely and correct answer, (١) score for incompletely correct answer and (٠) score for don't know or incorrect answer.

-The total scores were calculated as the following:

- Good knowledge ≥ ٧٥٪ .
- Average knowledge ٦٠٪ >٧٥٪ .
- Poor knowledge <٦٠٪ .

Tool II: Mother's reported practice regarding short stature: It was developed by the researcher after reviewing recent relevant literature, journals and periodicals. It was adapted **from Casadei& Kiel,(٢٠٢١) & Sofi & enthilvelan,(٢٠٢١) & Perry et al., (٢٠٢٢) & Mbuya et al., (٢٠٢١)** and modified by the researcher to suit the level of mothers education to assess mother's reported practice towards care of children with short stature, it included mother's actual intervention regarding short stature which included (٤) parts: Part one anthropometric measurement. Part two measures for nutritional status appropriate for age. Part three measures for mental health and psychological support of the child. Part four growth hormone injections by using pen.

Scoring system of mothers' reported practice:

Scoring system for reported practice of the studied mothers was calculated as the following: The mothers' reported practice was categorized into (١) scores for done, (٠) score for not done.

-The total scores were calculated as the following:

- Satisfactory practice ≥ ٧٥٪.
- Unsatisfactory practice < ٧٥٪.

Tool III: Mother's attitude towards short stature: : It was developed by the researcher after reviewing recent relevant literature, journals and periodicals. It was adapted from **Headey,et al., (٢٠١٩) & Avula et al., (٢٠٢١)** and modified by the researcher to suit the level of mothers education to assess mother's attitude towards care of children with short stature, it consists of (١٧) items.

Scoring system of mothers' attitude:

Scoring system for attitude of the studied mothers was calculated as the following: The mothers' attitude was categorized into (٣) scores for agree response, (٢) scores for unsure and (١) score for disagree response.

-The total scores were calculated as the following:

- Positive attitude ≥ ٦٠٪.
- Negative attitude < ٦٠٪.

Pilot study

A pilot study was carried out during January ٢٠٢٣ (١ month), involved ١٠٪ of sample size (٧ mothers and their children were collected from two hospital). In order to test the reliability and applicability of the constructed tools and the clarity of the included questions. The pilot has also served to estimate the time needed for each subject to fill in the questions and to identify the problems that may be encountered during the study. All participants in the pilot study were excluded from the sample due to modifications that done in the form of rephrasing, organization, omission and addition of some questions in the study tools.

Content validity:

Validity of the study tools was done through a jury of three expert (three professors) in the pediatric nursing field from Faculty of Nursing at Benha University. The experts reviewed the tools for its clarity, relevance, comprehensiveness, simplicity and applicability; accordingly, minor modifications were done.

Reliability:

Reliability of the study tools was tested for its internal consistency by administrating the tools to the same study subjects under the similar conditions using Cronbach's Alpha coefficient test. Results from repeated testing was compared (test-retest reliability. Knowledge reliability statistics Cronbach's alpha = ٠.٩٤. Attitude reliability statistics Cronbach's alpha = ٠.٩٦. Practice reliability statistics Cronbach's alpha = ٠.٩٨.This indicates a high degree of reliability for the study tools.

Ethical consideration :

The approval from committee of ethics of Faculty of Nursing/Benha University was obtained. Mother's oral and written consents were obtained before data collection with ensuring complete privacy and total confidentially, complete description of the purpose and nature of the study was approached and confidentially was assured to mothers. All mothers informed that they have the right to withdraw at any time from the study without explanation of their rationale and their data is secured

Field work:

The following phases were adjusted to achieve the aim of the current study; assessment, planning, implementation and evaluation phases. These phases covering ٦ months period (from the beginning of February ٢٠٢٣ to the end of July ٢٠٢٣). It was collected according to the policy of the study setting. Data were collected one day/week (Sunday) for benha university hospital from ٩:٠٠ AM until ١ PM and one day/week (Tuesday) for health insurance hospital from ٩:٠٠ AM until ١PM .

