

Mothers' Knowledge and Perception toward Short Stature of Their Children and Its Effect on Quality of Life

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Abstract

Short stature is a global problem in children. It's important to make early identification and treatment according their causes with participation of parents in the treatment plan to improve their quality of life of their children. The study **aimed to** assess mothers' knowledge and perception toward short stature of their children and its effect on quality of life. **Subjects and Method:** A descriptive research design was used. **Setting:** It was carried out at Pediatric Endocrine Outpatient Clinic of Tanta Main University Hospital. **Subjects:** All of mothers and their children (106) with short stature. The study was conducted at pediatric endocrine outpatient clinic of Tanta Main University Hospital. **Three Tools** were used to collect the required data: **Tool I:** Structure Questionnaire sheet of mothers' knowledge, **Tool II:** Mothers' perception regarding short stature and **Tool III:** Quality of Life in Short Stature Youth. **Results** revealed that mothers had low level of knowledge and perception and half of children had poor quality of life. **The study concluded** that short stature children had poor quality of life that prevent him from doing things, exposed to negative comparison, and affect on their parents. **The study recommended** that establishing educational programs for mothers to improve their knowledge toward short stature of their children.

Key words: knowledge, mothers, perception, quality of life, short stature.

Introduction

A healthy child will grow normally. For children's health requirements, growth interruption screening is crucial. Children with short stature are those whose height is two standard deviations or less under the average for their age and sex. or height below third percentile on a height chart. Only with precise growth measures and an in-depth assessment of growth information may short stature children be identified at an early age. ⁽¹⁾ Research conducted from January 2018 to January 2020, a total of 33,150 Egyptian

children ages 6-11 were surveyed regarding the frequency of short stature in 59 primary schools throughout Egypt. About 17 percent of the children were found to be short. ⁽³⁾

Children's short stature is an international issue, particularly in under developed regions. There are various possible etiologies for this condition. Genetic conditions, such as familial short stature if both parents are short, genetic defects like turner syndrome, malnutrition, chronic systemic disease (such as chronic kidney disease), endocrine disorders like growth hormone deficiency and primary insulin-like growth factor I deficiency, and

psychosocial factors can all lead to a lack of height in a child (psychological stress, emotional deprivation).

There are three types of short stature children dependent on the physical appearance and health state of the child which include variant restricted growth, proportionate short stature and disproportionate short stature. Variant restricted growth means that the child's body is in proportion (the limbs and the head develop in proportion with the spine) and the child is healthy.⁽⁵⁾

Proportionate short stature referred to that the child's limbs and trunk height is in proportion but the child has a health problem. Disproportionate short stature means that the limbs may be short compared with the trunk height resulting in a large disparity in child sitting and short stature height but the child has a genetic condition including turner syndrome and prader –willi syndrome.⁽⁶⁾

Children of short stature may be identified in a variety of ways. Radiological assessment, including left hand and wrist bone age determination, and laboratory testing supplement height charts as secondary screening tools. The levels of Thyroid Stimulating Hormone (TSH), free T4, and insulin-like growth factors one are measured, as well as a complete blood count, erythrocyte sedimentation rate, creatinine, electrolytes, bicarbonate, calcium, phosphate, alkaline phosphatase and albumin.^(7, 8)

"Quality of life for children with short stature" refers to how a child's height impacts their health, happiness, and ability to participate in society. The child's lack of height makes it difficult for them to participate fully in many physical elements of childhood development. Due to discrimination, exclusion, poor self-esteem, bullying, and a lack of social skills, children of short stature are at increased risk for

psychological distress compared to their taller peers.⁽⁹⁾

Male gender, having a younger but taller brother, being regarded and treated as younger than chronological age, poorer intellect, and lower family socio economic level are all risk factors that enhance psychosocial stress among children of short stature. Parents of children who are short-statured are more likely to report that their child has impaired social functioning.⁽¹⁰⁾

Patient self-assessment, age-appropriateness, applicability in research, and consideration of both generic and condition-specific aspects of health-related quality of life are all important criteria for instruments developed to assess health-related quality of life in pediatric health conditions, as recommended by the World Health Organization (WHO). Subjective health and functioning in the areas of body, mind, and spirit are all included.⁽¹¹⁾

Pediatric nurses serve as coordinators, resources, and instructors for patients. They offer services such as encouraging a better understanding of children's age-specific psychosocial requirements, screening for underlying medical disorders, and the need of endocrine clinic follow-up.⁽¹²⁾

