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Coping strategies among children with thalassemia

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Abstract : background :- *Thalassemia is a chronic genetic hematological disorder affect children from birth and remain for long life as all available treatment is supportive not curative. So that, critical psychological burden result from chronicity of thalassemia and its long-lasting treatment. This psychological burden include anxiety, depression, low self-esteem, guilt and shame. For all of these factors, thalassemic children use coping strategies to mediate psychological burden to maintain quality of life at normal level.*
Aim: *the main point of this study was to evaluate prevalence of coping strategies among children with thalassemia.*
Methods: - *descriptive cross-sectional study is carried out on a sample of 300 of thalassemic children belonging to in-patient and outpatient department at children Hospital of Mansoura University, Egypt. Socio-demographic characteristics and clinical data of the children and the Children's Coping Strategies Checklist- Revision 1 (CCSC- R1) were used to collect data.*
Results: - *The results of studied sample revealed that 74 % of studied sample their age range from 12 years to 18 years with mean and standard deviation score = 13.6 ± 2.7. 65 % studied thalassemic children were females. Avoidance and distraction strategies (Emotion-focused) are the most common used coping strategies with mean and SD 67.86 ± 6.37. Coping strategies are high statistically significant related to age, educational level and duration of illness (P ≤ 0.001).*
Conclusion:- *Thalassemic children addressed psychological disorders. So that, the use of coping strategies believed to be responsible for building the general wellbeing condition of children with thalassemia.*
Keywords – *Coping Strategies, Thalassemia, Adaptation, Maladaptation*

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I INTRODUCTION

Thalassemia is the term of a cluster of genetically inherited disorder of blood in which the body creates a hemoglobin anomalous kind, hemoglobin is known to be the protein in red blood cells with main function of carrying oxygen [1]. All of this leads to extreme demolition of red blood cells, that result in anemia [2]. Alpha thalassemia is produced by lacking creation of alpha globin chains, and beta thalassemia is produced by lacking creation of beta globin chains [3, 4].

Nearly 4.4 of every 10,000 live births are affected with thalassemia. Statistics show that, 5 % of the population all over the world has a variation of globin, but only 1.7 % has alpha or beta thalassemia trait. Both males and females affected equally. Individuals of Southeast Asian descent and African are more liable to alpha thalassemia, and individuals of Mediterranean are more liable to beta thalassemia, African, and Southeast Asian descent [5]. In Egypt, recorded Thalassemic cases are about 10,000 cases and non-recorded cases are more than 20,000 cases. Beta Thalassemia Major represent 95%, and Thalassemia intermedia or Hemoglobin H disease represent 5% [6].

Chronically ill Children with disorders of blood can be susceptible to depression and anxiety owing to societal issues like family separation, facial and physical malformations, anxiety of death, and limitations in societal, play and school activities [7]. In a different manner, there are studies reporting early psychological maturation in chronically ill children as they are coping with consequences of the chronic disorder either medical or psychological [8].

Coping has been outlined as a response aimed toward decreasing the physical, psychological and emotional burden that is associated with stressful life events and daily bothers. Coping is known to be adaptive activity that involves effort [9]. It is the component of effort, which permits us to draw the distinction between coping and ready-made adaptational devices such as reflexes [10, 11].

Within health psychology, coping is more typically defined by outcomes such as preserving functional status and low negative affect in the face of the illness. However, preserving functional status in the face of progressive loss of physical functioning may not always be realistic [12]. Adaptive illness tasks can be condition specific; therefore, the adaptive outcome may vary. For instance, in thalassemia, key tasks may be coping with imminent death, so the adaptive outcome may be maintaining quality of life in the face of increasing loss of function. Low distress may also not always be obtainable or indeed desirable in the trajectory of an illness [13].

Essentially, coping strategies are divided into emotion focused and problem-focused. An emotion-focused strategy highlights that patients try to manipulate their emotions by acting and thinking [14]. When patients use a problem focused strategy, they consider that they can affect the circumstances that was triggered by their disease or affect their resources to cope with the situation, and this form of strategy is important to preserve quality of life. Emotion-focused and problem-focused coping strategies may be used simultaneously or alternately [15]. It is so tough to distinguish between them in the

coping process. The consequence of the coping process a adaptation or maladaptation. Adaptation is well-defined as the grade to which patients cope psychologically, socially and physiologically with their chronic illness [16].

