Needs Assessment of Children with Cerebral Palsy Undergoing Hyperbaric Oxygen Therapy

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Abstract

Background: The study aimed to assess needs of children with cerebral palsy undergoing hyperbaric oxygen therapy. **Research Design:** A descriptive design was used to conduct this study. **Settings:** This study will be conducted at Hyperbaric Oxygen Therapy Unit at Nasser Institute for Research and Treatment. **Subject:** A convenient sample composed of 110 children fulfilling the inclusion criteria of the study and their accompanying parents. **Tools:** data collection involved an interviewing questionnaire adapted from (Narayanan et al, 2006). **Results:** this study showed that the needs of children were physical, psychological, social. Also the majority of studied children total dependent on their parents to fulfilling their needs. **Conclusion:** the needs of children include: crutches to help moving in hyperbaric chamber, ways to facilitate communication, instructed about middle ear equalization, reassurance, family support during period of treatment. **Recommendation**: Further researches should be conducted to develop strategy to overcome unfulfilled health needs of children with cerebral palsy undergoing hyperbaric oxygen therapy.

Key words: Cerebral Palsy, Hyperbaric Oxygen Therap

Introduction

Cerebral Palsy (CP) is a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of CP are often accompanied by disturbances of sensation, perception, cognition, communication and behavior, by epilepsy, and by secondary musculoskeletal problem ***(Gill, 2017).***

Cerebral palsy is the most common cause of motor disability in childhood with a broad clinical spectrum. It is affect about 2 to 3 per 1000 live births in high resource settings. Over the past few decades, there have been major changes and advances in obstetric and neonatal care, with a decline in neonatal mortality however the prevalence of CP has been shown to be constant over time by several studies , the at-risk population and subtypes observed appear to have changed ***(Kisanga et al., 2012).***

Hyperbaric oxygen Therapy (HBOT) has been described as "a therapy in search of disease", in the past it did not have much scientific support but it had evolved a lot of extensive use in the field of medicine. It did have a rich and diverse history, both in the United States (US) and around the world from its early uses in war to the building of bridges, and through many introductions to innovations in the medical community. Numerous areas of patient care use HBOT from wound care to military applications, in both single monoplace chambers and multi patient settings in larger chambers ***(Jones and Cooper, 2017).***

Hyperbaric oxygen therapy is use of oxygen at high pressure, for treatment of various medical conditions. Exposure of children to hyperbaric pressures for various therapeutic purposes had been introduced in medical practice for many decades. It has been recommended and used in a wide variety of conditions, often without adequate scientific validation of efficacy or safety ***(Singh et al., 2014).***

There is a fabulously important role for the hyperbaric nurses to assist with care

coordination for patient who receive HBOT so hyperbaric nursing should have a heightened degree of patient assessment skills, advanced knowledge about specific disease processes, and technical abilities not elsewhere seen in nursing environments ***(Daniels, 2016).***

Hyperbaric oxygen nurses work with oxygen therapy that helps patients recover from medical conditions such as cerebral palsy, carbon monoxide poisoning, diabetic foot ulcers, burns and bone infections. A patient is placed into a hyperbaric oxygen chamber for a painless, high pressure treatment involving immersion in pure oxygen. The goal of hyperbaric nursing is to provide for the safe operation of these chambers and monitor the patients inside, provide cost-effective, quality patient care, according to established standards ***(Walker, 2018).***

Hyperbaric nurses have specific role in operate the hyperbaric chamber when dealing with children. Through monitor the child and practical implementation of child care during hyperbaric treatment. Additionally, staff nurses are responsible for the child both before and after treatment ***(Kraft, 2017).***

Assessment of children health needs is not simply process of listening to parents of child but it's a systematic process of identifying, determining and addressing unmet health care needs and making changes to meet these unmet needs, thus leading to improvement in performance, accomplishment of desired result and improve a product or service a child receives ***(Collins, 2015).***

Needs assessment can help improve the quality of care provided for CP children treated with HBOT so the pediatric nurses have an important role not only educating the parents, but also in identifying true needs of child to be able to manage child when bring to treatment session. It's important for pediatric nurses to understand the physic and physiology of HBOT for safe treatment and should also have affair knowledge of condition treated by HBOT, which later can help their to address and determining true needs of those children ***(Kot, 2015).***

Significance of the study

Cerebral Palsy is a serious health problem that threatens the children and their families during their life and interferes with activities that normally achieved in infancy, childhood and adolescent. Also CP child need along life support and receive multiform of treatment as treatment with HBOT in which it's a relatively modern treatment, proved to alleviate CP effect on brain tissue.

