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From Chief Editors Desk

Dear Reader

With great pleasure we would like to publish this issue of "Journal of Nursing Updates". Life has become hard and challenging due to COVID -19 pandemic. The pressing times of the COVID -19 epidemic have given us an unfashionably down –beat and the condition is under control in India compared to other countries. We have realized in this pandemic that challenges can be made into opportunities.

When we started thinking about this issue of our journal, the hardest part for us was to consider what topics to leave out, rather than what to include with limited space, it has been extraordinarily difficult to choose just 6 articles for this issue. This journal focus on the current evidences and present issues in Nursing. Our aim has been to cover as wide as possible, to give a flavor to evidence based writing.

This issue would not have been possible without great support of the editorial board members and I would like to express our sincere thanks to all of them. I thank all the authors who have put aside some of their valuable time to write their articles. It is highly ambitious and very exciting initiative and we are proud to present this issue of journal to you. We hope that the fine collections of articles in this journal will be a valuable resource for all readers.

Stay safe, all.

Dr. Bincy R

Nutritional Problem and Feeding Practice Among Children with Developmental Delay

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Abstract

The present study was intended to assess feeding practice and nutritional problems among children with developmental delay attending SAT hospital, Thiruvananthapuram. The research approach adopted for the study was quantitative approach and the study design was descriptive study design. The theoretical framework for the study was Betty Neuman System model. The present study was conducted among children with developmental delay attending selected wards and neuro outpatient department of Sree Avittom Thirunal Hospital, Thiruvananthapuram. Total sample size was 80. The data were collected for a period of 6 weeks. Consecutive cases were selected as sample. Structured interview schedule was used to assess the socio demographic data and clinical data. Feeding practice was assessed using "Age wise feeding practice assessment rating scale" and nutritional problems were assessed by "Nutritional assessment proforma". The collected data were analysed using descriptive and inferential statistics. It was found that 73.8% of mothers had average feeding practice and 100% of children had nutritional problems. The present study result shows that there is significant association between feeding practice and nutritional problems among children with developmental delay.

Key words :*Feeding practice, nutritional problems, developmental delay*

Introduction

The nutritional status of children is vital for their growth and development, in the promotion and maintenance of health, in the prevention of disease, and in the restoration of health following illness or injury.[1]

Nutrition is fundamental for good health and development during the early stages of life. If children do not eat right amount of macro nutrients like protein, fat and carbohydrates and micro nutrients like vitamin A, iodine, iron and zinc, they may become ill, result in delayed mental

and motor development that can have enduring adverse effect beyond childhood.[2]

Developmental delay denotes when child does not reach his/her developmental milestone at expected time. Delay can occur in one or many are lagging behind, that is gross or fine motor, language, social or thinking skills.[3]

A developmental delay refers to when a child does not achieve developmental milestones within normal age range. Simply put, it is a delay in child development.[4]

Developmental delay predisposes the nutritional deficit which interferes with outcome. Screening, assessment and timely intervention are warranted to prevent poorer developmental outcome.[5]

Many children with developmental delay suffer from anaemia, stunting, underweight and wasting. Poor haemoglobin level in blood are associated with significant cognitive and psychomotor delay that affects child's scholastic performance.[6]

Feeding is a complex physiological process that is further complicated by social and cultural influences. Study results show that Children with developmental disabilities frequently develop problems with feeding that can lead to malnutrition and respiratory symptoms. Feeding disorders are often the result of multiple interacting variables that have disrupted feeding development and feeding relationships. [7]

Feeding problems in children with neurological impairment are common and severe, causing parental concern. Many of these children would benefit from nutritional assessment and managing as a part of overall care.[8]

Many studies show that improper feeding practice leads to nutritional problems like stunting, wasting, undernutrition, overnutrition, PEM etc.

Children with developmental delay are vulnerable group to develop malnutrition due to poor feeding practice and feeding problems.

