Coping Strategies of Mothers Having Primary School Students with Down Syndrome

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Abstract

Background: Down syndrome is a chromosomal disorder resulting in an additional full or partial copy of chromosome 21. The result in varying levels of impairment, from mild to moderate physical and cognitive developmental disabilities and specific physical characteristics and health problem. **Aim:** The study aimed to assess coping strategies of mothers having primary school students with down syndrome. **Research Design:** A descriptive research design was utilized to conduct this study. **Setting:** This study was conducted at special needs school (ALtarbih ELfikria) at Benha City. **Sample:** A convenience sample was used in this study for all available mothers having primary school students with down syndrome and their age from 6 to 12 years old . **Tools**: Three tools were used. **Tool I:** An structured interviewing questionnaire, which consisted of five parts. **First Part**: **A)** Socio-demographic characteristics of the studied mothers. **B)** Personal characteristics of the primary school students with Down syndrome. **Second part:** Past medical history of primary school students with down syndrome. **Third part**: Assess health problems regarding down syndrome primary school students. **Fourth part**: Mothers knowledge regarding down syndrome primary school student. **Five part**: Reported practices regarding care of primary school students with down syndrome. **Tool II:** Coping Orientation to Problem Experienced (COPE). **Tool III:** An observational checklist was used in this study to assess the school environment. **Results:** 43.8% of the studied mothers aged 40<50 years,56.3 % of them married and 33.8 % of them had university education. 50.0% of the studied mothers had poor level of total knowledge, 32.5 % of them had average level of total knowledge about down syndrome and 17.5 % of them had good level of total knowledge about down syndrome.47.5 % of the studied mothers had satisfactory level of their total reported practices level, and 52.5 % of them had unsatisfactory level of their total reported practices. **Conclusion**: There was a positive correlation between the studied mothers total score of knowledge, total score of reported practices and their total score of coping strategies level. **Recommendations:** Preform health education program for mothers having primary school students with down syndrome to improve their knowledge and practices toward prevention of common health problems.

Keywords: Coping Strategies, Mothers, Primary School Students, Down syndrome.

Introduction

Primary school students is the initial stage start from 6-12 years of general secondary education. Primary school students education the period of the first education of primary school students in grades 1-4, the beginning of spiritual development and study begins at the age of 6-7 years .Primary school students with Down Syndrome (DS) need a brief explanation of such concepts as: primary education, primary class, integration,

integrative education, communication communicativeness, communicative culture, speech culture, culture of communication, communicative formation **(Baxriyevna & Ilxomovna, 2023).**

Down syndrome is the most common chromosomal malformation due to an extra chromosome number 21, is a genetic disorder caused by the presence of all or part of a third copy of chromosome 21. It is usually associated with physical growth delays, mild to moderate intellectual disability, and characteristic facial features **(Mahmoud et al., 2022).**

The prevalence of DS is in the world estimated incidence is 1 per 1000 live births. Annually, 3000 to 5000 primary school students across the world with DS. Primary school students with DS exhibit persistent intellectual, developmental, and health issues that require medical and rehabilitation services, both of which can impact family systems **(Gashmardv et al., 2020).**

The health problems of DS students include mental retardation, several dimorphic features and delayed psychomotor development. In addition primary school students with down syndrome are at higher risk for congenital heart defect and vision issues that could be detected in almost half of students with DS. Hearing loss may be detected in up to three-quarters of students with down syndrome. Hearing loss is often related to anatomical ear disorders **(Hegazy& Baraka, 2021).**

Coping strategies can be adaptive (i.e., leading to less distress) or maladaptive (i.e., leading to more distress) and can be executed behaviorally, such as seeking emotional support, or cognitively, such as attaching positive thoughts to a stressful situation. Coping strategies has various functions for mothers, including: increasing the motivation of mothers to recover from stress, preparing mothers to face every possibility and adapting to bad situations, a positive self-image, maintaining emotional stability, and making mothers able survive and build good relationships with the people around them **(Sood, 2020)**.