Needs assessment of children is the corner stone of caring these tragic disorder of CP, this assessment should include identification of poor muscles tone, personal care, transferring, positioning, mobility, comfort, emotion, communication, social interaction and quality of life. Good assessment of the child needs help in managing child with CP and provide early recognition of child problems, promote self-care, empowerment and intervention to maximize the child abilities.

Aim of the study

This study aimed to assess needs of children with cerebral palsy undergoing hyperbaric oxygen therapy.

Research Questions

What are the needs of children with CP undergoing hyperbaric oxygen therapy?

Subject And Method

This study was aimed to assess needs of children with cerebral palsy undergoing hyperbaric oxygen therapy

The subject and methods of the current study was discussed under the following four (4) designs:

I. Technical Design
II. Operational Design
III. Administrative Design
IV. Statistical Design

I. Research Design

A descriptive design was used to conduct this study.

Study Setting

The study was carried out at conducted at Hyperbaric Oxygen Therapy Unit at Nasser Institute for Research and Treatment.

Subject

A convenient sample composed of 110 children fulfilling the inclusion criteria of the study and their accompanying parents at the previously mentioned setting.

Tools of Data Collection

Data collected through used the following tools:

I: An interviewing questionnaire: It was designed by researcher and was written in a simple Arabic language to suit level of understanding of parents after reviewing the relevant literature. This tool will consist of the following five parts:

Part I: Characteristics of the studied children (Age, gender, birth order, level of education).

Part II: Past and present medical history of child disease, to assess (Type of CP, degree of disability, causes of CP, mental status, any complication).

Part III: Socio-demographic characteristics of the family included (Number of siblings, income, residence, and any kind of disability among family member, cost of treatment, any financial support).

Part IV: Knowledge of parents about HBOT included: meaning, technique of ear equalization, material banned, precautions, noticed change occur to child during HBOT, degree of self –reliance allowed for the child during sessions.

The scoring level was arranged as follow:

- Unsatisfactory < 50%
- Satisfactory ≥ 50%

II: An interviewing questionnaire about needs of children with CP undergoing HBOT: it was adapted from ***Narayanan et al. (2006)*** which assess needs of children with CP by using Caregiver Priorities & Child Health Index of Life with Disabilities (CPCHILD).

Physical domain

Consist of section one (positioning, transferring, mobility), section two (personal care& ADLs) and level of assistance required to accomplish each task from parents. Section three (a child health ability to perform middle ear equalization).

Psychological domain

To assess comfort, emotion and intensity of pain to quantified the magnitude of the discomfort or emotional/ behavioral problem.

Numerical rating pain scale: it was used to determine pain intensity during treatment sessions. The scale ranged from 0-10. According to children's responses, the following classification was adopted: 0 (none), 1-3 (mild), 4-6(moderate) and 7-10 (severe) ***(Krebs et al, 2007 & Jacques, 2011).***

Social domain

To assess communication and social interaction of children.

Scoring system

These scores were summed-up and converted into a percent score as follows:

- < 50% scores **"total dependent"** on caregiver.
- 50% to ≤ 75% scores "**partially dependent"**
- 76 to ≥ 100% scores **"independent"**

II. Operation Design

The operational design for this study consisted of three phases, namely preparatory phase, pilot study, and fieldwork.

Preparatory Phase

This phase included reviewing of literature related to needs of children with cerebral palsy undergoing hyperbaric oxygen therapy. This was served to develop the study tools for data collection. During this phase, the researcher also visited the selected place to get acquainted with the personnel and the study settings. Development of the tools was under supervisors' guidance and experts' opinions were considered.

Pilot Study

Pilot study was carried out on 10% of caregivers and their children with cerebral palsy undergoing hyperbaric oxygen therapy to test the applicability of the constructed tools and the clarity of the included questions related to caregivers care toward their children with cerebral palsy needs undergoing hyperbaric oxygen therapy. The pilot has also served to estimate the time needed for each subject to fill in the questions. According to the results of the pilot, some corrections and omissions of items were performed as needed. The pilot participants were not included in the main studied sample.