There are few research studies that are present to quantify which condition belongs to developmental delay is more chance to develop malnutrition.

During the clinical postings in paediatric wards, the investigator has had noticed that many children with developmental delay suffer from nutritional problems and these groups were prone to develop malnutrition due to decreased food intake. So it was decided to conduct a study with the purpose to assess the feeding practice, nutritional problem among children with developmental delay.

Objectives

Primary objective

- Assess thre feeding practices of mothers of children with developmental delay.
- Assess the nutritional problems among children with developmental delay.

Secondary objective

- Find out the association between feeding practice and nutritional problems among children with developmental delay.

Materials and Method

In the present study interview and observation were used as the technique for data collection and structured interview schedule to collect socio demographic data and nutritional assessment proforma to assess nutritional problem and agewise feeding practice assessment rating scale to assess feeding practice of mothers, were the tools used for data collection.

The socio demographic data of mothers in this study was age, education, occupation, income, residence area, type of family. The socio demographic data of the child include age and gender of the child. The clinical data include the child's hospital status, type of developmental

delay, age at which first diagnosis is made, duration of illness, associated problems, treatment history, feeding problems and history of previous hospitalisation.Nutritional problem of the child is assessed by Nutritional assessment Proforma using observation method. Nutritional assessment Proforma contain measurements such as height in centimetre, weight in kilograms, mid arm circumference in centimetre (for children less than 6 year). Assessment proforma also contains other parameters of nutritional assessment - hair, face, eyes, lips, tongue, teeth, gums, neck, skin, nail and musculoskeletal system. If any said parameters present in the child it will be considered as the existence of nutritional problems in the child. Feeding practice of mothers of children with developmental delay assessed by "Three point feeding practice assessment rating scale". From the score obtained, feeding practice is classified as poor feeding practice (less than 12), average feeding practice (13-26), good feeding practice (above 27)

The present study was intended to assess the feeding practices, and nutritional problem among children with developmental delay attending Sree Avittom Thirunal Hospital, Thiruvananthapuram. Data were collected from 80 subjects. The data collected were grouped and analysed using both descriptive and inferential statistical test. The analysis was performed by frequency, proportion, mean, standard deviation and chi square test.

RESULTS

Table 1: Distribution of mother based on feeding practices followed

(n=80)

Feeding practice	*Frequency*	*Percentage*
Poor	2	2.5
Average	59	73.8
Good	19	23.8
Total	**80**	**100**

Table 1shows that 73.8% of mothers of children with developmental delay had average feeding practice, 23.8% had good feeding practice and only 2.5 % had poor feeding practice.

Table 2: Distribution of children based on presence of stunting

Stunting	*Frequency*	*Percentage*
Present	24	30.0
Absent	56	70.0
Total	**80**	**100**

Table 3: Distribution of children based on wasting

(n=80)

Wasting	*Frequency*	*Percentage*
Present	38	47.5
Absent	42	52.5
Total	**80**	**100**

Table 4: Distribution of children based on PEM

(n=80)

PEM	*Frequency*	*Percentage*
Present	38	47.5
Absent	42	52.5
Total	**80**	**100**

In this study only 30% of children with developmental delay had stunting. Among the participants 47.5% of children had wasting and 52.5% were free of wasting. Among the children only 47.5% of children had Protein Energy Malnutrition and 52.5% were free of Protein Energy Malnutrition. In this study 100% of children had nutritional problems based on nutritional assessment Proforma.

DISCUSSION

Present study shows that 73.8% of mothers of children with developmental delay had average feeding practice, 23.8% had good feeding practice and only 2.5% had poor feeding practice.

Similar research findings shows caregivers of children with developmental disability, found meal time stressful due to time demand, messiness and pressure of providing enough quality food. Researchers felt that a training programme for mothers regarding feeding had helped reducing this stress and dietary recall data suggest some improved dietary quality. [9]

Present research findings shows that 30% of children with developmental delay had stunting, 47.5% had wasting and 47.5% of children had protein energy malnutrition.