Studies of interpersonal factors have targeted on stress processing in thalassemic children, proposing that active coping strategies and perceived control are related to higher levels of adjustment, including fewer physical indicators and psychological complications [17]. Avoidance coping has been accompanied by more anxiety symptoms, reduced activity, and increased need for medical interferences; disengaged coping styles have predicted more internalizing behavioral problems [18]. Distraction coping strategies characterized by passive adherence and negative thinking (catastrophizing and self-report of fear and anger) were associated with more frequent emergency visits, less activity, and higher levels of self-reported distress [19]. Active coping strategies like cognitive and behavioral strategies, including diverting attention, calming self-report, and reinterpreting pain sensations, were associated with fewer emergency visits and more activity throughout painful episodes [20].

1.1 Aim and objectives:-

The main point of this study was to evaluate prevalence of coping strategies among children with thalassemia. Objective of this study is to evaluate the using of coping strategies among the children with thalassemia.

1.2 Research question:-

- Does thalassemic children use coping strategies to relieve psychological burden result from their chronic disease?

II MATERIALS AND METHOD

2.1 Research design:-

A descriptive cross-sectional design adopted in this study.

2.2 Setting:-

The study was conducted at the in-patient and out-patient of Children Hospital of Mansoura University, Egypt.

2.3 Study sample:-

A convenience sample of 300 children with thalassemia who attend the previous setting will select for this study. These subjects will meet the following criteria:

- Age: between 8 to 18 years.
- Gender: both sexes will be included in the study.
- Diagnosis with thalassemia according the child medical records.
- Children should attend regularly to out-patient clinic and in-patient department of Children Hospital of Mansoura University, Egypt.

2.4 Tools for data collection:-

A- Socio-demographic characteristics and clinical data of the children:-

This sheet was designed by the researcher after the review of literature for collection of socio-demographic and clinical data from children and their caregivers which include:-

- **Socio-demographic data of children that included -** child's age, gender, child order and level of education.
- **Clinical data of thalassemic children such as**: - onset of the disease, duration of illness, frequency of blood transfusion, presence of any disease as diabetes mellitus, heart disease (cardiomegaly) and bone deformities (fractures or osteoporosis) and family history, number of brothers or sisters affected with thalassemia.

B- The Children's Coping Strategies Checklist- Revision 1 (CCSC- R1):-

CCSC-R1 is developed by (Ayers et al., 1996), which was designed to measure children's self-perceived coping styles and efforts in response to general problems [21].

CCSC-R1 is a self-report inventory in which children describe their coping efforts. CCSC-R1 is a 54-item Likert type self-report inventory that allows participants to rate the degree to which they use a particular coping strategy on a 4-point Likert scale. The four response options for the CCSC- R1 items are 1 = never, 2 = sometimes, 3 = often, and 4 = most of the time. CCSC-R1 consists of four coping domains. The active, distraction, avoidance and support seeking domains are engaged coping strategies while the avoidant domain is a disengaged strategy. The scale was translated to Arabic by researcher. Reliability of Arabic version of (CCSC-R1) was hold on 30 thalassemic children patients (r = 0.84).

2.5 Method and ethical consideration:-

- Ethical committee was obtained from the Research Ethics Committee of Faculty of Nursing, Mansoura University.
- An official approval for conducting the study was obtained from the director of Children Hospital of Mansoura University.
- The verbal consent was obtained from the children and their family caregivers to share in the study after explanation of the study.
- Tool was tested for their content validity and reliability. Reliability of Arabic version of (CCSC-R1) was hold on 30 thalassemic children patients (r = 0.84).
- Children history and diagnosis was used from their medical record.
- A pilot study was carried on 30 children with thalassemia was not included in the actual study to test reliability and validity and the necessary modifications was be carried out.
- The children privacy was maintained.
- Jury was done by five experts from faculty of nursing, medicine and education at Mansoura and Cairo university, Egypt.
- Collection of data covered a period of six months "from the first of August 2016 to the first of February 2017"

2.6 Pilot study:

A pilot study was carried out on 30 thalassemic children (who were excluded from the sample) to assess the clarity and applicability of the data collection tools, arrangements of items, estimate the time needed for each sheet and the feasibility of the study and acceptance to be involved in the study. Necessary modifications were undertaken.