(a) Assessment phase:-

Data collected in this phase before implementing the educational program. The questionnaire sheets were distributed to all mothers individually to assess mother's performance and determine mothers' needs regarding short stature using the previous study tools. The time needed for filling all data collection tools were ٣٠- ٤٠ minutes, the average time needed to answer personal data and knowledge questions ١٠-١٥ minutes, attitude questions ٥-١٠ minutes and reported practice steps are ١٠-١٥ minutes. The period of assessment phase (pre-test) took one month (February ٢٠٢٣). An average

of ٥-٦ mothers were interviewed per/day, ٢ days/week (one day for each setting).

(b) Planning phase:-

This phase included analysis of the assessment phase (pre-test) findings and identification of the actual needs of the studied mothers. Accordingly, the educational program was designed by the researcher using simple Arabic language and pictures in order to facilitate mothers' understanding.

(c) Implementation phase:-

It was achieved through ٥ sessions at a period of ٢ days/week. Each session started by a summary of the previous session and objectiveness of new one. Take into consideration, the use of the Arabic language that suits the mothers' educational level. During session, mothers, children and researcher sits together in circle and take turns sharing. Motivation and reinforcement during sessions were used for the sharing in the study.

The total numbers of sessions were ٥ sessions; each session was taken ٤٥-٦٠ minutes at a period of ٤ months beginning from (March ٢٠٢٣ till the end of June ٢٠٢٣). Moreover, ٥ sessions containing the study objectives and carried out through (٣ sessions for the theoretical and affective parts and ٢ sessions for the practical part) with different teaching methods and media.

A schedule suitable for mothers developed including date, time, place, topics and duration of each session. It was challenging to take whole mothers at the same time; so, they divided into ١٢ groups (٨ groups from benha university hospital and ٤ groups from health insurance Hospital) each group consisted of ٥-٦ mothers and their children. Each mother was supplemented with a copy of program and share video to her mobile or received a copy of video on CD.

(d) Evaluation phase:-

After implementation of educational program. An immediate posttest was carried out after the implementation to assess mothers' knowledge, attitude and reported practice regarding their children with short stature, using the same forms of the pretest. This helped to evaluate the effect of the implemented educational program. The period of post-test took one month (July ٢٠٢٣).

Statistical analysis:

The collected data was arranged, categorized, coded, analyzed and tabulated using electronic computer and Statistical Package for Social Sciences (SPSS) software version ٢١.

Results:

Table (١). Showed that, more than half (٥٤.٣٪) of the studied mothers was in the age group of ٢٠>٣٠ years with a mean age of ٢٦.٤٥±٨.٧٩ years. Concerning educational level, more than two fifth (٤٢.٩٪)of them were preparatory education. Regarding occupation, less than two-thirds (٦٥.٧٪) of them were not working and slightly slightly more than three-quarters(٧٥.٧٪)of them lived in rural areas.

Table (٢).

All of them(١٠٠٪) had done a periodic follow-up during pregnancy, more than half of them (٥٤.٣٪) had done ٤-٦ antenatal visit, ١٠٠٪, ٥٧.١٪ of them were interest in proper nutrition and taking nutritional supplements , and had taken folic acid, iron, calcium respectively, more than two-thirds (٦٨.٦٪) of

them didn't have any problems and complications during pregnancy.