Similar research findings shows that 75.5% of children with developmental disorders had protein energy malnutrition, 70.7% had stunting, 64% had wasting. [10]

From the present study investigator noticed that 86.3% of children had reduced thickness of hair, 61.3% had depigmentation and 43.8% had easy pluckability of hair. Majority of children had skin dark over checks and under eyes. 75% of children had pale eye membrane and 51.3% had photophobia. 87.5% of children had swelling and redness of mouth and lips. Nutritional problem involved in the tongue include swollen sore in tongue (36.3%) and 26.3% had swelling tongue. Nutritional problem involved in the teeth include dental caries (88.8%), 77.5% of children had missed teeth, 65% had malformed teeth. 18.8% of children had ulcers in gums. 26% of children had thyroid enlargement. Nutritional problems involved in the skin include 88.8% had dryness of skin, 87.5% had sandpaper like feeling skin. 86.3% had white spot on the nail and 61.3% had pale nails. Investigator also noticed that 61.3% of children had muscle wasting, and 25% of children had frontal bossing and beading of ribs.

Similar research study results show that there is a significant reduction in anthropometric parameters found in children with developmental disorders compared to their non-disabled counterpart. This deviation from normal growth can be attributed to inadequate dietary intake, feeding problems, decreased weight bearing, and severe non nutritional factors including abnormal endocrine function, socio economic status, disease severity, and age. [11]

Another research study conducted in Iran shows that abnormal growth was significantly common among children with developmental disabilities. About 64% of children had inadequate caloric intake. Nutritional management should be arranged for the undernourished children to promote their nutritional status and improve their growth and functional capacity. [12]

CONCLUSION

Present study reveals that 73.8% of mothers of children with developmental delay follow average feeding practice. Majority of children with developmental delay are suffering from nutritional problems like wasting, stunting, Protein Energy Malnutrition and other nutritional problems present in nutritional assessment Proforma. Present study also found out that there was a significant association between nutritional problems and feeding practice of children with developmental delay.

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Prevalence and Associated Factors of Non Adherence Towards Therapeutic Regimen Among Adult Patients With Hypothyroidism

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Abstract

Hypothyroidism is a chronic disease which needs active patient participation for optimal management. Compliance with suggested therapy is necessary in order to achieve euthyroid health. The objectives of the study was to find out the prevalence of non adherence towards therapeutic regimen among adult patients with hypothyroidism, identify the associated factors of non adherence towards therapeutic regimen among adult patients with hypothyroidism and to find out the association between non adherence and selected associated factors of non adherence towards therapeutic regimen. The research approach adopted for the study was quantitative approach and the research design was cross sectional design. The present study was conducted among adult patients with hypothyroidism under the service area of primary health centre Thiruvananthapuram. The total sample for the study was 150. The data was collected for 6 weeks. The participants for the study were selected by cluster sampling. Structured questionnaire was used to assess the socio demographic data and the associated factors of non adherence towards therapeutic regimen among adult patients with hypothyroidism, Morisky 8 item medication adherence questionnaire used to find out the prevalence of non adherence. The collected data were analyzed using descriptive and inferential statistics. It was found that 76.67% of participants were having non adherence towards therapeutic regimen. There was a significant association between non adherence and associated factors such as age, gender, accessibility of health education regarding hypothyroidism and level of knowledge regarding hypothyroidism.