2.7 Statistical analysis:-

Data entry and analysis were performed using SPSS statistical package version 22. The normal distribution of data first tested with Kolmogorov-Smirnov. Qualitative data were described using number and percentage. Continuous variables was presented as Mean ± Standard Deviation (SD) for parametric and number and percentages for non-parametric data. Mann-Whitney U Test was used for two-group comparison. Kruskal-Wallis Test was used for three-group comparison. All tests were considered statistically significant at $P \leq 0.05$ (5 %).

III RESULTS

Table (1), Figure (1), Figure (2) and Figure (3) shows Distribution frequency of thalassemic children according to their Socio – demographic and clinical characteristics. According to age two thirds (74 %) of studied sample their age range from 12 years to 18 years with mean and standard deviation score = 13.6 ± 2.7. More than half of the studied thalassemic children were females they constituted (65 %). 4.3 % of studied thalassemic children not entered school. More than half of studied thalassemic children (74.3%) were first child. Regarding the onset of disease, more than two-thirds (76 %) were from birth to less than one year. The majority of the child (84 %) receive blood transfusion once monthly. About (93 %) of studied thalassemic children suffer from bone fractures or osteoporosis, (37 %) suffer from cardiomegaly and (21.3 %) suffer from diabetes mellitus. according to history of relative relation, more than two-thirds (74 %) of parents of study sample have history of relative relation. Regarding to degree of relative relation, (55.86 %) are first degree and (44.14 %) are second degree. In relation to the positive family history, (70.3 %) have positive family history and (29.7 %) have not positive family history. Concerning the degree of relation with child, (34.3 %) are brother or sister, According to number of thalassemic siblings, (21.3 %) have one sibling affected with thalassemia and (13.0 %) have two siblings.

Table (2) and Figure (4) illustrates Descriptive statistics for total coping strategies scale and its domains. The total mean score of Distraction Strategies and Avoidance Strategies (Maladaptive coping) was 67.86 that were more frequent used than Support Seeking Strategies and Active Coping Strategies (Adaptive coping) that there mean score were 65.90. The total mean score and SD of coping strategies were 133.767±15.382. The studied thalassemic children use problem focused coping strategies with total mean score (22.823) and standard deviation (± 5.043) and positive cognitive restructuring strategies with mean score (26.593) and standard deviation (± 4.940), so high score of mean achieved in positive cognitive restructuring strategies. In relation to dimensions of problem focused coping, the studied thalassemic children use cognitive decision making with mean score (7.733) and standard deviation (± 2.114), direct problem solving with mean score (7.533) and standard deviation (± 2.086) and seeking understanding with mean score (7.557) and standard deviation (± 1.901) so high score of mean achieved in cognitive decision making strategies. Concerning dimensions of positive cognitive restructuring, the studied thalassemic children use positivity with mean score (8.403) and standard deviation (± 2.010), control with mean score (8.300) and standard deviation (±2.257) and optimism with mean score (9.890) and standard deviation (± 2.324) so high score of mean achieved in optimism strategies. The studied thalassemic children use distracting actions with total mean score (13.390) and standard deviation (± 1.786) and physical release of actions with mean score (8.743) and standard deviation (± 2.218), so high score of mean achieved in distracting actions strategies. The studied thalassemic children use avoidant actions with total mean score (14.300) and standard deviation (± 1.641), repression with mean score (14.003) and standard deviation (± 2.130) and wishful thinking with mean score (13.993) and standard deviation (± 2.108) so high score of mean achieved in avoidant actions strategies. The studied thalassemic children use support for actions with total mean score (8.923) and standard deviation (± 2.306) and support for feeling with mean score (7.563) and standard deviation (± 2.017) so high score of mean achieved in support for actions strategies.