Mothers of primary school students with DS are having plenty of problems in life in physical, psychological and social compared to the mothers of normal primary school students. Mothers of primary school students with intellectual and developmental disabilities as DS are facing lots of negative emotions like stress, anxiety, depression and they also have more fear about future and students future which will have adverse effect on the wellbeing due to inability to cope with this situation. In spite of that some parents accept the reality and tend to lead a positive life developing coping strategies and self-esteem **(Mohammed et al., 2021).**

Community Health Nurses (CHN) are essential in providing mothers centered care to primary school students with DS, focuses on providing support , education to the primary school students and mothers, promoting growth and development, preventing complications and problems and mothers need support and education continuously. Some mothers may see it as a lifelong tragedy to have primary school students with DS, while others may see it as a healthy growing experience **(Alhaddad et al., 2018)**.

The CHN should assess how this experience is described and handled by the mothers and should base the care plan on the values, beliefs, abilities and resources of each individual family. support, good communication, information and proper care help mothers of primary school students with DS to lead full and productive lives and positively adapt to students diagnosis need up to date detailed information concerning

students condition and treatments and caring facilities. Prompt management of DS health problems and teaching care givers the suitable care practices for the child, regular follow up and compliance with treatment are important elements in decreasing disability effect and improving family life **(Choi & Van Riper, 2021).**

Aim of the study:

This study aimed to assess coping strategies of mothers having primary school students with down syndrome.

Research questions:

1. What are the health problems of primary school students with down syndrome?
2. What are the level mothers knowledge regarding primary school students with down syndrome?
3. What are the level coping strategies of mothers regarding primary school students with down syndrome?
4. What are the reported practice of mothers regarding primary school students with down syndrome?
5. Is there correlations between mothers knowledge, reported practice and coping strategies regarding primary school students with down syndrome?

Subjects and method:

Research design:

A descriptive research design was utilized to conduct this study.

Setting:

This study was conducted in special needs school (ALtarbih ELfikria) at Benha City.

Sampling:

A convenience sample was used in this study for all available mothers primary school student have been diagnosed with down syndrome and their age from 6 to 12 years old (total number 80).

Tools of data collection: Three tools were used for data collection:

Tool I: A structured interviewing questionnaire: which consists of five parts:

Part 1: It was concerned with socio-demographic characteristics of studied sample. This part included two items: **A)** A-Socio-demographic characteristics of the mothers included seven closed ended questions related to; age, marital status, educational level, work nature, residence, type of family and monthly income. **B)** Personal characteristics of the primary school students with down syndrome included four closed ended questions related to; gender, age, students ranking and educational class.

Part 2: It was concerned with past medical history of primary school students with down syndrome included three closed ended questions about; The students problems during labor, causes of hospitalization and frequency of hospitalization.

Part 3: It was concerned with health problems regarding primary school students with down syndrome included seven closed ended questions about ear, nose and throat problems, circulatory system in the blood vessels, digestive system, respiratory system, nervous system, motor system and skin problems.

Part 4: It was concerned with mothers knowledge regarding down syndrome included seventeen closed ended questions about meaning, causes, types, high risk factors, face and features manifestations, physical manifestation, mental manifestation, congenital anomalies, diseases associated with down syndrome, diagnosis during pregnancy, diagnosis after labor, treatment, ways which school deals with cases of down syndrome, effective teaching methods, ways to integrate education ways for mother to cope with primary school students with down syndrome and source of information about DS.

The scoring systems for mothers knowledge was calculated as follows: (2) score for a complete and correct answer, while (1) score for a correct and incomplete answer, and (0) for don't know for each question of knowledge. The score of items was summed-up and the total divided by the number of the items giving a mean score for the part. These scores were converted into a

present score. The total scores of knowledge=32points. The total score was considered good when score of total knowledge ≥ 75% (≥ 24 points), while considered average if it equal 50- < 75% (16<24 points) and considered poor when the total score was < 50 % (< 16 points) and source of information about DS not included scoring system.