Keywords: *Prevalence; associated factors; non adherence; therapeutic regimen; hypothyroidism*

Introduction

Hypothyroidism is a metabolic disorder resulting from deficiency of thyroid hormones. Hypothyroidism slower the rate of metabolism and this can affect the function of virtually every system of the body. The consequences of untreated hypothyroidism can vary from physical symptoms to psychiatric illnesses like depression, psychosis, delirium, and dementia.[1] Hypothyroidism can damage the central nervous system resulting in irreversible cognitive and behavioral changes and in severe cases that, in turn, can affect a patient's activities of daily living and occupational functioning.[2]

The prevalence of hypothyroidism in the developed world is about 4-5%. The prevalence of subclinical hypothyroidism in the developing world is about 4-15%.[3] A Study conducted in Northern Europe, Japan and USA showed a prevalence of 6 to 12% among women and 1.3 to 4% among men[4] Overt hypothyroidism was found in 7% of 558 subjects aged between 85 and 89 years in Leiden, Netherlands.[5]

A cross-sectional, multi-centre, epidemiological study was conducted in eight major cities (Bangalore, Chennai, Delhi, Goa, Mumbai, Hyderabad, Ahmadabad and Kolkata) of India showed an overall prevalence of hypothyroidism was 10.95% of which 7.48% patients self reported the condition, whereas 3.47% were previously undetected. The prevalence of hypothyroidism was high, affecting approximately one in 10 adults in the study population.[6]

A study on the prevalence of thyroid diseases in Ernakulam city and Cherthala town of Kerala state shows 53% and 37% respectively. The prevalence of thyroid diseases is more in Ernakulam city which represents an urban metro area with people following a metro life style.[7]

Statement of the problem

Prevalence and associated factors of non adherence towards therapeutic regimen among adult patients with hypothyroidism under the service area of primary health centre, Thiruvananthapuram

Objectives of the study

- Find out the Prevalence of non adherence towards therapeutic regimen among adult patients with hypothyroidism.
- Identify the associated factors of non adherence towards therapeutic regimen among adult patients with hypothyroidism.
- Find out the association between non adherence and selected associated factors of non adherence towards therapeutic regimen.

Materials and method

Research approach is quantitative, design selected for the present study was Cross sectional designs. Sampling technique used in the present study was cluster sampling. Under the service area of primary health centre, Thiruvanathapuram the investigator selected Pangappara primary health centre. There were eleven wards, from that the investigator selected five wards by a lottery method. The wards were the clusters and samples were selected consecutively through house to house visit. Data were collected from 150 participants.

Permission to conduct the study was obtained from the concerned authority. Duration of the study period was 6 weeks from 07.01.2019 to 15.02.2019. Informed consent was obtained directly from the participants. After getting informed consent structured interview was conducted among participants to get data regarding the prevalence and associated factors of non adherence towards therapeutic regimen. The investigator collected data from each participant by an interview method. It took 15 minutes to complete the interview.

Tools

Tool 1

Section A: Socio demographic data

Section B: Questionnaire to assess the associated factors of non adherence towards therapeutic regimen among adult patients with hypothyroidism.

Tool 2

Section C: Morisky 8 item medication adherence questionnaire.

Technique

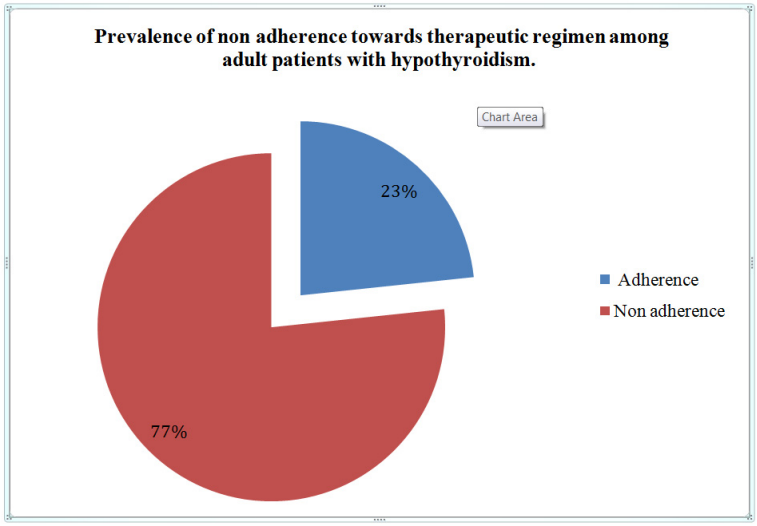
Interview method

This study is intended to assess the prevalence and associated factors of non adherence towards therapeutic regimen among adult patients with hypothyroidism under the service area of primary health centre, Thiruvanathapuram. The data were tabulated, analyzed and interpreted using descriptive and inferential statistics