Table (3) shows the variation of total coping strategies based on sociodemographic and clinical characteristics of studied thalassemic children. The studied thalassemic children with age from 15 years to 18 years constitute low usage of coping strategies (maladaptive) with mean score (126.02) and the difference is highly statistically significant ($p \leq 0.001$). Females constitute more usage of coping strategies with mean score (134.25) however the difference is not statistically significant ($p = 0.620$). Studied thalassemic children at secondary stage constitute low usage of coping strategies (maladaptive) with mean score (125.55) and the difference is highly statistically significant ($p \leq 0.001$). Other child order more than third (fourth and fifth) constitute low usage of coping strategies (maladaptive) with mean score (126.50) however the difference is not statistically significant ($p = 0.377$). Studied thalassemic children who have known they affected with thalassemia at age from birth to less than one year constitute low usage of coping strategies (maladaptive) with mean score (132.99), however the difference is not statistically significant ($p = 0.317$). Studied thalassemic children whose frequency of blood transfusion twice monthly constitute low usage of coping strategies (maladaptive) with mean score (133.44), however the difference is not statistically significant ($p=0.439$). Studied thalassemic children who suffering for diabetes mellitus constitute low usage of coping strategies (maladaptive) with mean score (132.94) however the difference is not statistically significant ($p = 0.598$). Studied thalassemic children who suffering for heart diseases (cardiomegaly) constitute low usage of coping strategies (maladaptive) with mean score (133.70) however the difference is not statistically significant ($p = 0.834$). Studied thalassemic children who suffering for bone fractures or osteoporosis constitute low usage of coping strategies (maladaptive) with mean score (132.62) however the difference is not statistically significant ($p = 0.440$).

IV DISCUSSION

In the current study, the characteristics of studied patient revealed that the commonest age group ranged from 15 – 18 years that represent more than one third of the total sample with Mean ± SD = 13.6 ± 2.7. These may due to prenatal diagnosis has led to early detection of the disease and proper health care service, which lead to increase life span. Consistent

with our results reported, Ghanizadeh A et al, 2006 [22] conducted study on thalassemic children and found the mean of age was 14.6.

Our results show that the majority of studied sample were females (65 %) that compromised of more than two thirds of the studied sample. Like other genetic diseases, thalassemia is an autosomal disease can affect males and females alike since the abnormality is one of the autosomes. Our results agreed by study conducted by Hajibeigi B et al, 2009 [23] found that 52.4 % of thalassemic children participated with the study was female.

Regarding to educational level it was found that, educational level results indicates that 4.3 % of studied sample not entered school, although their age behind the age of obligatory education. The results of educational level not in line with results of age group of studied sample, which indicate that, the majority of studied sample under expected educational level. This interruption of educational level may be related to many causes as effect of disease severity on child, several complications of thalassemia. We found our results are agreed with results of (Abu Samra O, 2010) [24] in Egypt at Mansoura University of children hospital found that 6.9 % of studied sample not entered school.

Blood transfusion is essential part of treatment regimen for all children with thalassemia to achieve appropriate level of hemoglobin above 9-10.5 g/dl. The frequency of transfusion is usually every two to four weeks. Regarding blood transfusion frequency among studied children this study finding illustrated that a higher frequency of blood transfusion among thalassemic children, where more than two third of them was observed required blood transfusions once monthly (84 %) or every two month (16 %) in our study. This finding goes in line with (Ismail et al., 2013) [25] who assessed the health-related quality of life in Malaysian children with thalassemia and found that 66% of thalassemic children required blood transfusion monthly.

In our study, the majority of children reported having at least one of the complications listed in our study. The most frequent cause of death is heart disease, and, in our study, heart problems were reported by 37 % of children, diabetes mellitus was 21.3 % and bone fractures or osteoporosis was 93 %. Taken together, these findings extend previous findings that a recent cooperative study demonstrated that Cardiac complications were the most common morbidities with the rate of 76.4% (244/390). (Yaghobi M et al, 2017) [26]. In a multicenter long-term Italian study, the prevalence of diabetes mellitus (DM) among thalassemic patients affected by thalassemia major was 17 % (Gamberini M et al, 2008) [27]. Osteoporosis has been found to affect 51% of thalassemia patients, with an additional 45% affected by osteopenia. (Vogiatzi M et al, 2009) [28].