Significance of the Study:

Inadequate growth and development, due to both hereditary and environmental factors, is a typical reason why children are short in height. Children with short stature have challenges in their physical health, their relationships with peers, and their mental well-being. The effects of any underlying health issue may be mitigated and ultimate child height can be optimized by early identification and diagnosis of children with short stature. The quality of life of children with short stature may be greatly enhanced by the efforts of pediatric nurses and the moms of these children. This study aimed to assess

mothers' knowledge and perceptions toward short stature of their children and its effect on quality of life. ⁽¹³⁾

Aim of the study

The study aimed to assess mothers' knowledge and perception toward short stature of their children and its effect on quality of life.

Research Questions

1-What is the mothers' level of knowledge and perception toward short stature of their children?

2-What is the effect of short stature on children's quality of life?

Subjects and Method

Research Design: A descriptive research design was used in the present study

Setting: The study was carried out at Pediatric Endocrine Outpatient Clinic of Tanta Main University Hospital's, which is affiliated the Ministry of Higher Education and Scientific Research.

Subjects

All mothers and their short stature children (106) who were attended for follow up in the previously mentioned setting.

Data collection Tools:

The following tools were utilized in the current study:

Tool I: Structure questionnaire sheet: The researcher designed this tool for evaluating mothers' knowledge of short for their children.

It was divided into two parts: -

Part (1): Bio-socio-demographic characteristics which include:

- a- Socio-demographic characteristics of mothers that included data such as age, level of education, occupation, residence, number of children in family and consanguinity.
- b- Socio-demographic characteristics of the studied children that included age, sex and birth order.

c- Children's past and present medical history. It included medical history of genetic defect, chronic disease or malnutrition and mothers' health problems during prenatal, perinatal care and presence of any chronic illness.

Part (2): Mothers' knowledge about short stature: ^(14, 15) to assess mothers' knowledge regarding short stature such as definition, causes, treatment of children and their difficulty such as physical, social and emotional problem.

Scoring system of mothers' knowledge:

Each question scored as follow (0, 1, 2 grades).

-Correct and complete answer scored (2)

-Correct and incomplete answer scored (1)

-Wrong answer or didn't know scored (0).

Total scores of mothers' knowledge were calculated and classified as follow:

-Less than 50% was considered low level of knowledge.

-From 50 to 75% was considered moderate level of knowledge.

-More than 75% was considered high level of knowledge.

Tool II: Mothers' perception regarding short stature. ⁽¹⁶⁾

a- It contained questions of mother feeling about their children's height and how much they worried about it. It consists of 9 items.

Mothers' responses were being measured on five points likert scale that ranged from one to five.

Strongly Disagree=1, Disagree=2, Little Agree=3, Agree=4, Strongly Agree=5.

The total scores of mothers' perception were calculated and classified as follow:

- More than 75% was considered high level of perception.

- From 60 to 75% was considered moderate level of perception.

- Less than 60% was considered low level of perception.

b- Height assessment:

-The height of each child was measured using a measuring tape. ⁽¹⁶⁾

c- **Growth charts:** Through the use of age-appropriate charts for height and weight percentiles for both sexes. ⁽¹⁷⁾

Tool III: Quality of Life in Short Stature Youth (QoLISSY): ⁽¹⁸⁾

The tool was used to measure the health-related quality of life of short-stature children by asking both children and their mothers in the following domains:

a- **Physical domain** was included (6 items) limitation in daily activity, energy, clothing, pain, sleep and recreational activity.

b- **Social domain** was included (8 items) teasing, bullying, social comparison, social exclusion, stigma, peer rejection, positive comparison and social acceptance.

c- **Emotional domain** was included (8 items) self-confidence, negative effect, embarrassment, and worry about height, bothered about height, feeling hurt, isolation and satisfaction with height. They were added together to form the total score (22 items).

Domains measure predictors of quality of life:

a- **Coping domain** (5 items) ignoring, blocking, aggression, denial and receiving support,

b- **Beliefs domain** (2 items) The child believes that growing taller and participating in all physical activities would make him or her happy

c- **Treatment domain** (3 items) expectation about treatment, treatment administration and side effect of treatment.

-**For mothers'** version two supplemental domains were included that relate to the mother's worries regarding their child's future (future domain, 3 items) employment, future partner, and being left out. The effect of the child's condition on the parents' well-being (**effects on parents**, 5 items) parents feels sadness about other people's reaction to their

child's height, worries about treatment cost, side effect of treatment, their child marriage and effect of treatment on child academic performance. The total items (40).