Part 5: It was concerned with mothers reported practices primary school students with down syndrome through asking question: which included six items: Personal hygiene**,** healthy nutrition, follow-up, communication skills, skills development educational development.

Scoring system: Each step of reported practices of mothers has two level : Done or not done: these were respectively 1, 0. The scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a present . The total practices score = (30 points). The total practices scores were considered satisfactory if the score of the total practices ≥ 80% (≥24 points) and considered unsatisfactory if it < 80% (< 24 points).

Tool II: Coping strategies of mothers, Coping Orientation to Problem Experienced (COPE). The COPE inventory was created by **(Carver el al., 1989)**. It's a multi-dimensional inventory developed to assess the different coping strategies mothers with down syndrome: which included 10 items: Coping skills for adopt situation, solve problems, daily living activity, critical thinking, accepting the problem, problem solving, feeling expression, situational deny, behavior modification to cope with problem, mentally coping.

Scoring system: The scoring systems for mothers coping strategies was calculated as follows: (0) score for a never done at all , while (1) score for done a little, (2) for done average and(3)for done a lot. The score of items was summed-up and the total divided by the number of the items giving a mean score for the part. These scores were converted into a present score. The total scores of coping strategies =150 points. The total score was considered high when score of total coping strategies ≥ 75% (≥113 points), while considered moderate if it 50- < 75% (75<113 points) and considered low when the total score was < 50 % (< 75 points).

Tool III: An observational checklist was used in this study to assess the school environment which adapted by the united states environment protection agency **(Abd Elazem,2018)**.It was comprises two main parts The two parts consisted of five items covering school environment about: **General characteristics include**: Located in a convenient location away from public roads to prevent accidents, located far from workshops and factories, located in a place away from the noise, well lighted, well ventilated, characterized by high walls, especially high floors, have sufficient number of classes and a fair distribution of students, have a health clinic for emergency cases such as wounds and others, have emergency exit known to students and staff to evacuate in emergency situations and have usable fire extinguishers.

- **Class room sanitation include:** Class room are well ventilated there are sufficient protection means on the windows, such as iron classrooms are spacious for allowing children to move freely, school furniture is well distributed, allowing flexibility of movement, covering sockets and electrical outlets to prevent children from accessing them and keep the classroom floor dry and clean to prevent slipping**.**

- **Bath room sanitation include:** Have a sufficient number of toilets**,** maintain clean

bathrooms at all times, floors are dry and slip-free, Adequate number of usable water taps, the presence of materials used in hygiene such as soap and the bathrooms are devoid of plugs and electrical outlets

- **Playground sanitation include:** The playground is spacious, allowing students to easily move around The presence of high fences on the outskirts of the playground, parents and employees are not allowed to enter the playground with cars, keep the playground dry, arrange the presence of children in the playground according to different rows to prevent overcrowding and regular maintenance occurs for the games on the playground such as swings and slides.

- **Cleanliness include:** The school is characterized by constant and continuous cleanliness, workers are constantly cleaning the playground and classrooms, there are enough waste containers furniture is constantly cleaned of dust, constantly have hand sanitizing materials such as alcohol, there is a potable water source, Water tanks are constantly washed and disinfected and the school is free of animals and rodents.

Scoring system: The scoring system for studied school environment safety and sanitation was calculated as follows (1)score given when environment safety and sanitation was present,(0) score given when environment safety and sanitation was not present.

Validity of the tools:

The tools validity was done by three of Faculty's Staff Nursing -Benha University experts from the Community Health Nursing Specialties who reviewed the tools for clarity, relevance, comprehensiveness, applicability and give their opinion.

Reliability of the tools:

The reliability of the tool was applied by the researcher for testing the internal consistency of the tools by administration of the same tools to the same subjects under similar condition on one or more occasion. Answers from repeated testing were compared (test-re-test reliability). The reliability was done by Cornbrash's Alpha coefficient test which revealed that which the two tools consisted of relatively homogeneous items as indicated by the moderate to high reliability of each tool. The internal consistency of knowledge was 0.957 practice was 0.760 and coping strategies 0.702.