Result

Descriptive analysis of socio demographic data obtained regarding the participants and are described under the subheadings-age, gender, marital status, religion and social class.

Among the participants 48% belonged to 26-50 years of age, 34% belonged to 51-64 years of age, 12% belonged to 65and above years of age and only 6% belonged to 18- 25 years of age. Most of the participants (85.3%) were females.



Among the participants 76.67% of had non adherence towards therapeutic regimen. Most of the participants 68.67% have source of health information related to hypothyroidism Among the participants 8.67% of have good knowledge, 59.33% of participants have average knowledge and 32% of participants have poor knowledge regarding hypothyroidism. There was a significant association between non adherence and associated factor such as age, gender, accessibility to health education regarding hypothyroidism and level of knowledge regarding hypothyroidism.

Discussion

The present study revealed that, majority of the participant (76.67%) were have non adherence towards therapeutic regimen. A similar cross sectional study was conducted among Lebanese population to evaluate treatment adherence to Levothyroxine therapy and to assess factors affecting the adherence to treatment study showed that 14.5% high adherence, 30.6% medium adherence and 54.9% low adherence to medication.[8]A similar cross-sectional study was conducted in Dhulikhel hospital, Kathmandu

University hospital**,** Nepal. Showed that, More than half (51.3%) of the patients were adherent to medication.[9]

Conclusion

Adequate knowledge about therapeutic regimen of hypothyroidism is necessary to overcome the non adherence among the people. So the need for education is a primary goal among general population. Age, gender, accessibility to health education regarding hypothyroidism has an important role in maintaining proper intake of hypothyroid medications.

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Menopausal Symptoms and Perceptions Regarding Menopause Among Perimenopausal Women in Thiruvananthapuram Corporation

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Abstract

Background : *Menopause is a natural phenomenon in a women's life. The present study was intended to assess the menopausal symptoms and perceptions regarding menopause among perimenopausal woman in Thiruvananthapuram Corporation. The study was based on Betty Neuman's system model.*

Objectives: *This study aims to assess the menopausal symptoms among perimenopausal women and explore the perceptions regarding menopause among perimenopausal women in Thiruvananthapuram Corporation.*

Materials and Methods: *The study adopted a mix of both quantitative and qualitative research methods. Cross sectional design was used in first phase to assess the menopausal symptoms among perimenopausal women. In the second phase qualitative research design was used to explore the perceptions regarding menopause. Four focus group discussions were conducted .Sample consisted of women in the age group of 45-55 years who have not attained menopause and were selected by multistage cluster sampling. Sample size was 350. The menopausal symptoms were assessed using the menopausal rating scale (MRS). Collected data were analyzed by descriptive statistics. Data were analyzed by thematic analysis in the second phase.*

Results*: Findings of the study showed that 45.15% women had moderate symptoms of joint and muscular discomfort, 39.7% of the women had hot flushes, 38.8% of the women had mild symptoms of sleep problem, 39.71% of the women had mild symptoms of depression and 36.85% had moderate symptoms of physical and mental exhaustion. In the second phase the major themes emerged from the study that women experienced various physical, psychological, urogenital, relationship problem and have misconceptions and ignorance related to menopause.*

Conclusion: *Based on the findings of the study, the following conclusions were drawn.Women in the age group between 45-55 years who had not attained menopause had mild perimenopausal symptoms of hot flushes, moderate symptoms of physical and mental exhaustion joint and muscular discomfort.Perceptions regarding menopause showed that women experienced various physical, psychological, urogenital, relationship problem and have misconceptions and ignorance related to menopause. They displayed various health seeking behaviour.*