Scoring System for quality of Life in short stature: The response was measured on three-point Likert scale:

Each question was scored as follow:

-Not at all (3)

-Quite often very (2)

-Very often extremely (1)

The total scores of children's quality of life were categorized into three categories which ranged from 40-120:

-**Good** when the total scores: 94 up to 120

-**Fair** when the total scores: 67 to less than 94.

-**Poor** when the total scores: 40 to less than 6.

Method

1-Permission to perform the study was taken from related authorities of the previously mentioned setting.

2- Ethical considerations:

Nature of the study would not cause any harm to the subject. Consents were obtained from mothers and their children who are included in the study after explaining the study aim. They have the right to withdraw at any time from the study; mothers and their children were informed about the privacy of their data

3-Tools Development: Two tools were developed and modification was done based on the review of related literature. (Tool I and Tool II).

4--Content validity: Tool I and tool II was presented to a jury of seven experts in pediatric nursing to check the validity, comprehensiveness, understanding, applicability of the content and ease for implementation.

5- Reliability of the developed tool was tested through the internal consistency by using Cronbach's alpha coefficient test 0.878 for

mothers' knowledge and 0.81 mothers' perception.

6- A Pilot study:

It was carried out on (10%) of the sample to test clarity, visibility and applicability of the study tools and the necessary modifications were done. Those children were included to total sample of the study.

Data collection:

- 1-Interviews schedule was used for data collection. Socio demographic characteristics related to mothers and their child, past and present medical history of the studied children and assess mothers' knowledge about short stature. The time was taken 20 minutes (Tool I).
- 2-The researcher asked mothers about their perception regarding short stature that contained questions of mothers feeling toward their child's stature and the degree of worries about children height. The researcher assessed the height and weight of the children after measurement of it by the nurse. The time was taken 20 minutes to collect these parts (Tool II).
- 3-The researcher asked mothers and their children about domains of health-related quality of life. The researcher asked questions related to effect of short stature on physical, social, emotional, coping domains, beliefs about short stature, questions related to treatment and its effect on parent. The time was taken 20 minutes to collect these parts (Tool III).

Statistical analysis:

Statistical analysis of the data was carried out and the collected data was organized, categorized, computerized, tabulated, analyzed, and calculated using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Qualitative data were described using number and percent. Quantitative data were described using range, mean, standard

deviation. Significance of the obtained results was judged at the 5% level. The used tests were (Pearson coefficient).

Results

Table (1): Illustrates percentage distribution of the studied mothers according to their socio- demographic characteristics. It was observed that, 66.0% of the mothers their ages ranged between 30-40 years old with the mean age were 34.20 ± 4.59 years and median was 35.0 years and most of them (82.1%) were working. It was found that half of the mothers (50.0 %) had diploma and the majority (90.6 %) were from rural areas. It was observed that 46.2% of studied mothers had two children. It was cleared that, less three quarters of the mothers (70.8 %) hadn't consanguinity.

Table (2): It represents that, nearly two thirds (67%) of children were males, their ages ranged from 3.0 – 16.0 years with mean \pm SD was 9.0 ± 2.85 years and 60.4% of these children were the first child in their families.

Figure (1): Shows percentage distribution of the studied children according to their past and present medical history. The majority of the studied children (99.1%) didn't have past medical history; all of them (100%) had present medical history and 22.6% of them suffered from growth hormone deficiency.

The same table illustrates that, more than two third (68.9 %) of the studied mothers didn't have any health problem during prenatal and nearly one third (31.1%) had health problem during prenatal and more than one third (39.4%) suffered from anemia.

Figure (2): Demonstrates level of mothers' knowledge toward short stature of their children. It was evident that, nearly half of mothers (50.9 %) had low level of knowledge and 45.3 % of them had moderate level of knowledge.

Figure (3): Demonstrates level of mothers' perception toward short stature. It was observed that, more than two third (67.0 %) of the studied mothers had low level of perception regarding short stature and their score ranged between 30.56 – 72.22%.

Table (3): shows percentage distribution of the studied children according to their weight and height. In relation to weight of children, it was found that, nearly one third (32.1%) of the children, their weight was on 10th and 25th percentile in growth chart with mean \pm SD was 27.38 ± 9.04 kg. Regarding children height, it was found that, nearly three quarter (72.6 %) of children located in 3rd percentile of growth chart with mean \pm SD was 120.67 ± 14.25 cm.