Pilot study :

The pilot study was carried out on (8) of mothers who represented 10 % of the total sample size (80). The pilot study was aimed to assess the tool clarity, applicability and time needed to fill each sheet. No modifications were done, so the pilot study sample was included in the total sample.

Ethical consideration:

All ethical issues were assured; to the mothers having primary school students with down syndrome prior to the study. Oral consent has been obtained from each mother before conducting the interview and given them a brief orientation of the purpose of the study. They were also reassured that all information gathered would be kept confidentially and used only for the purpose of the study. Mothers had right to withdraw from the study at any time without giving any reasons**.**

Data collection procedures:

Preparatory phase:

An extensive review of the current and past available national and international references related to the research title was done, using a journal, textbooks and internet search was done. This was necessary for the researcher to be acquainted with and oriented about aspects of the research problem as well as to assist in the development of data

collection tools. This took time for preparing the tools about 3 months.

Field work:

The study was conducted at a period of three months, which started from the beginning of April 2022 to the end of June 2022. The researcher visited ALtarbih ELfikria school two days\week on (Monday, Tuesday) respectively. ALtarbih ELfikria school was visited by the researchers two days per week from 10am to 2pm to collect data, the average number of mothers was between 3-5 mothers /day depending on their responses to the interviewers, each interview mothers about 30-45 minutes to fill the depending upon their understanding and responses .

Statistical analysis:

All data collected were organized, tabulated and analyzed by using Statistical Package for Social Science (SPSS version 21). Which was used frequencies and percentages for quilt descriptive data, and chi-square co-efficient x2 was used for relation tests, and mean and standard deviation was used for quantitative data .

Statistical significance was considered:

The observation difference and were considered associated as the following (p-value)

- Highly significant (H S) $P \leq 0.001$.
- Significant (S) $P \leq 0.05$. .
- Non- significant (N S) $P > 0.05$

Results:

Table (1): Shows that 43.8% of the studied mothers their aged 40<50 years with mean age 36.78±6.84 ,56.3 % of them were marrieds and 33.8 % of them had higher education. Also 86.3% of the studied mothers didn't work, and 46.2 % of them had enough family income.

Table (2): Shows that 72.5 % of the studied primary school students their age was ranged between 6<8 years with, mean age 7.24±3.15, 55.0 % of them were girls, 46.3 % of them were the first child in the family and 38.7 % of them were at the first educational class.

Table (3): Show that 47.5 % of the studied students had hearing impairment, while 46.3 % of them had congenital heart defects, while 52.5 % of them had gastroenteritis, while 63.8 % of them had Shortness of breath, especially during sleep, while 73.8 % of them had Difficulty perceiving and understanding, while 40.0 % of them didn't have any motor system problems and 47.5% of them had Allergy.

Figure (1): Shows that 50.0% of the studied mothers had poor level of total knowledge while 32.5 % of them had average level of total knowledge regarding down syndrome and 17.5 % of them had good level of total knowledge regarding down syndrome.

Figure (2): Shows that 47.5 % of the studied mothers had satisfactory level of their total reported practices level, and 52.5 % of them had unsatisfactory level of their total reported practices.

Figure (3): Illustrates that 17.5 % of the studied had high level of total coping strategies while 31.3 % of them had moderate level of total coping strategies, and 51.2 % of them had low level of total coping strategies.

Table (4): Shows that there were a statistically significant positive correlation between the studied mothers total level of knowledge, total level of reported practices and their total level of coping strategies level. ($p=\leq 0.05$*).

Table (1): Frequency distribution of the studied mothers regarding their socio demographic characteristics (n=80).