Fieldwork

To carry out the study, approvals were obtained from the directors of Hyperbaric Oxygen Therapy Unit at Nasser Institute for Research and

Treatment. A letters were issued to them from the Faculty of Nursing, Ain-Shams University, explaining the aim of the study in order to obtain their permission and cooperation. The researcher was available three days / week. Each caregiver interviewed individually using the previously mentioned study tools.

The researcher first met with the caregivers had children with cerebral palsy in the previously mentioned setting, explained the purpose of the study after introducing herself. The caregivers were assured that information collected would be treated confidentially, and it would be used only for the purpose of the research. Then, individual interviewing was done after obtaining caregivers consent to participate.

III. Administrative Design

Approvals were obtained through on issued letters from the Dean of Faculty of Nursing, Ain Shams University to directors of the previously mentioned settings. The researcher then met the director of Hyperbaric Oxygen Therapy Unit at Nasser Institute for Research and Treatment and explained the purpose and the methods of the data collection.

Ethical Consideration

Verbal approval was obtained from the parents before inclusion in the study; a clear and simple explanation was given according to their level of understanding, physical and mental readiness. They secured that all the gathered data was confidential and used for research purpose only.

IV. Statistical Analysis

Data collected from the studied sample was revised, coded and entered using PC. Computerized data entry and statistical analysis were fulfilled using the statistical package for social sciences (SPSS) version 20.Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test(X^2) was used for comparisons between qualitative variables. Statistical significant was considered at p-value <0.05.

Results

Data were tabulated, analyzed and presented in the following parts:
Part (I): Characteristics of the Studied children .
Part (II): Medical History of the studied children.
Part (III): knowledge of caregiver about hyperbaric oxygen therapy for children with CP.
Part IV: Assessment child s needs during treatment with HBOT.

Part I. Characteristics of the Studied Sample

Table (1): Distribution of the studied children according to their characteristic (no=110)

Items	No	%
Child age in year		
2< 3	29	26.4
3 < 6	44	**40.0**
6< 12	37	33.6
Mean ± SD	**5.24±2.29**	
Gender		
Male	64	**58.2**
Female	46	41.8
Ranking of child		
First	42	**38.2**
Second	23	21.0
Third	25	22.7
Fourth	13	11.8
≥ Fifth	7	6.3

Table (1) shows that, 40.0% of the studied children their age ranging between of 3 < 6 years old with mean 5.24±2.29, 58.2% of them were males, 38.2% of them were arranged as first child in their family

Part II. Medical History of the Studied Children

Table (2): Distribution of the studied children according to their past medical history (no=110)

Past Medical History	No	%
Health problems during childbirth (Neonatal cause)		
Yes	53	**48.2**
No	57	51.8
If yes	**No=53**	**100%**
hypxic ischemic encephalopathy	43	**81.1**
interacranial heamorrhage	8	15.1
Post menengitis	2	3.8
Exposed to diseases during childhood (Postnatal cause)		
Yes	80	**72.7**
No	30	27.3
If yes	**No=80**	**100%**
Head injures	43	**53.8**
Post menengitis	19	23.7
Encephalitis	18	22.5

Table (2) shows that, slightly less than half 48.2% of the studied children had health problems during childbirth, more than three quarters 81.1% of them were suffering from suffocation. In addition to 72.7% of them exposed to a diseases during childhood and 53.8% of the studied children had head injuries.

Figure (1): Percentage of the studied children according to the care received from their family (no=110)

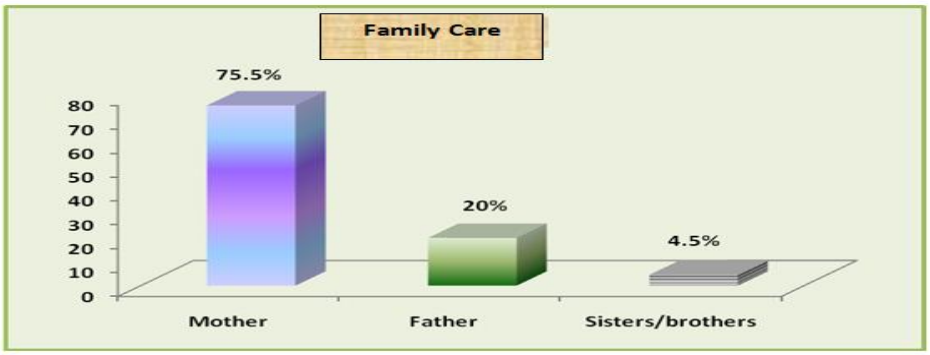
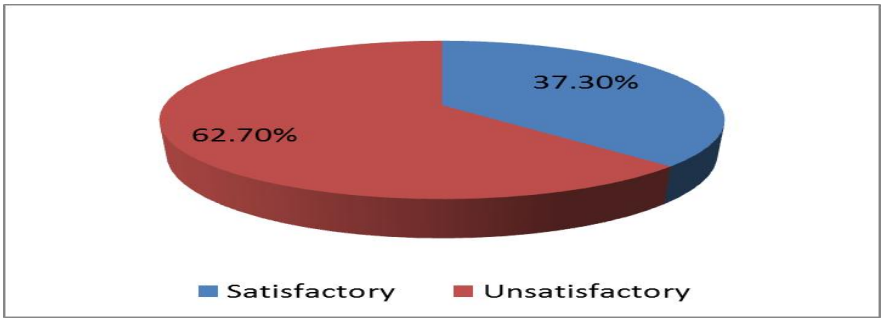