Figure (4): Shows percentage distribution of quality of life. It was obvious that half (50.0 %) of children had poor quality of life, more than one third (39.6 %) of them had fair quality of life and 10.4 % had good quality of life that ranged between 28.75 – 70.0 % with Mean \pm SD was 42.24 ± 12.02 .

Table (4): Represents relation between level of mothers' knowledge and their socio-demographic data. It showed that no significant correlation between level of mother's knowledge and socio demographic data such as age, occupation, level of education, residence and number of children where $P= 0.444, 0.123, 0.853, 0.549$ and 0.470 respectively.

Table (1): Percentage distribution of the studied mothers according to their socio-demographic characteristics. (n=106)

Socio-demographic characteristics related to the mother	No.	%
Age of mother (years)		
<30	22	20.8
30-<40	70	66.0
≥40	14	13.2
Range	23.0 – 42.0	
Mean ± SD.	34.20 ± 4.59	
Median	35.0	
Occupation		
Working	87	82.1
Not working	19	17.9
Level of education		
Illiterate or read and write	17	16.0
Primary or preparatory	18	17.0
Diploma	53	50.0
High education	18	17.0
Residence		
Rural	96	90.6
Urban	10	9.4
Number of children		
1	10	9.4
2	49	46.2
3	33	31.1
4	14	13.3
Range	1.0 – 5.0	
Mean ± SD.	2.50 ± 0.89	
Median	2.0	
Consanguinity		
No	75	70.8
Yes	31	29.2

Table (2): Percentage distribution of the studied children according to their socio-demographic characteristics. (n=106)

Socio- demographic characteristics of children	No.	%
Sex		
Male	71	67.0
Female	35	33.0
Age of child (years)		
Range	3.0 – 16.0	
Mean \pm SD.	9.0 \pm 2.85	
Median	8.25	
Birth order		
First	64	60.4
Second	37	34.9
Third	5	4.7