Socio Demographic Characteristics	No.	%
Age/years		
20 <30	18	22.5
30< 40	27	33.7
40 <50	35	43.8
Min –Max	26-48	
Mean ±SD	36.78±6.84	
Marital status		
Married	45	56.3
Divorced	15	18.7
Widow	20	25.0
Educational level		
Don't read or write	18	22.5
primary education	14	17.5
secondary education	21	26.2
University education	27	33.8
Work nature		
Work	11	13.7
Not work	69	86.3
Monthly income		
Enough	37	46.2
Not enough	13	16.3
Enough saving	30	37.5

Table (2): Frequency distribution of the studied primary school students regarding their personal characteristics (n=80).

Personal Characteristics	No.	%
Age/ years		
6 <8	**58**	**72.5**
8 <10	**14**	**17.5**
10 ≤12	**8**	**10.0**
Min –Max	**6-12**	
Mean ±SD	**7.24±3.15**	
Gender		
Boy	**36**	**45.0**
Girl	**44**	**55.0**
Child ranking		
The first	**37**	**46.3**
The second	**28**	**35.0**
The third or more	**15**	**18.7**
Educational class		
First	**31**	**38.7**
Second	**21**	**26.2**
Third	**17**	**21.3**
Fourth	**9**	**11.3**
Fifth	**2**	**2.5**

Table (3) Frequency distribution of the studied primary school students regarding their health problems (n=80).

Health Problems	**No.**	**%**
Ear, nose and throat problems		
Hearing impairment	38	**47.5**
ear infection	24	30.0
Weakness in vision	31	38.8
Difficulty swallowing	28	35.0
Slurred speech	16	20.0
Circulatory system in the blood vessels		
Heart problems such as congenital heart disease	18	22.5
congenital heart defects	37	**46.3**
Not present	27	33.8
Digestive system		
Gastroenteritis	42	**52.5**
Not present	38	47.5
Respiratory system		
Shortness of breath, especially during sleep	51	**63.8**
Pulmonary diseases	27	33.8
Not present	3	3.8
Nervous system		
learning difficulties	45	56.3
Difficulty perceiving and understanding	59	**73.8**
Difficulty speaking	38	47.5
Not present	18	22.5
Motor system		
Difficulty moving	23	28.8
Spinal problems	25	31.3
Not present	32	**40.0**
Skin problems		
Eczema	22	27.5
Psoriasis	5	6.3
Allergy	38	**47.5**
Not present	21	26.3

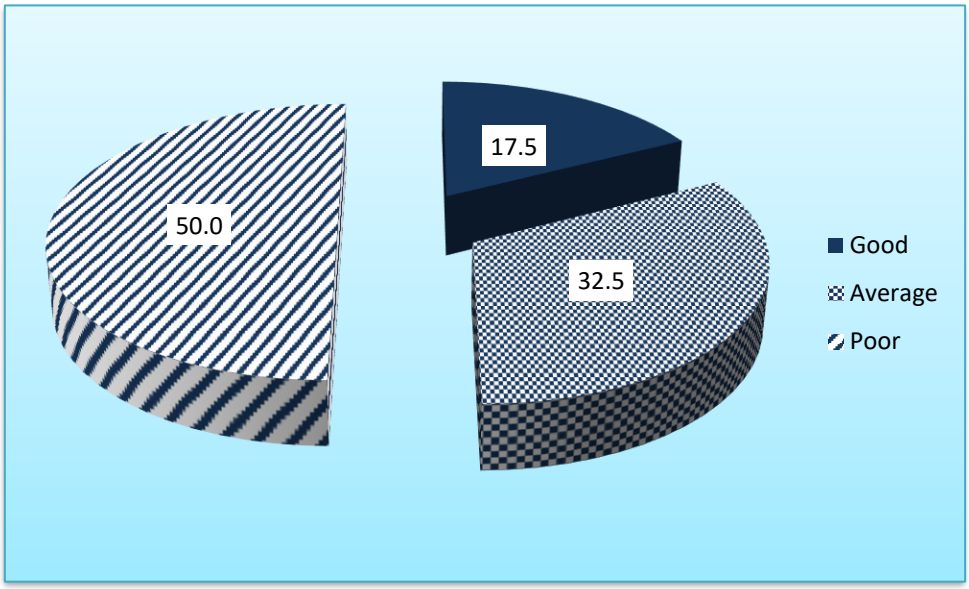

Figure (1): Percentage distribution of the studied mothers total knowledge level regarding down syndrome (n=80).