Figure (1) illustrates that the majority 96.4 % of the studied children receiving care through their mother, while 20% & 4.5% received care through their father & sisters/ brothers respectively.

Part (III): Knowledge of Caregiver about Hyperbaric Oxygen Therapy for children with CP

Figure (2): Percentage of the studied parents according to their total knowledge regarding to HBOT (no =110)



This figure shows that, 62.7% of the parents had unsatisfactory knowledge of about hyperbaric oxygen therapy for children with CP.

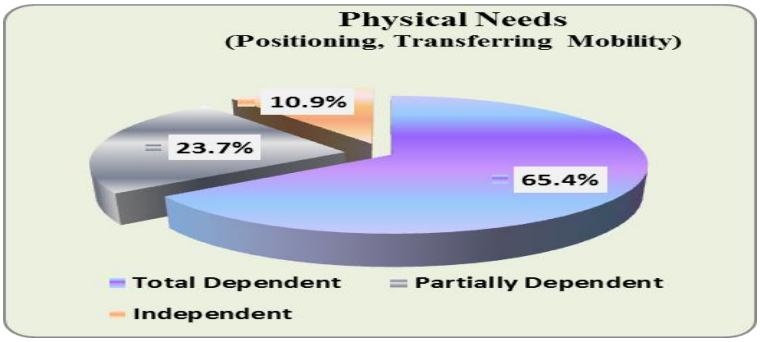
Part V. Assessment Child's Needs during Treatment with HBOT

Table (3): Distribution of the studied sample according their physical needs (Positioning, Transferring Mobility) (no=110)

Items	Not Possible		Very Difficult		Difficult		Slightly Difficult		Slightly Easy		Easy		No Problem at ALL	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
The ability to enter the pressure room	26	23.6	21	19.1	19	17.3	16	14.5	15	13.6	10	9.1	3	**2.7**
Access to the pressure chamber using physical aids (wheel chair, crutches, walkers, compensators)	31	28.2	23	20.9	18	16.4	13	11.8	14	12.7	7	6.4	4	3.6
The ability to sit in the right position during the treatment session	26	23.6	22	20.0	16	14.5	15	13.6	13	11.8	11	10.0	7	6.4
Put the source of oxygen on his nose during the treatment session	38	**34.5**	20	18.2	17	15.5	16	14.5	10	9.1	6	5.5	3	2.7
The ability to move inside the pressure chamber	36	**32.7**	24	21.8	15	13.6	12	10.9	11	10.0	8	7.3	4	3.6
The ability to get out of the pressure chamber after the end of the session	30	27.3	25	22.7	12	10.9	13	11.8	15	13.6	10	9.1	5	4.5
Transferring into/ out wheelchair /chair	26	23.6	23	20.9	19	17.3	14	12.7	13	11.8	9	8.2	6	5.5
Ability to move in open places in any way possible	37	**33.6**	21	19.1	14	12.7	15	13.6	12	10.9	7	6.4	4	3.6
Getting in and out of a motor vehicle (car-van or bus)	32	29.1	28	25.5	20	18.2	19	17.3	6	5.5	3	2.7	2	**1.8**

Table (3) show that, 2.7%, &1.8% of the studied children have the ability to enter the pressure room & getting in and out of a motor vehicle (car- van or bus) without problems respectively, while 34.5%, 32.7% & 33.6% of the studied children not possible able to put the source of oxygen on his nose during the treatment session, move inside the pressure chamber& move in open places in any way possible without assistant of their caregivers respectively.