Table (٣). Demonstrate that; less than three-quarters (٧٤.٣٪) of the studied children in the age group ٣ ≤٥ years with the mean age ٣.٢٤±١.٠٥ years. Also less than three-quarters (٧٢.٩٪)of them were males. Regarding child ranking, more than half (٥٢.٩٪) of them were the second child. Concerning child weight at birth; all (١٠٠٪) of them had abnormal weight at birth (< ٢٠٠٠ grams), more than two thirds (٧١.٤٪) of them had normal weight at birth (٢٠٠٠<٣٠٠٠ grams), and most (٩٧.٢٪) had normal weight at birth (≥ ٣٠٠٠ grams) with a mean ٢.٧١±.٦٤. Regarding child's current weight; more than three quarters (٧٧.٨٪) of them had abnormal current weight (٥<١٥ kg), and more than three fifth (٦٢.٥٪) of them had normal current weight (≥١٥ kg) with a mean ١٢.٢٥±٢.٩١. As regard to child's length at birth; more than three fifth (٦٣.٢٪) of them had normal length at birth (٤٠<٥٠cm), and all (١٠٠٪) of them had normal length at birth (≥٥٠ cm) with a mean ٤٩.٣٦±١.٣١٩. According to child's current height; all (١٠٠٪) of them had abnormal height (٦٠<٩٠cm), and all (١٠٠٪) of them had abnormal height (≥٩٠cm) with a mean ٨٦.١٨±٧.٣٨.

Table (٤). Indicate that; less than three-quarters (٧٤.٣٪) of the studied children in age group of ≥١year when short stature was detected with the mean age ١.٧٤±.٤٤ years, and more than two thirds (٦٧.١٪) of them had taken nutritional intervention as a medical intervention for short stature.

Figure (١). This figure illustrates that; only (١٤.٣٪) of studied mothers had good total knowledge level in pre implementation of educational program compared to less than three-quarters (٧١.٤٪) post implementation of educational program, while less than two thirds (٦٧.١٪) of them had poor total knowledge level at pre implementation of educational program compared to (١٥.٧٪) post implementation of educational program.

Figure (٢). This figure illustrates that; ٢١.٤٪ of studied mothers had total satisfactory practice level in pre implementation of educational program compared to ٨٢.٩٪post implementation of educational program, while ٧٨.٦٪ of them had total unsatisfactory practice level in pre implementation of educational program compared to ١٧.١٪ post implementation of educational program.

Figure (٣). This figure illustrates that; the minority (٢٥.٧٪)of studied mothers positive attitude towards children with short stature in pre implementation of educational program compared to more than three quarters (٨٠٪) post implementation of educational program, while slightly less than three quarters (٧٤.٣٪)of them had negative attitude towards children with short stature in pre implementation of educational program compared to (٢٠.٠٪) post implementation of educational program.

Table (٤). Shows that; there were positive correlations between the studied mothers' total knowledge scores, total reported practices scores, and total attitude score pre and post implementation of educational program (P= > ٠.٠٥)

Table (١): Frequency distribution of the studied mothers regarding their characteristics (n=٧٠).

Mothers' characteristics	No.	%
Age in years		
>٢٠	٦	٨.٦
٢٠>٣٠	٣٨	**٥٤.٣**
٣٠>٣٥	١٤	٢٠
≤٣٥	١٢	١٧.١
Min-Max	٢٠-٣٥	
Mean ±SD	٢٦.٤٥±٨.٧٩	
Educational level		
Can't read and write	١	١.٤
Primary Education	٢	٢.٩
Preparatory Education	٣٠	**٤٢.٩**
Diploma	٢١	٣٠.٠
University education	١٦	٢٢.٨
Occupation		
Working	٢٤	٣٤.٣
Not working	٤٦	**٦٥.٧**
Residence		
Rural	٥٣	**٧٥.٧**
Urban	١٧	٢٤.٣

Table (٢): Distribution of the studied mothers regarding their medical history during pregnancy (n=٧٠).

Medical history during pregnancy	No	%
A periodic follow-up		
Yes	٧٠	١٠٠
No	٠	٠.٠
Number of antenatal visit (n=٧٠)		
٠-٣	٢١	٣٠.٠
٤-٦	٣٨	**٥٤.٣**
٦-٩	١١	١٥.٧
Proper nutrition and supplements		
Yes	٧٠	١٠٠
No	٠	٠.٠
***Types of nutritional supplements (n=٧٠)**		
Folic acid, iron, calcium	٤٠	**٥٧.١**
Zinc	١٢	١٧.١

Vitamin C	١٨	٢٥.٧
Vitamin B١٢	٢٧	٣٨.٦
Others	٠	٠.٠
Any problems and complications		
Yes	٢٢	٣١.٤
No	٤٨	٦٨.٦
If yes, problems during pregnancy(n=٢٢)		
Anemia	١٣	**٥٩.١**
Hyperemesis gravidarum	٧	٣١.٨
Chronic disease as diabetes mellitus	٢	٩.١
Infectious disease as cytomegalovirus	٠	٠

Note: *Answers are not mutually exclusive

Table (٣): Table (٣): Distribution of the children regarding their characteristics (n=٧٠).