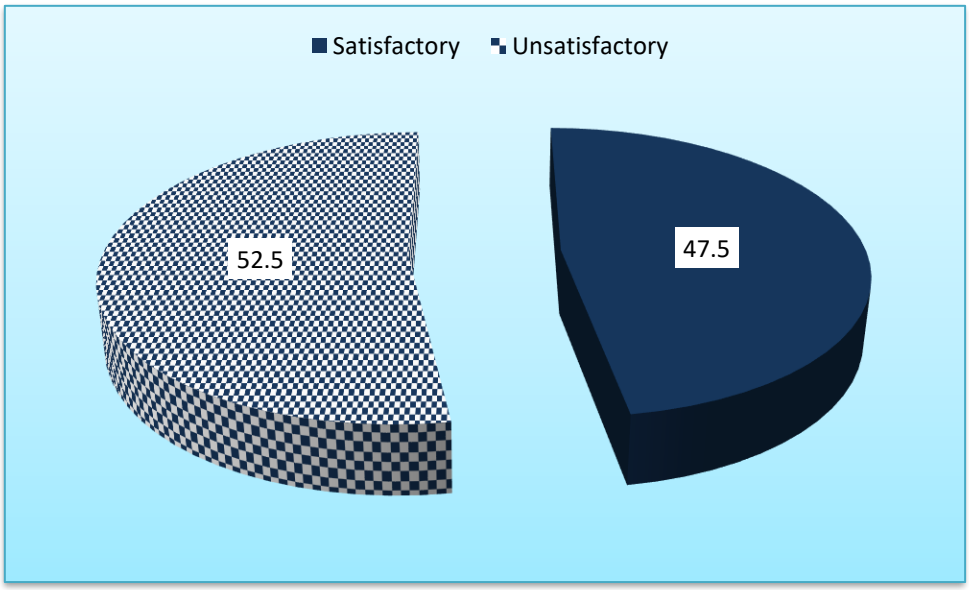

Figure (2): Percentage distribution of the studied mothers total practices level regarding down syndrome (n=80).

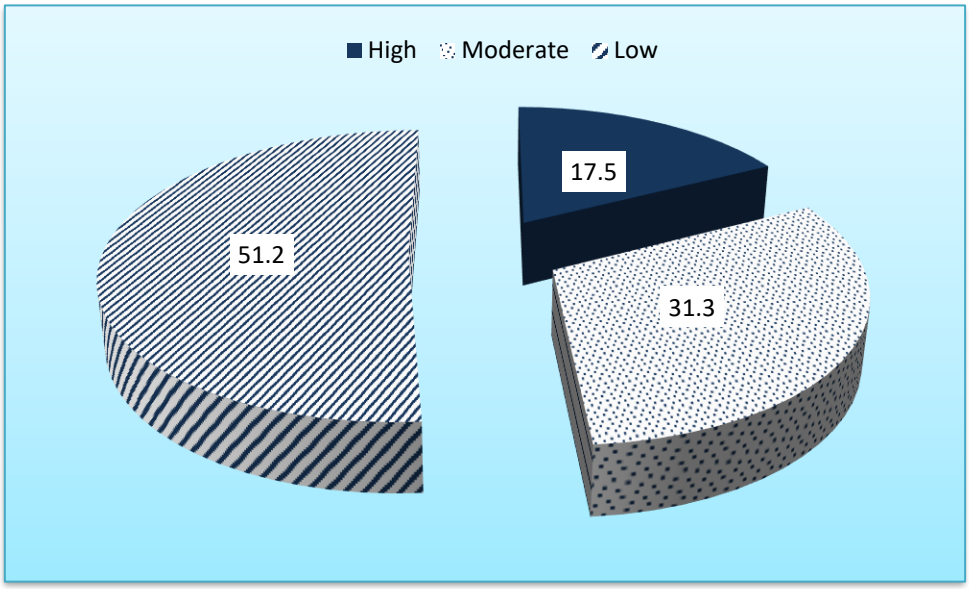

Figure (3): Percentage distribution of the studied mothers regarding their total coping strategies level (n=80)

Table (4): Correlations matrix between total knowledge, total reported practices and total coping strategies studied mothers(n=80).