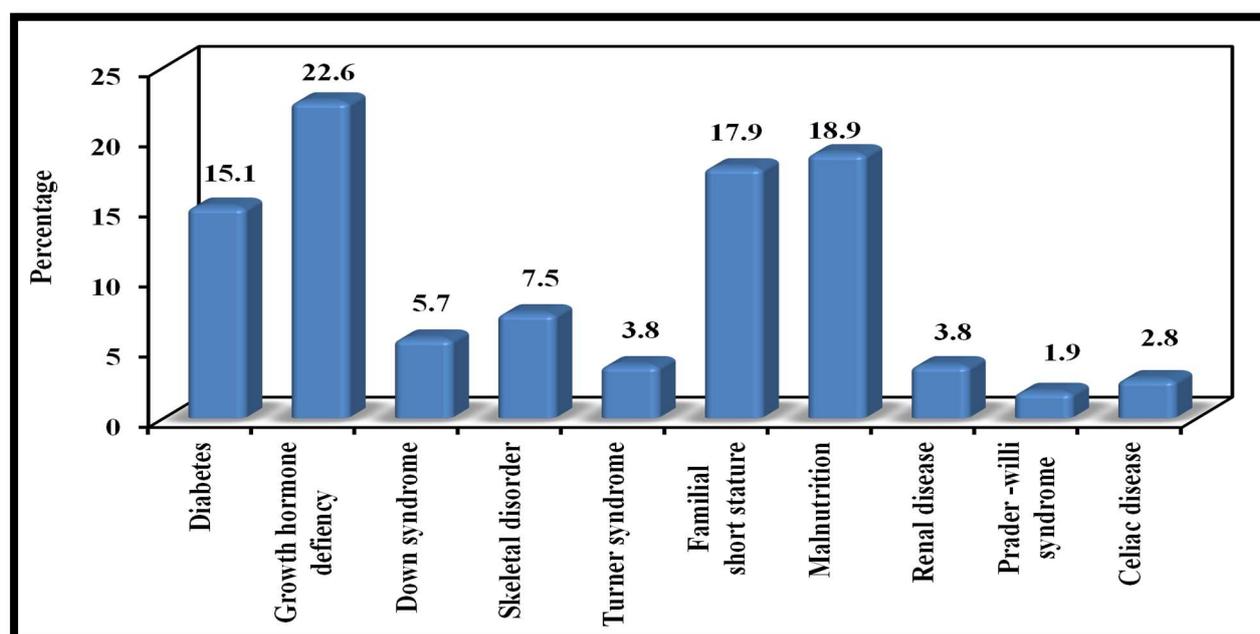


Figure (1): Present medical history of the studied children

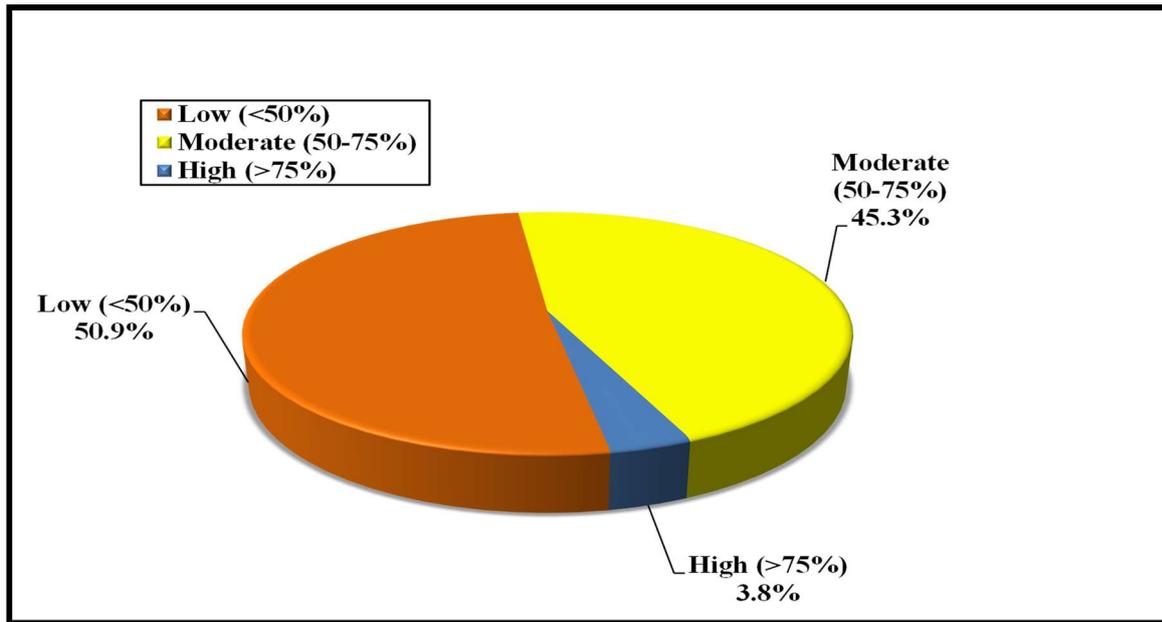


Figure (2): Level of mothers' knowledge toward short stature.