Keywords:*Menopausal Symptoms; Perceptions; Perimenopausal Women*

Introduction

Menopause is an accepted universal phenomenon that occurs in a woman's life.Worldwide, natural menopause occurs between the age of 45 and 55 years.[1] Mean age at menopause for Indian women ranges from 40.32 to 48.84 years and in developed countries from 48 to 51 years.[2] With increasing life expectancy, women spend1/3rd of life in this phase.[3] Majority of women pass through menopause as a normal physiological manifestation of the aging process. Menopausal symptoms, though well tolerated by some women, may be particularly troublesome in others. The duration, severity, and impact of menopausal symptoms vary from person to person and population to population. Severe symptoms compromise overall quality of life for those experiencing it. There is under-reporting of symptoms among Indian women due to socio cultural factors.[4]

The menopausal transition is experienced by 1.5 million women each year and often involves troublesome symptoms including vasomotor symptoms, vaginal dryness, decreased libido, insomnia, fatigue and joint pain. Perceptions of symptoms and distress caused by the menopausal transition have been shown to relate to women's general health, their employment and socio-economic status and previous life events.[5]Many a time, women are unaware of menopausal symptoms experienced by them. The Menopause Epidemiology Study (MEPI) reports that vasomotor symptoms are highly prevalent among premenopausal women (70%) and post-menopausal women (65%).[6]

In 2010, there were nearly 400 million women worldwide of menopausal age (45-55 years), and nearly 500 million women will be entering the menopause transition over the next 5 to 10 year (United State census Bureau, 2010).[7] Menopausal health demands priority in Indian scenario due to increase in life expectancy and growing population of menopausal women.[8] Most are either unaware or do not pay adequate attention to these symptoms.

Statement of the problem

A study to assess the menopausal symptoms and perceptions regarding menopause among perimenopausal women in Thiruvananthapuram Corporation.

Objectives

- To assess the menopausal symptoms among perimenopausal women in Thiruvananthapuram Corporation.
- To explore the perceptions regarding menopause among perimenopausal women in Thiruvananthapuram Corporation.

Materials and Methods

A community based cross sectional study was conducted among350 perimenopausal women in the age group of 45-55 years who had not attained menopause. The study used a mix of both quantitative and qualitative research methods and

the research design was cross sectional used in first phase and descriptive qualitative design used in second phase of study. The study was undertaken to assess the menopausal symptoms and perception regarding menopause.

The study was conducted in two phases. In first phase samples were selected by multistage cluster sampling among the100wards of Thiruvananthapuram Corporation. The investigator selected 10 wards using lottery method. List of women in the age group of 45 - 55 years were collected from the nominal list from Corporation office. From that list women who had attained menopause were excluded. From the remaining list of women ,35 samples were selected randomly from each ward.Number of clusters =10, Cluster size =35, Sample Size was 350.Tools used for the study were structured interview schedule to assess socio demographic data and menopausal rating scale (MRS) to assess menopausal symptoms. The purpose of this study was explained to the participants and took consent from those who were willing to participate in the study. The researcher collected data by interviewing the participants at their houses and took 30minutes to complete the interview.

In the second phase, data were collected by focus group discussion by using FGD guide after getting consent from each participants. Purposive sampling technique was used in this phase. Investigator prepared focus group discussions (FGD) guide in accordance with the study objective. FGD was conducted in selected wards of Thiruvananthapuram Corporation. Investigator moderated the discussion. Audio recording was done and sociogram was drawn. The number of respondents vary from 8-10 in each FGD_s and lasted for 45 minutes. 4 FGD_s were conducted. The recorded data were transferred to the computer hard disk and later on it was transcribed for analysis.