In relation to the onset of disease our results revealed that more than two thirds (76 %) of studied sample were diagnosed with thalassemia at age ranging from birth to less than one year. the early detection and early diagnosis of thalassemia cases reflects positive point for the child's health progress. Our results are in agreement with results of (Hassan S et al, 2016) [29] that found 65.2% of them diagnosed with thalassemia from less than one year.

As regards family history of thalassemia, the present study indicated that more than two thirds of studied patients (70.3 %) reported had previous history for thalassemia among their family members. These results take together with proportion that emphasize hereditary and autosomal of thalassemia, which passed from parents to sons. Our analytical results also revealed that more than two thirds of studied sample (74 %) have history of relative relation from which 55.86 % were first degree and 44.14 % were second degree. This may be due to increased consanguineous marriages in rural areas. Our findings confirming previous data of (Gharaibeh et al., 2009 [30]; Ammad et al., 2011 [31]) who found that more than two thirds of children had sick relatives and siblings with thalassemia.

On the other hand, coping strategies were significant related to duration of illness and more frequent and related to lower disease duration. This may be due to higher levels of hope and optimism when facing the disease in its early stages, after that the initial difficulties related to the diagnosis have been overcome and when disability is not yet elevated. Consistent with our results, study done by Goretti B et al 2009 [32] to assess the impact of psychological features in the choice of coping strategies in multiple sclerosis patients, and their influence on quality of life. Results of these study found that positive attitude and planning/ activity strategies, less frequently employed by multiple sclerosis patients, were related to lower disease duration, socialization, and neurotic and extraversion personality traits. Conflicting evidence is also noted between disease duration and coping relationship.

The findings of the present study indicate that the most commonly reported coping strategy used by thalassemic children is distraction and avoidance coping strategies (maladaptive or emotional-focused coping). In other words, many of thalassemic children prefer avoid thinking about the problem situation by staying away from it or leaving it or physically work off feelings with physical exercise, play or efforts to physically relax. Our finding is agreed by previous studies on children with cancer, where it was found that the overall results indicated that around 30% used problem-focused strategies, while 70% relied on emotion focused coping. (William Li H et al, 2011) [33]. Our findings agreed by notion which is hypothesized that emotion-focused coping is the more common form used when nothing can be done to change the situation as a result of philosophy of Confucianism and the associated notion of fatalism, and that most of them might believe that there is nothing that can be done to change their present situation (Aldridge A et al, 2007) [34].

Our results show that there was significant relationship between age and coping strategies. The most common age group using coping strategies is from 8 years to 12 years and this usage decline with older age. This may due to the fact that with the arrival of old age, people experience fewer important life events because the activities they carry out follow a routine more so than earlier in life. Our results agreed by Meléndez J et al, 2012 [35] who assumed that using of coping strategies decreased by increasing of age intervals.

The results of this study showed that the coping strategies more used by female than male children hospitalized with thalassemia. This is explained by female thalassemic children showed a tendency to experience more helplessness. Female in fact have a higher burden of disease and therefore need to use coping strategies more frequently. Consistent with our results on gender differences in relation to the use of coping strategies, Englbrecht M et al, 2011 [36]-postulated female were more common usage of coping strategies than male.

Our results found there was a significant relationship between coping strategies and educational level of thalassemic children. Lower educational level was related to more use of coping strategies. This finding explained by thalassemic children not entered school yet or have lower educational level put themselves in comparison with other peers in the same age who entered school or in advanced level of education. Our results are in line with Tuncay T et al, 2008 [37] who postulated that problem focused coping strategy, was found to be negatively correlated with educational status and monthly income indicates that patients with lower level of education and monthly income more frequently use of religious coping strategies.

V CONCLUSION

Thalassemic children tend to use maladaptive coping strategies (emotional-focused coping strategies) in form of distraction coping strategies and avoidance coping strategies to eliminate the negative feelings result from thalassemia as chronic disease. Thus, these approaches will contribute to increased appropriate knowledge, enabling health care professionals to provide proper interventions and how to cope with the chronic illness that maximizes the efficacy of coping strategies in all thalassemia adolescents.