		Total knowledge level	Total practices level	Total coping level
Total knowledge level	R	1	801	518
	P-value		042*	027*
	N	80	80	80
Total practices level	R	801	1	754
	P-value	042*		023*
	N	80	80	80
Total coping strategies level	R	518	754	1
	P-value	027*	023*	
	N	80	80	80

*** p≤0.05 (Statistically Significance)**

Discussion:

According to socio-demographic characteristics of studied mothers. The results of the present study showed that less than half of the studied mothers their aged 40<50 years with mean age 36.78±6.84, more than half of them were, the majority of the studied mothers didn't work, and less than half of them had enough family income. This might be due to that the study was conducted on primary school student's mothers and this is the average age of them.

Regarding studied mothers education. This study revealed that more than one third of mothers had university education, study was supported by **Munny, (2019)** who studied "Quality of life among mothers with down syndrome children" in Dhaka (n=31) and found that many of the participant (56.8%) had completed high school and above more rather than others. There were about (38.7%) participants is secondary school pass and the minority of participants (6.5%) were of illiterate.

Concerning the personal characteristics of studied primary school students the table showed that, nearly three quarters of the studied primary school students their age was ranged between 6<8 years with, mean age 7.24±3.15, more than half of them were girls, less than half of them were the first child in the family and more than one third of them were at the first educational class. The results of this study supported by **Mahmoud et al., (2022)** who studied mothers Coping among Primary School Child with Down Syndrome in Egypt (n=95) revealed that, more than half of children with DS were male, mean of students age with DS was 7.84±3.2, and less than one third of students were the first child in their families. The results of this study was disagreed with **Hegazy& Baraka, (2021)** who studied "Effectiveness of Promoting Mothers' Caring Practices Regarding Down Syndrome Children on the Family Coping" in Egypt (n=31) who found that, the age of children was ranged from 6-9 years with the mean of 3.128±1.982. More than half of them (55 %) were males and 41.67 % were the second child in the family.

The present study illustrated that less than half of the studied primary school students with DS complain from hearing impairment while more than three fifths of the complain from shortness of breath and less than three quarters complain from difficulty of perceiving and understanding, results study supportive by **Hegazy& Baraka, (2021)**. Who reported that half of them had visual anomalies and exposed to different types of accidents. Less than half of them had cardiac anomalies, chewing and swallowing difficulties followed by incontinence one quarters of them had hearing weakness and skin dryness. This might be due to explained in the light of neuroanatomical and physiological changes that cause muscle hypotonic, alterations in primitive reflexes, joint hypermobility.

The results of the this study illustrated that almost half of the studied mothers had poor level of total knowledge about down syndrome while less than one third of them had average level of total knowledge regarding down syndrome and the minority of them had good level of total knowledge. This result study was congruent with **Mahmoud et al., (2022)**.Who reported that more than three quarters of studied mothers had low knowledge before educational program. This might be due to their low educational level, poor health facilities in rural areas, decrease health teaching programs that were provided to families and social stigma.

This present study illustrated that, less than half of the studied mothers had satisfactory level of their total reported practices level,

and more than half of them had unsatisfactory level of their total reported practices (figure2).This result disagreed with **Abo El-Enen, et al., (2022)** who reported that the total mean percent score of mothers practices were (56.7%) for satisfactory compared to more than one third for dissatisfactory (39.2%).This might be due to some obstacles, such as no financial or social support .