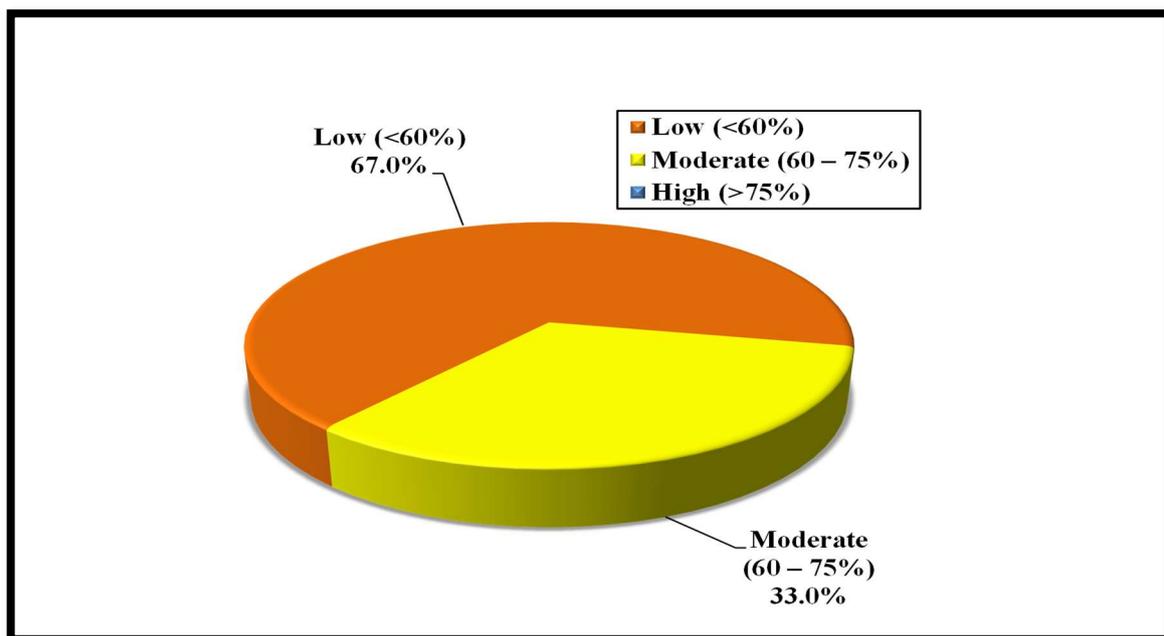


Figure (3): Level of mothers' perception toward short stature

Table (3): Percentage distribution of weight and height of short stature children. (n=106)

Distribution weight and height of the studied children	No.	%
Weight percentile		
3 rd percentile	1	0.9
5 th percentile	18	17.0
10 th percentile	34	32.1
25 th percentile	34	32.1
50 th percentile	16	15.1
75 th percentile	3	2.8
Weight of the child (kg)		
Range.	14.0 – 57.0	
Mean ± SD.	27.38 ± 9.04	
Median	25.0	
Height percentile		
3 rd percentile	77	72.6
5 th percentile	27	25.5
10 th percentile	2	1.9
Height of the child (cm)		
Range.	88.0 – 155.0	
Mean ± SD.	120.67 ± 14.25	
Median	118.50	

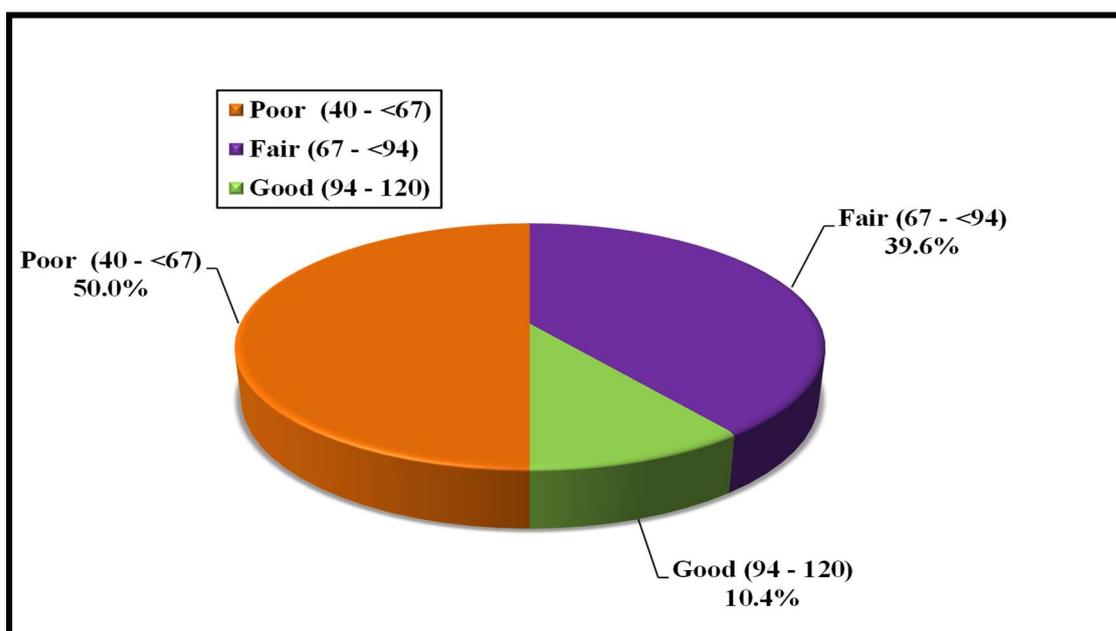


Figure (4): Level of quality of life for short stature children.