VI. Recommendations

Based on our results, we recommend psychosocial assessment as well as physical assessment such as coping strategies checklist for children to identify psychosocial needs and problems of thalassemic children and their parents as a routine assessment. Based on psychosocial assessment plan psychosocial intervention to enhance coping strategies among children with thalassemia. It is therefore, greatly recommended to involve health care professionals to provide health education of the disease for their parents and support for best possible treatment for thalassemic children that help for improving adaptive coping strategies. Furthermore, policy makers and stakeholders should provide social and monetary support for family members that in turn comprehensively improve the disease burden and the QOL in thalassemic children. Plan intervention programs should include support of the patients and their families especially the psychological support to avoid mental disorders. We recommend that all patients with thalassemia should regularly undergo assessment of the quality of life to be sure that the more affected domains of quality of life become well and the psychological disorders as anxiety and depression eliminated. We suggest that due importance to the recognition and management (Medication, psychosocial interventions e.g. individual therapy, family intervention packages, self-help groups) of psychological problems would improve treatment outcomes including the QOL. Interventional studies are needed to evaluate the efficacy of cognitive-behavioral treatment programs that specifically train children with thalassemia to modify their coping strategies. Planning for brief training in coping strategies skills followed by minimal therapist contact may lead to a range of clinical benefits in children when they practice with their skills on consistent basis.

Table (1) shows Distribution frequency of thalassemic children according to their Socio – demographic and clinical characteristics. (No = 300)

Item	No	%	Item	No	%
Age			**Onset of disease**		
8 – less than 12	78	26	From birth - < one year	228	76
12 – less than 15	102	34	From one year - < two years	53	17.7
15 – 18	120	40	From two years to more	19	6.3
Mean ± SD = 13.6 ± 2.7					
Educational level			**Frequency of blood transfusion per month**		
Not entered school	13	4.3			
Primary	87	29	Once monthly	252	84
Preparatory	107	35.7	Twice monthly	48	16
Secondary	93	31			
Child order			**Gender**		
First	223	74.3			
Second	60	20	Male	105	35
Third	13	4.3	Female	195	65
Other (Fourth & Fifth)	4	1.3			

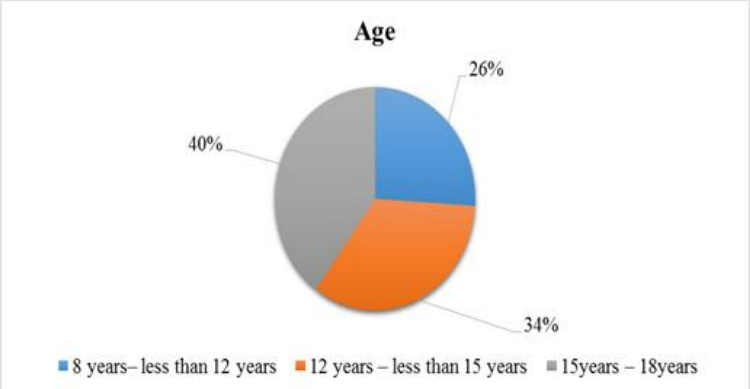

Fig (1): shows Distribution frequency of thalassemic children according to their age.

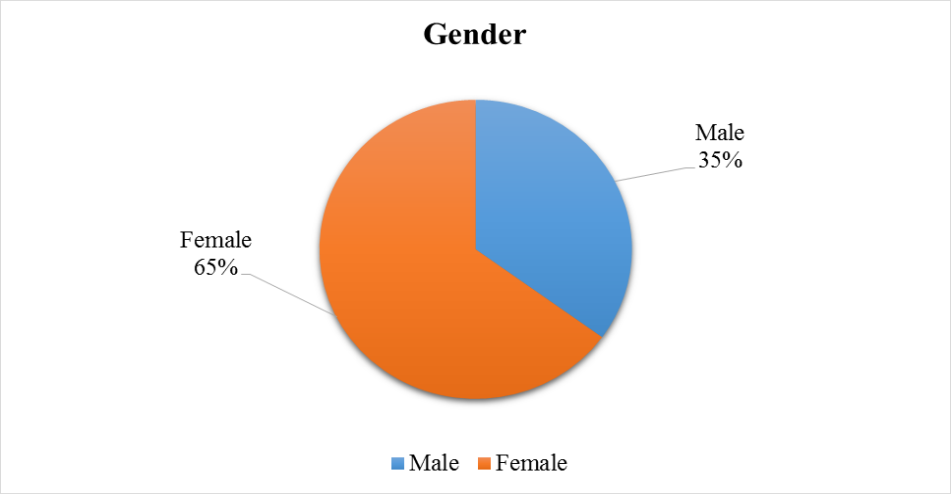

Fig (2) shows Distribution frequency of thalassemic children according to their gender.