Children' characteristics		No.	%
Age			
From day to < year		٠	٠.٠
١ year<٣ years		١٨	٢٥.٧
٣ years≤٥ years		٥٢	**٧٤.٣**
Min-Max		**١.٤٠-٥.٠٠**	
Mean ±SD		**٣.٢٤±١.٠٥**	
Gender			
Male		٥١	**٧٢.٩**
Female		١٩	٢٧.١
Child ranking			
First		١٠	١٤.٣
Second		٣٧	**٥٢.٩**
Third		١٤	٢٠.٠
Fourth		٩	١٢.٩
Child weight at birth			
< ٢٠٠٠ grams	Normal Abnormal	٠ ٦	٠.٠ **١٠٠**
٢٠٠٠<٣٠٠٠ grams	Normal Abnormal	٢٠ ٨	**٧١.٤** ٢٨.٦
≥ ٣٠٠٠ grams	Normal Abnormal	٣٥ ١	**٩٧.٢** ٢.٨
Min-Max		**١.٥٠-٣.٥٠**	
Mean ±SD		**٢.٧١±.٦٤**	
Child's current weight			
<٥ kg		٠	٠.٠
٥<١٥ kg	Normal Abnormal	١٢ ٤٢	٢٢.٢ **٧٧.٨**
≥١٥ kg	Normal Abnormal	١٠ ٦	**٦٢.٥** ٣٧.٥
Min-Max		**٧.٠٠-٢٠.٠٠**	

Mean ±SD		١٢.٢٥±٢.٩١	
Child's length at birth			
< ٤٠ cm		٠	٠.٠
٤٠<٥٠cm	Normal Abnormal	١٢ ٧	٦٣.٢ ٣٦.٨
≥٥٠ cm	Normal Abnormal	٥١ ٠	١٠٠ ٠.٠
Min-Max		٤٥.٠٠-٥٠.٠٠	
Mean ±SD		٤٩.٣٦±١.٣١٩	
Child's current height			
<٦٠ cm		٠	٠.٠
٦٠<٩٠cm	Normal Abnormal	٠ ٤١	٠.٠ ١٠٠
≥٩٠cm	Normal Abnormal	٠ ٢٩	٠.٠ ١٠٠
Min-Max		٧٣.٠٠-٩٨.٠٠	
Mean ±SD		٨٦.١٨±٧.٣٨	

Table (٤): Distribution of the studied children regarding their medical history (n=٧٠).

Medical history	No.	%
Onset of the disease		
<١year old	١٨	٢٥.٧
≥١year old	٥٢	٧٤.٣
Min-Max	١.٠٠-٢.٠٠	
Mean ±SD	١.٧٤±.٤٤	
Type of medical intervention		
Nutritional intervention	٤٧	٦٧.١
Surgical intervention	٠	٠.٠
Physiotherapy	٨	١١.٤
Growth hormone injection	١٥	٢١.٥

Figure(١) :Percentage distribution of the studied mothers regarding their total knowledge level about short stature pre and post implementation of educational program (n=٧٠).