Figure (3): Distribution of the studied sample according their positioning, transferring and mobility (no=110)



This figure illustrate that, 65.4% of the studied children are total dependent on their caregivers to performing positioning, transferring mobility, while 10.9% of them able to performing positioning, transferring mobility without assistant from their caregivers.

Table (4): Distribution of the studied sample regarding their psychological needs (Comfort & Emotions) (no=110)

Items	Daily		Frequently		Often		Sometimes		Rare		Never	
	No	%	No	%	No	%	No	%	No	%	No	%
Feeling the child pain or discomfort during the treatment session	31	**28.2**	29	26.3	13	11.8	21	19.1	9	8.2	7	6.4
Tinnitus or ear pain	23	20.9	25	22.7	25	22.7	23	20.9	9	8.3	5	**4.5**
The child feeling angry or sad	10	9.1	34	**30.9**	32	29.1	24	21.8	6	5.5	4	3.6
Sudden mood change from laughing to crying or vice versa	30	27.3	28	25.4	20	18.2	13	11.8	13	11.8	6	**5.5**
The difficulty of giving in to sleep, sleep intermittent, feeling tired when wake up	3	2.7	6	5.5	16	14.5	20	18.2	36	32.7	29	26.4
The occurrence of constipation, stomach burning, nausea or vomiting	30	27.3	35	**31.8**	13	11.8	15	13.6	11	10	6	5.5
Lin stool, abdominal pain, increase the number of urination	13	11.8	23	20.9	30	27.3	20	18.2	14	12.7	10	9.1
The child anxious and tense during the treatment session	31	28.2	28	25.4	22	20	19	17.3	6	5.5	4	3.6
Feeling too hot or too cold during session	33	**30**	42	38.2	9	8.2	14	12.7	5	4.5	7	6.4

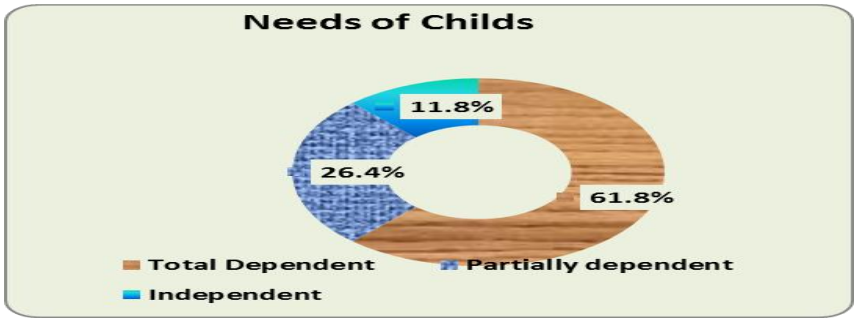
Table (4) show that, 28.2% & 30% of the studied children daily feeling the pain or discomfort during the treatment session & feeling too hot or too cold during session respectively, while almost two third of children 30.9% & 31.8% of them frequently feeling angry or sad & occurrence of constipation, stomach burning, nausea & vomiting respectively.

Table (5): Distribution of the studied sample regarding their social needs (Communication & Social Interaction) (no=110)

child can communicate during treatment sessions	Not Possible		Very Difficult		Difficult		Slightly Difficult		Slightly Easy		Easy		No Problem at ALL	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Can Understood mother	8	7.3	8	7.3	17	15.4	20	18.2	38	**34.5**	9	8.2	10	9.1
Can Understand him	22	20.0	30	27.3	4	3.6	16	14.5	34	**31.0**	2	1.8	2	1.8
Can communicate with the team work	12	10.9	14	12.7	25	22.7	28	25.5	19	17.3	7	6.4	5	4.5
Can he understand the instructions given by the team	31	28.2	25	22.7	21	19.1	19	17.3	6	5.5	5	4.5	3	2.7
Can follow the instruction given to him by the team	41	**37.3**	33	30	17	15.4	8	7.3	7	6.4	2	1.8	2	1.8
Has the ability to participate in the care plan provided to him	50	**45.4**	17	15.5	15	13.7	11	10	9	8.2	5	4.5	3	2.7
Have ability to express his need	40	**36.4**	27	24.5	15	13.7	12	10.9	7	6.4	5	4.5	4	3.6

Table (5) show that, 34.5%& 31.5% of the studied children are slightly easy understood their mothers & their mothers can understand him. Meanwhile 37.3%, 45.4% & 36.4% of them not possible follow the instruction given to him by the team, to participate in the care plan provided to them & express their needs respectively.