Table (4): Relation between level of mothers' knowledge and their socio-demographic characteristic. (n=106)

Socio- demographic characteristic of mother	Level of mothers' knowledge						χ^2	MC _p
	Low (n =54)		Moderate (n =48)		High (n =4)			
	No.	%	No.	%	No.	%		
Age of mother (years)								
<30	10	18.5	11	22.9	1	25.0	3.272	0.444
30-<40	39	72.2	29	60.4	2	50.0		
≥40	5	9.3	8	16.7	1	25.0		
Occupation								
Working	43	79.6	42	87.5	2	50.0	3.874	0.123
Not working	11	20.4	6	12.5	2	50.0		
Level of education								
Illiterate or read and write	7	13	9	18.8	1	25.0	2.801	0.853
Primary or preparatory	10	18.5	7	14.6	1	25.0		
Diploma	26	48.1	25	52.1	2	50.0		
High education	11	20.4	7	14.6	0	0.0		
Residence								
Rural	47	87.0	45	93.8	4	100.0	5.187	0.549
Urban	7	13.0	3	6.3	0	0.0		
Number of children								
1	4	7.4	5	10.4	1	25.0	5.187	0.470
2	28	51.9	19	39.6	2	50.0		
3	16	29.6	17	35.4	0	0.0		
4	6	11.2	7	14.6	1	25.0		

Discussion

Short stature is not a sickness, but rather a global issue among children especially in families with low socio-economic status and developing countries. Short stature is a result of poor linear growth which begin from length of the child at birth and the rate of growth over time. Monitoring the rate of children's development is vital for early identification and diagnosis of short stature that can be performed through using growth charts. Short stature children mean

that their height below lower limit of normal and according to age and sex is under the third percentile. ⁽²⁰⁾

This result can be interpreted based on that most families in rural areas have some factors that delay growth and development in children such as unhealthy food, limited health services and sanitation.

This result was consistent with **Farouk (2014)** ⁽²¹⁾ who indicated that more than thirty percent of the study's participants were from rural areas. In addition, **Ahmed (2017)** ⁽²²⁾

and Zayed et al (2016)⁽²³⁾ who mentioned that there was a rise in instances of short stature in rural regions. According to the results of the current study, less than three quarters of the mothers who were investigated had negative consanguinity. This result might be interpreted from the researcher's perspective based on presence awareness programs about dangerous of consanguinity marriage.

Azab et al (2021)⁽²⁴⁾ who were matched with the current results and said that more than two third of the children with short stature had negative consanguinity. Andrews et al (2021)⁽²⁵⁾ who also in the same direction and stated that more than two third of short stature children had negative consanguinity.

The current study found that males had a higher frequency of short stature was sixty seven percent. The researcher thought that the current result may be due to that most families show concern towards boys and their fear about any delay in their health and their sexual development. ElMouzan et al (2011)⁽²⁶⁾ and Gjikpulli (2020)⁽²⁷⁾ were in the same direction with the current result and reported that the short stature males were more than females. Shrimali et al (2016)⁽²⁸⁾ also showed that, males had a greater frequency of short stature than females. On the other hand, Mohammad et al (2016)⁽²⁹⁾, Neyzi et al (2015)⁽³⁰⁾ and Azab et al (2021)⁽²⁴⁾ disagreed with the results of present research and revealed a higher frequency of female than male short stature. While Zayed et al (2016)⁽²³⁾ stated that no significant differences were found among males and females.

The results of the current research confirmed that the average height of children was 120.67 ± 14.25 cm and mean weight was 27.38 ± 9.04 kg while Azab et al (2021)⁽²⁴⁾ who disagreed with these results and found the average

child's height was 143.28 cm, and their average weight was 44.41 kg. Short stature is not a disease but occurred due to many causes.

The current study clarified that most causes of short stature were growth hormone deficiency, malnutrition and familial. According to the researchers, the fact could be applied to explain the current outcome are that growth hormone is an important hormone that regulates linear growth in children.

Gjikopull et al (2016)⁽²⁷⁾ results were congruent with the present results and stated that the prevalence of endocrine reasons of short stature, particularly growth hormone insufficiency, are common. Besides, Angadi et al (2021)⁽³¹⁾ and Hussein et al (2017)⁽³²⁾ indicated that endocrine causes of short stature are the most frequent.

On the opposite hand, Abdullah et al (2022)⁽³³⁾ disapproved with these findings and indicated that familial low height was common reason of short stature. Shrimali et al (2016)⁽²⁸⁾ were also against the current result and reported that the incidence of short stature because of deficient growth hormones was 1.2 %.

Regarding malnutrition as one of the etiologies of short stature Ramagopal and Vasudevan (2017)⁽³⁴⁾ who agree with the present results that reported twenty percent of short stature are due to malnutrition and Shrimali et al (2016)⁽²⁸⁾ also showed that, 16.5% of short stature due to the effect of malnutrition.