Table (1) shows Distribution frequency of thalassemic children according to their Socio – demographic and clinical characteristics *(Cont'd)*. (No = 300)

Item	No (300)	%
Duration of illness		
• From 5 years to less than 10 years	48	16.0
• From 10 years to less than 15 years	142	47.3
• From 15 to more	110	36.7
History of relative relation		
No	78	26 %
Yes	222	74 %
• **In case of yes :-**		
Degree of relative relation		
First degree	124	55.86 %
Second degree	98	44.14 %
Positive family history		
No	89	29.7 %
Yes	211	70.3 %
• **In case of Yes:-**		
Degree of relation with child		
Brother / Sister	103	34.3 %
Uncle	10	3.3 %
Aunt	9	3.0 %
Grandfather / Grandmother	1	0.3 %
Cousins	57	19.0 %
Aunt Children	31	10.3 %
Number of thalassemic siblings		
One	64	21.3 %
Two	39	13.0 %

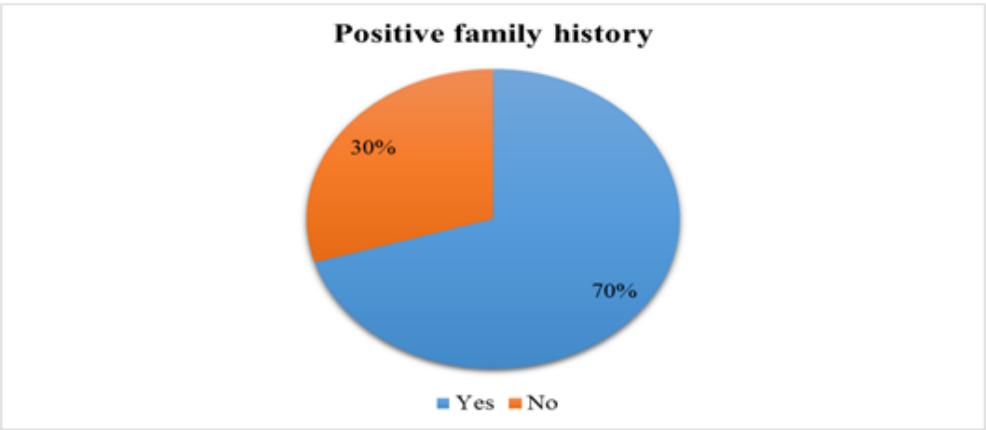

Fig (3): shows Distribution frequency of thalassemic children parents according to their positive relationship.

Table (2) Descriptive statistics for total coping strategies scale and its domains.

Item	Mean	SD	Median	Min - Max
Total coping Strategies	133.767	±15.382	134.500	96.00 – 175.00
Maladaptive coping (emotion-focused)	67.86	± 6.37	68.00	42.00 – 98.00
Distraction Strategies	25.567	±3.154	26.00	13.00 – 33.00
Avoidance Strategies	42.297	±4.578	43.00	23.00 – 48.00
Adaptive coping (problem-focused)	65.90	± 11.50	65.00	41.00 - 80.00
Support Seeking Strategies	16.487	±3.873	16.00	9.00 – 27.00
Active Coping Strategies	49.417	±8.720	48.00	33.00 – 77.00

Table (2) Descriptive statistics for Coping Strategies and its domains *(Cont'd)*.