Figure (4): Distribution of the studied sample regarding their total needs (no=110)



This figure illustrates that, 61.8% of the studied children total dependent on their caregivers to fulfilling their needs , 26.4% of them partially dependent on their caregivers, while 11.8% of them able to fulfilling their needs without assistant from their caregivers.

Discussion

Cerebral palsy is the name for a group of lifelong conditions that affect movement and co-ordination, caused by a problem with the brain that occurs before, during or soon after birth. There's currently no cure for cerebral palsy, but treatments are available to help children with the condition have a normal and independent life ***(Muller-Bolla et al., 2016).***

Evidence around the globe is now accumulating providing strong support for the use of HBOT as an approach to the actual underlying problem in children with CP. It's important to be more focused on children needs with this new treatment to clearly identifying and addressing the needs of child which help in improving the quality of that treatment ***(Liu et al., 2015)***.

The current study aimed to assess needs of children with cerebral palsy undergoing hyperbaric oxygen therapy.

Regarding the characteristics of the studied children the current work showed that, less than half of them were in the age group ranging between 3-6 years old, more than half of them were males, more than one third of them were the first child in their families, about more than half of them lived in rural area and the majority of them were illiterate.

This current finding was supported by ***Leach et al. (2014),*** who studied "Hyperbaric oxygen therapy among children with CP" and mentioned that, more than half of the studied children were males, the majority of them were illiterate and less than half of them were in the age group (3-6 years old).

While, this finding was not in agreement with ***Summary et al. (2013)*** who conducted a study about "Hyperbaric Oxygen Therapy for Brain Injury, Cerebral Palsy, and Stroke" and showed that, more than half of the studied children were in the age group (6-10 years old) and less than half of them were males, this may be due to the study different settings and the protocol of start the treatment.

The current study revealed that, about three quarters of the studied children families consisted of 3 to 6 members, the majority of them did not have family history of mental disability with enough monthly income to cover the cost of hyperbaric oxygen therapy and they did not receive financial support for the treatment of the child. Meanwhile, the majority of the studied children had not an easy accessibility from the residence to the oxygen therapy unit and most of them received care from their mothers. Also more than one third of the parents had a technical education.

This finding was in agreement with ***Montgomery et al. (2011),*** who conducted a study about "Effects of hyperbaric oxygen therapy on children with spastic diplegic cerebral palsy" mentioned that, three quarters of the studied children families consisted of (3-6 members), most of them didn't have family history of mental disability and most of the studied children received their care from their mothers.

The current study mentioned that, less than half of the studied children had health problems during childbirth and more than three quarters of them suffered from suffocation. In addition, more than two thirds of them exposed to diseases during childhood and about half of them had head injuries. This was in accordance with ***Tsorlakis et al. (2014),*** who conducted a study about "Effect of intensive neuro-developmental treatment in gross motor function of children with cerebral palsy " showed that, regarding the medical history of the studied children less than half of them had health problems during childbirth with the majority suffered from suffocation.

Also the current work clarified that, half of the studied children had spastic CP, more than two thirds of their mothers discovered delayed movement as a common sign & symptom, about three quarters of the studied children their I.Q level was moderate and the majority of them had malnutrition as a complication of CP.

This was supported by ***Neubauer and James, (2010),*** who studied " Cerebral oxygenation and the recoverable brain "mentioned that, about half of the studied children had spastic CP, about two thirds of their mothers observed delayed movement among their children and the majority of the studied children suffered from malnutrition as a complication.

The current work showed that, about two thirds of the studied parents had unsatisfactory knowledge about HBOT for children with CP; they did not know the meaning of oxygen therapy under high pressure, mechanism of equalize the pressure of the ear and precautions to be followed before treatment session. Meanwhile more than half of them knew the procedures to be followed during the session and noticed change that occurred to child during HBOT.

This was in agreement with ***Santamaria et al. (2015)*** whose study was about "Hyperbaric oxygen therapy in pediatrics. Advances in Pediatrics" mentioned that, two thirds of the studied parents didn't know the meaning of oxygen therapy under high pressure and about half of them noticed change that occurred to their children during oxygen therapy under high pressure.

This could be due to lack of awareness programs about oxygen therapy under high pressure, that's why these programs should be applied specially to parents of children with CP.