Concerning total coping strategies level, the results of the present study revealed that the minority of the studied mothers had high level of total coping strategies while less than one third of them had moderate level of total coping strategies, and more than half of them had low level of total coping strategies. This result of this study agreed with **Mahmoud et al., (2022)**. who showed that, more than one quarter of mothers were always able to cope with their children, nearly one third sometimes able to cope, and nearly half of mothers never able to cope. In addition, the study was supported by **Gashmardv et al., (2020)** who studied "Coping strategies adopted by Iranian families of children with Down syndrome" in Iranian (n=45) and revealed that the majority of studied mothers had low level of coping with children health condition and disabilities. Conversely the study was disagreed with **Hegazy & Baraka, (2021)** who studied "Effectiveness of Promoting Mothers' Caring Practices Regarding Their Down Syndrome Children on the Family Coping" in Egypt (n=31) and found that, nearly two thirds of mothers (61.67%) had fair coping and adaptation before educational program while, all of them (100%) had good adaptation immediately and after one month of educational program intervention. This might be due to lack of education and training on coping strategies and that, medical and nursing teams health care providers focus mainly on illness and treatment rather than family-centered care.

Regarding statistical correlation between the correlation between total knowledge, total reported practices and total coping strategies of studied mothers, this study was supported by **Alosaimi et al., (2020)** who reported that there was statistical significant positive correlation between studied mothers knowledge, practice, attitude and adaptation positively. This might be due to majority of mothers had good knowledge, had good practice and coping and toward caring for their students with DS.

Conclusion:

Less than half of studied primary school students with DS complain from hearing impairment, while more than there fifths of the primary school students with DS from shortness of breath and less than three quarters of the of the primary school students with DS complain from difficulty of perceiving and understanding. Approximately of studied mothers had poor level of total knowledge regarding down syndrome, less than fifth of studied mothers had good level of total knowledge regarding down syndrome. More than half of them had an unsatisfactory level of their total reported practices, studied mothers had low level of total coping strategies. There was positive correlation between the studied mothers total score of knowledge, total score of reported practices and their total score of coping strategies level.

Recommendations:

1. Preform health education program for mothers having primary school students with down syndrome to improve their knowledge and practices toward prevention of common health problems.

2. Mothers counseling to improve psychological wellbeing and necessity of training about effective coping strategies.

3. Further study social awareness of the challenges encountered by the down syndrome students and their families to promote the social support for them and limit the bullying practiced against the students and their families

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استراتيجيات المواجهة لدي الامهات اللائي لديهن طلاب المرحلة الابتدائية بمتلازمه داون

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متلازمة داون هي اضطراب كروموسومي يؤدي إلى نسخة إضافية كاملة أو جزئية من الكروموسوم 21.لذلك هدفت الدراسة إلى تقييم استراتيجيات التكيف لدى الأمهات اللاتي لديهن طلاب في المرحلة الابتدائية يعانون من متلازمة داون. تم استخدام تصميم البحث الوصفي لإجراء هذه الدراسة. أجريت هذه الدراسة بمدرسة ذوي الاحتياجات الخاصة (التربية الفكرية) بمدينة بنها. تم استخدام عينة مناسبه وملائمه في هذه الدراسة لجميع الأمهات اللائي حضرن مع طلاب المرحلة الابتدائية بمتلازمة داون وأعمارهن من 6 إلى 12 سنة (العدد الإجمالي 80). وقد تبين إحصائيا ان ما يقرب من خمس الأمهات المدروسات لديهن مستوى ضعيف من المعرفة الإجمالية فيما يتعلق بمتلازمة داون وأقل من خمس الأمهات المدروسات لديهن مستوى جيد من المعلومات الإجمالية فيما يتعلق بمتلازمة داون. خمسي الأمهات المدروسات لديهن مستوى مرض من إجمالي الممارسات المبلغ عنها وأكثر من النصف وكان منهم مستوى غير مرض من مجموع ممارساتهم المبلغ عنها. واوصت الدراسة بتطوير برنامج التثقيف الصحي للأمهات اللاتي لديهن طلاب في المدارس الابتدائية يعانون من متلازمة داون لتحسين معلوماتهن وممارساتهن نحو الوقاية من المشاكل الصحية الشائعة.