Active Coping Strategies			**Avoidance Coping Strategies**		
Item	**Mean**	**SD**	**Item**	**Mean**	**SD**
Problem focused coping	22.823	±5.043			
Cognitive Decision Making	7.733	±2.114	**Avoidant Actions**	14.300	±1.641
Direct Problem Solving	7.533	±2.086	**Repression**	14.003	±2.130
Seeking Understanding	7.557	±1.901	**Wishful Thinking**	13.993	±2.108
Positive Cognitive Restructuring	26.593	±4.940			
Positivity	8.403	±2.010	**Support for Actions**	8.923	±2.306
Control	8.300	±2.257	**Support for Feeling**	7.563	±2.017
Optimism	9.890	±2.324			
Distraction Strategies			**Support Seeking Strategies**		
Item	**Mean**	**SD**	**Item**	**Mean**	**SD**
Distracting Actions	13.390	±1.786	**Support for Actions**	8.923	±2.306
Physical Release of Actions	8.743	±2.218	**Support for Feeling**	7.563	±2.017

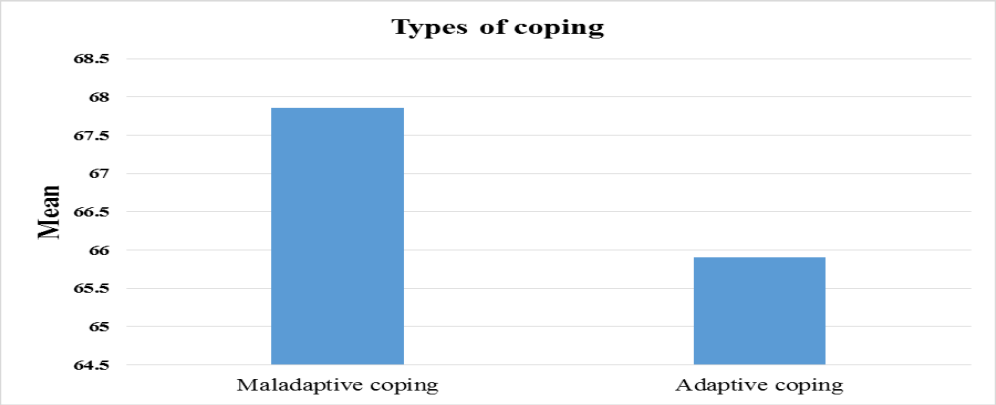

Fig (4): shows Descriptive statistics for two main domains of coping strategies

Table (3) shows the variation of total coping strategies based on sociodemographic and clinical characteristics of studied thalassemic children.

Item	Mean	SD	Significance test	P
Age				
8 – less than 12	141.67	±16.40		
12 – less than 15	136.84	±14.91	χ^2 =57.300	0.000*
15 – 18	126.02	±11.05		
Gender				
Male	132.87	±18.55	**Z** =0.496	0.620**
Female	134.25	±13.40		
Educational level				
Not entered school	143.39	±16.92		
Primary	139.59	±15.78	χ^2 = 46.470	0.000*
Preparatory	133.01	±14.98		
Secondary	125.55	±11.19		
Child order				
First	133.25	±14.81		
Second	134.82	±16.79	χ^2 = 3.098	0.377**
Third	140.00	±18.63		
Other	126.50	±12.15		

Onset of disease				
Birth - < one year	132.99	±15.60		
One year - < two years	136.09	±14.46	$\chi^2 = 2.296$	0.317**
Two years to more	136.58	±15.07		
Frequency of blood transfusion per month				
Once monthly	135.48	±16.26	**Z** = 0.774	0.439**
Twice monthly	133.44	±15.22		
Duration of illness				
From 5 years to less than 10 years	138.77	±16.54		
From 10 years to less than 15 years	138.13	±15.57	$\chi^2 = 48.087$	0.000*
From 15 to more	125.95	±10.96		
Suffering from Diabetes mellitus				
Yes	132.94	±14.27	**Z** = 0.527	0.598**
No	133.99	±15.69		
Suffering from Heart diseases (cardiomegaly)				
Yes	133.70	±14.93	**Z** = 0.209	0.834**
No	133.80	±15.67		
Suffering from Bone fractures or osteoporosis				
Yes	132.62	±18.73	**Z** = 0.772	0.440**
No	133.85	±15.14		

Z: - for Mann-Whitney test χ^2**:-** for Kruskal-Wallis test

* P significant at P < 0.05 ** P not significant at P > 0.05

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