The current study clarified that, more than half of the studied caregivers did not allow their children to rely on themselves and did not encourage them in every positive step they took during the treatment session. Also the majority of them did not know the importance of adherence to treatment for improving mobility, strengthening muscles and improving the ability to speak.

This was not in agreement with ***Davis et al. (2009)*** who conducted a study about "Hyperbaric medicine: patient selection, treatment procedures, and side effects " mentioned that, most the studied caregivers encouraged their children in every step they took during the treatment session and they know the importance of adherence to treatment for improving mobility.

Regarding child's needs during treatment with HBOT, the current study showed that, more than one third of the studied children were not able to put the source of oxygen on their noses during the treatment session, move inside the pressure chamber and move in open places in any way possible without assistant of their parents. Moreover more than two thirds of the studied children were totally dependent on their parents for positioning, transferring and mobility.

This was in accordance with ***Neubauer, (2015),*** "who studied the effect of hyperbaric oxygen in CP: possible identification of marginally functioning brain zones "clarified that, two thirds of the studied children with CP were dependent on their parents for transferring and mobility.

The current work showed that, more than three quarters of the studied children were totally dependent on their parents regarding their physical needs as personal care and activities of daily living.

This was supported by ***Nordmark et al. (2016),*** whose study was about "Reliability of the gross motor function measure in cerebral palsy" clarified that, about three quarters of the studied children with CP were dependent on their parents regarding their physical needs.

The current study showed that, one third of the studied children had the feeling of pain or discomfort and too hot or too cold during the treatment session. Moreover, two thirds of the studied children were totally dependent on their parents to fulfill their social needs communication and social interaction.

This was in accordance with ***Qibiao et al. (2010)*** who conducted a study about "Treatment of children's epilepsy by hyperbaric oxygenation: analysis of 100 cases "mentioned that, during the treatment session of children with CP about one third of them experienced pain and two thirds of them were dependent on their caregivers regarding their social needs.

Regarding relation between child's needs during treatment with HBOT and their socio-demographic characteristics the current work clarified that,there was statistically significant difference between child's needs during treatment with HBOT and their age, educational level, their ranking and their residence.

This was in agreement with ***Machado, (2013),*** who conducted a study about "Clinically observed reduction of spasticity in patients with neurological diseases and in children with cerebral palsy from hyperbaric oxygen therapy" mentioned that, there was statistically significant difference between child's needs during treatment with HBOT and their age, their gender and their educational level.

The current study showed that, there was high statistically significant difference between child's needs during treatment with HBOT and their parents and their parent's level of education.

This was supported by ***Harch et al. (2016),*** whose study was about "Low pressure hyperbaric oxygen therapy induces cerebrovascular changes and improves cognitive and motor function in CP children "mentioned that, there was statistically significant difference between child's needs and their parent's level of education.

Also the current work showed that, there was high statistically significant difference

between child's needs during treatment with HBOT and their duration of illness, their type of CP and their IQ level.

This was in accordance with ***Lanoix-Nadeau, (2010),*** who conducted a study about "In pursuit of hyperbaric oxygen therapy "showed that, there was statistically significant difference between child's needs and their type of CP and their IQ level.

Conclusion

Based on the finding of the study and answering research question, the current study concluded that the majority of the studied sample not able to fulfilled their physical needs during treatment session in themes of positioning, transferring, mobility, personal care and ADLs. Also the majority of studied sample unfulfilled their psychological needs which suffered from anxiety, sadness, angry or discomfort during treatment. Also the majority of the studied sample not able to interact during session or express their needs and they are had total dependent on caregiver to fulfilling their needs.

Furthermore, high frequency of study sample has been needed assistive device, equipment, financial support to help them to fulfilling their needs during treatment session.

Recommendations

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

- Good assessment of children before HBOT sessions to clearly identify their true needs and try to fulfill it, to help children take more benefit from the course of treatment.
- Health teaching for caregiver about HBOT and ear equalization technique to reduce pain that may occur during session and ensure cooperation from the child.
- Encouragement and positive reinforcement for the child from caregiver and nursing staff to increase socialization, interaction during sessions which make the child more involved in the treatment and obtain the optimal result.
- Financial support from government for child family in order to help the child to complete treatment course.
- Availability of assistive devices and equipment needed for the child during session.
- Further researches should be conducted to develop strategy to overcome unfulfilled health needs of children with cerebral palsy undergoing HBOT.

Reference

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