On the opposite hand, El-Shafie et al (2020)⁽³⁵⁾ reported that six percent of children with malnutrition cause short stature. Abdullah et al (2022)⁽³³⁾ reported that four percent of short stature in children is due to malnutrition. The findings also revealed that half of mothers had low level of knowledge. According to the researcher's perspective may

be explained that on the reason there is no awareness programs are conducted for mothers to increase their knowledge and perception toward short stature.

Nasution and Oktavinola (2019) ⁽³⁶⁾ who agreement with the current result and reported that that about half of the mothers had low level of knowledge about short stature and **Ahmed and Abd Elsalam(2017)** ⁽²²⁾ who also found that three quarter of the mothers who participated in the study had poor knowledge regarding short stature **Alharbi et al (2022)** ⁽³⁷⁾ who also congruent with the current result that found that most families lack basic information about short stature that is needed early detection and intervention.

Regarding mother' perception toward short stature, the results of the current study indicated that the studied mother had low perception about short stature. **Hwang et al (2015)** ⁽³⁸⁾ and **Ahmed et al (2017)** ⁽²²⁾ who in agreement with this result that found the most of mothers weren't aware of that their children suffer from short stature and it's the impact on children's quality of life. Besides, was consistent with the current study. **Nasution et al (2019)** ⁽³⁶⁾ also supported this finding and reported that mothers' of short stature children had poor perception.

Critically documented outcomes in pediatric endocrinology include quality of life. that aids in understanding how short stature affects children and their parents. According to the current study, it was found that the short stature children had poor level of quality of life.

According to the researcher, the current result can be explained by the fact that short stature prevents children from doing things that other of the same age are doing, their feeling dissatisfied regarding his height, suffer from bullying and others dealt with him according to his height, not his age.

Backeljauw et al (2021) ⁽³⁹⁾ agreed with the current result and suggested that those with short stature, regardless of the reason, may had a lower quality of life. **Quitmann et al (2019)** ⁽⁴⁰⁾ matched with the present results and observed that children with short stature were more likely to experience poor health-related quality of life than those with normal height. **Silva et al (2018)** ⁽⁴¹⁾ also found significant height-based variations across the groups, demonstrating that higher children had better life quality while shorter children have worse life quality.

Bloemeke et al (2019) ⁽⁴²⁾ reported that the short stature children have poor level of QoLISSY and increased as a result of improved children height. Bedside, **Quitmann et al (2019)** ⁽⁴³⁾ were consistent with the current findings and concluded that improvements in quality of life of children were connected with a rise in height. **Drosatou et al (2019)** ⁽⁴⁴⁾ suggested that taller children had higher quality of life.

Furthermore, **Silva et al (2018)** ⁽⁴¹⁾ and **Briceno al (2019)** ⁽⁴⁵⁾ found that children who treated and grew to normal height had a better quality of life than those who were not treated. **Tanak et al (2014)** ⁽⁴⁶⁾ and **Al-Uzri et al (2013)** ⁽⁴⁷⁾ were observed that children's quality of life improved following therapy as a consequence of their height increasing.

The results of this study demonstrated positive non-significant correlation between the level of mother's knowledge and their ages. As the mother's age increase, her experience and information increasing regarding caring for their children. **Nasution et al(2019)** ⁽³⁶⁾ who was accordance with my opinion and reported that age can affect mothers' knowledge because increasing age of a persons there will lead to increase their experience and the level of thinking so, it influences on mothers' knowledge.

Conclusion

According to the current study, it could be concluded that mothers' had low level of knowledge and perception toward short stature of their children. The result of the present study demonstrated that short stature children had poor quality of life that prevent them from doing things, exposed to negative comparison, embarrassment, lack of self-confidence and effect on parents that cause worry about child future such as finding a job, life partner , treatment cost, side effect and effect of treatment on their academic performance.

Recommendations

The findings of the study contribute to the following recommendations:

- 1- Offer pediatric nursing instructional programs on child growth and development monitoring.
- 2- Developing educational programs for mothers' about short stature of their children.
- 3- Booklets must be available for mothers and children about treatment plan and nutrition, monitoring growth and development.
- 4-Multidisciplinary interventions must be available to provide the parents of short stature children with cognitive and behavioral strategies to improve their child's physical, emotional, social, and behavioral problems to decrease the impact of short stature.

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