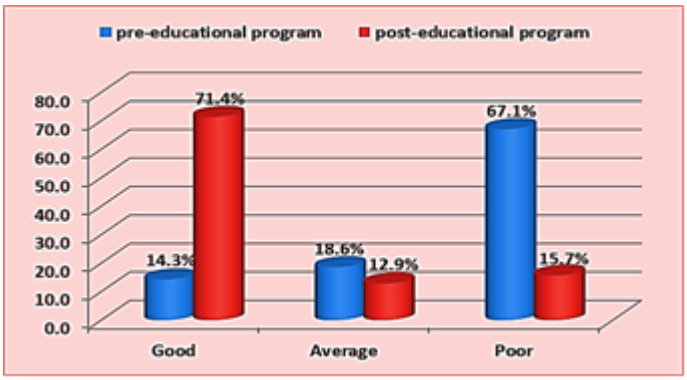

Figure (٢): Percentage distribution of the studied mothers regarding their total practice level about short stature pre and post implementation of educational program (n=٧٠).

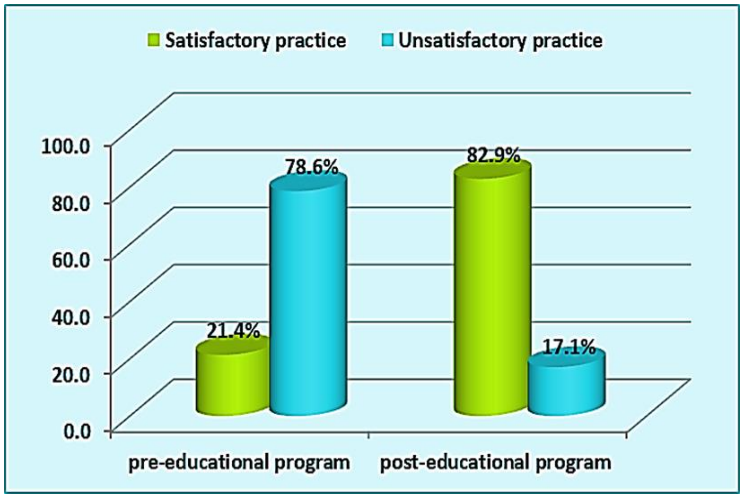

Figure (٣): Percentage distribution of the studied mothers regarding their attitude towards their children with short stature pre and post implementation of educational program (n=٧٠).

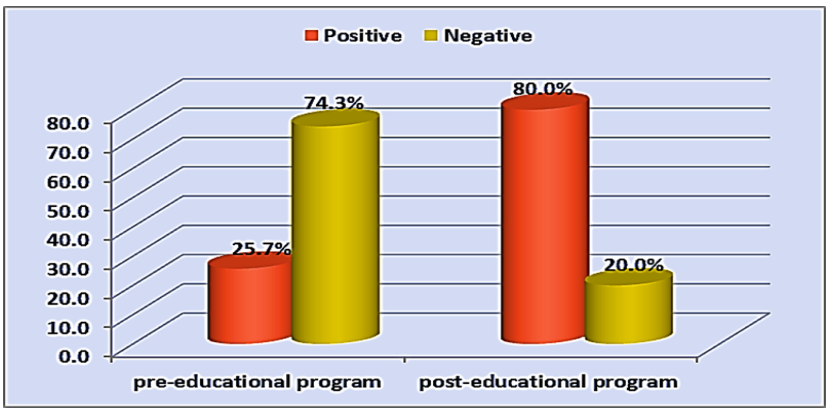

Table (٤):Correlation between mothers' total knowledge, reported practices and attitude regarding short stature in pre and post educational program implementation.

Variables		Studied mothers (N=٧٠)					
		Pre implementation of educational program			Post implementation of educational program		
		Total knowledge	Total reportedpractice	Total attitude	Total knowledge	Total reportedpractice	Total attitude
Total knowledge	R	١	.٨٥٣	.٨٧٢	١	.٨٩٥	.٨٩٦
	P-vale		.٠٠٠**	.٠٠٠**		.٠٠٠**	.٠٠٠**
Total practice	R	.٨٥٣	١	.٨٨٨	.٨٩٥	١	.٩١٠
	P-vale	.٠٠٠**		.٠٠٠**	.٠٠٠**		.٠٠٠**
Total attitude	R	.٨٧٢	.٨٨٨	١	.٨٩٦	.٩١٠	١
	P-vale	.٠٠٠**	.٠٠٠**		.٠٠٠**	.٠٠٠**	

Discussion:

Regarding characteristics of the studied mothers. It was mentioned that, more than half of them were in the age group ٢٠ < ٣٠ years with a mean age of ٢٦.٤٥±.٨٧٩ years. Also, less than two thirds were not working.These findings were congruent with **Nasution & Oktavinola.(٢٠١٩)** who carried out a study about "Mother's knowledge and attitude about stunting of children in namorambe distric" and found that more than half of mothers (٥٢.٩٪) of the studied mothers in the age group of ٢١ to ٣٠ years, less than two thirds (٦٠.٩٪) were not working.

Additionally, the current study revealed that more than three-quarters of the mothers were lived in rural areas. These findings were congruent with **Amaha&Woldeamanuel. (٢٠٢١)** who carried out a study about "Maternal factors associated with moderate and severe stunting in Ethiopian children: analysis of some environmental factors based on ٢٠١٦ demographic health survey" and found that more than three-quarters of mothers (٨١.٦٪) of the studied mothers live in rural area. The researcher interpreted this finding as Benha University Hospital is central setting for surrounding rural areas

Regarding the level of education, the current study revealed that, less than two thirds of the studied mothers had preparatory education. This finding was supported by **Luzingu et al., (٢٠٢٢)**, who found in a study entitled " Risk factors associated with under-five stunting, wasting, and underweight in four provinces of the Democratic Republic of Congo: Analysis of the American Society of Safety Professionals (ASSP) project baseline data" and reported that, (٤٧.٣٪) of mothers had preparatory education. Conversely, this finding disagreed with **Hadi et al., (٢٠٢١),** who studied "Exclusive breastfeeding protects young children from stunting in a low-income population: A Study from Eastern Indonesia", reported that ٣٥٪ of studied mothers was graduated from elementary school.

Regarding medical history during pregnancy, the current study revealed that, all of them had done a periodic follow-up during pregnancy, more than half of them had done ٤ to ٦ antenatal visit . This finding was supported by **Orellana et al., (٢٠٢١),** who reported in a study entitled " Intergenerational Association of Short Maternal Stature with Stunting in Yanomami Indigenous Children from the Brazilian Amazon" and reported that, more than half of them(٥٧.٩٪) had done ٤ to ٦ antenatal consultation, so the mother of the current study have low percent of medical problems during pregnancy.

Additionally, the current study revealed that, more than half of them had taken folic acid, iron; calcium.This finding was supported by Sari& **Sartika. (٢٠٢٣),** who founded in a study entitled " The Impact of Iron Supplementation During Pregnancy and Change of Consumption among Stunting Children Aged ٦-٢٤ Months During the COVID-١٩ Pandemic in Indonesia" and reported that, (٨٣.٧٪) take iron supplementation during pregnancy. The researcher interpreted this finding all of studied mother done periodic follow up and more than have done antenatal care visit

Additionally, the current study revealed that, more than two-thirds of them didn't have complications during pregnancy and more than half of them had anemia during pregancy.This finding was supported by **Santosa et al., (٢٠٢١),** who found in a study entitled " Effect of maternal and child factors on stunting: partial least squares structural equation modeling" and reported that, less than two third(٦٣.٦%) had anemia as problems during pregnancy.

As regarding characteristics of the studied children, the current study demonstrated that, less than three-quarters of the studied children in the age group ٣ ≤٥ years, also less than three-quarters of them were males. Concerning child ranking, more than half of them were the second child. This finding was incongruent with by **Qurani et al., (٢٠٢٢)** that entitled "correlation between maternal factor and stunting among children of ٦-١٢ months old in central lombok " and reported that, more than half (٥٣,٦٪)of them in age group ٦-٩ months and more than half (٥٥٪)of them were females and (٤٣,٧٪)were the first child. The researcher interpreted this that the mother does not take in concern and is ignorant to follow the child in the young and concerned if their child is not gaining weight

Concerning children medical history, related to onset of disease, it was stated that, less than three-quarters of the studied children in age group of ≥١year when short stature was detected with the mean age ١.٧٤±.٤٤ year. This finding was inconsistent with **Essaddam et al., (٢٠٢٠)** that entitled "Characteristics and etiologies of short stature in children: Experience of an endocrine clinic in a Tunisian tertiary care hospital" and reported that, the mean age at diagnosis was ٨.٢ ± ٤.٣٨ [١.٥–١٧.٥] years.

Regarding to type of medical intervention,less than two thirds of childern had taken nutritional intervention as a medical intervention for short stature. These findings were compatible with **Goudet et al., (٢٠١٩)** that entitled "Nutritional interventions for preventing stunting in children (٠ to ٥ years) living in urban slums in low and middle- income countries (LMIC)" and reported that; majority (٧٦٪) had taken nutritional intervention and minority by other strategies. The researcher interpreted this that the cause of short stature in studied children is nutritional family habits depend on starch food and not help for growth .

Concerning total mothers' knowledge of short stature, it was revealed that, less than three quarters of the studied mothers had good knowledge in post educational program implementation. This finding was similar to **Malonda.(٢٠٢٢),** whose study entitled "History of exclusive breastfeeding and complementary feeding as a risk factor of stunting in children age ٣٦-٥٩ months he in Coastal Areas, Sitaro Regency" (n=٢٠٤) which portrayed that, the majority of mothers ٩١٪ had good knowledge about short stature. The researcher rationalized that, the importance of educational program on improving knowledge of mother.

Regarding total reported practice of the studied mothers in pre/ post educational program implementation. The majority of the studied mothers had satisfactory practices in post educational program implementation. This is in accordance with **Golshiri١ (٢٠١٨),** who conducted a study on "the comparison of two types of education on the knowledge and practice of mothers with children under the age of three years old regarding growth monitoring and nutritional development phases", the study reported a significant difference in mothers' practice mean scores before and after educational intervention.

Concerning mothers' total attitude of short stature; it was found that, more than three quarters of the studied mothers had positive attitude in post educational program implementation. This finding was similar to the study done by **Mirayanti&Juanamasta. (٢٠٢٠)** that entitled "Knowledge and attitude of Mothers about Stunting in Banjar Pengukuh Peguyangan Kangin Village Denpasar" and reported that, the majority of participant (٩٧.٠٪) has positive attitude towared their childern with short stature

The present study mentioned that, there was positive correlation between mothers' knowledge, attitude and practice in pre/ post educational program implementation. This finding was congruent with **Ayed et al., (٢٠٢١).** It was found that, there was positive correlation between knowledge, attitude and practice of participants. The researcher rationalized that, mothers' knowledge, attitude and practice factors related to each other's, as increasing knowledge led to positive attitude and correct done practices.

Conclusion:

The present study revealed that, the research hypothesis is accepted. The educational program were effective in improving mothers' knowledge, reported practice and attitude regarding their children with short stature post educational program implementation compared to pre- educational program implementation. Meanwhile, there was a highly statistical significant improvement of mothers' knowledge, reported practice and attitude score regarding their children with short stature in post when compared with pre-educational program implementation. Additionally, there was a positive correlation between mothers' total knowledge, reported practice and attitude.

Recommendation:

- Educational program about benefits of early detection of problems through mass media, monitoring growth & development of the child
- Educational nutritional intervention for mothers that promote and support infant and young child feeding practices to increase awareness of mothers about healthy nutrition.
- Develop and implement health educational programs to maintain child and maternal health during pregnancy.

- Stress management and assertiveness training program should be given to short stature children to relieve their psychological problems and enhance their coping patterns.
- Disseminate booklet with illustrated pictures included all information and care provide towards short stature to inform mothers about importance of follow up and improve their children quality of life.
- Future researches should be replicated on a large sample of mothers in different setting which are needed for generalization of the obtained results.

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