Steps involved in data analysis are [Ref: COLAIZZI (1978)]

- Reading the transcribed data to acquire a sense of the information.
- Extracting significant statements from each transcript.
- Formulating meanings for each extracted significant statement.
- Organizing the formulated meaning in to a cluster of themes.
- Integrating results in to an exhaustive description of the phenomena.
- Essence of the study.

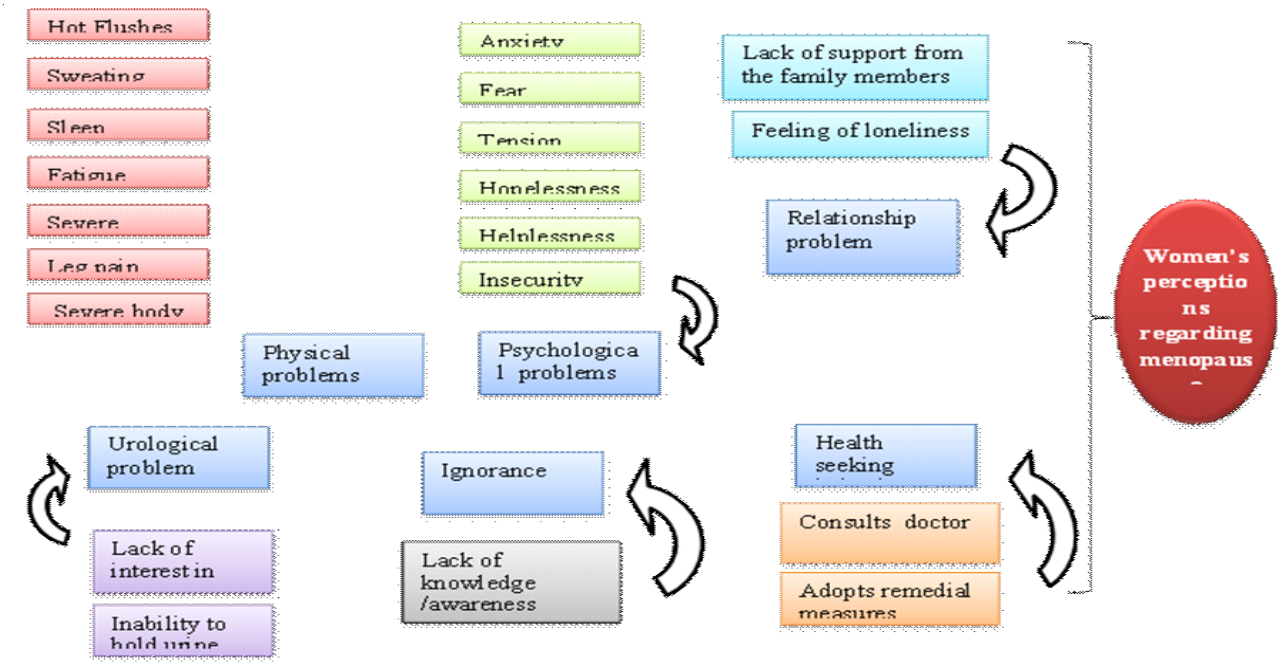
RESULTS

Phase 1 Prevalence of menopausal symptoms.

- Among 350 women, 39.72% had mild symptoms of hot flushes and38.8% had mild symptoms of sleep problem.
- Out of 350 participants, 39.72% had mild symptoms of depression and 31.7% of the women had moderate symptoms of depressive mood.
- Based on symptoms of irritability, 31.4% of participants had mild symptoms of irritability.
- Among the participants, 36.86 % had moderate symptoms of physical and mental exhaustion.
- Only 6.2% of the women had sexual problem and 45.15% women had moderate symptoms of joint and muscular discomfort.

Phase 2 Perceptions regarding menopause.

Findings of the qualitative phase showed that perimenopausal women experienced various physical, psychological, urogenital, relationship problem and have misconceptions and ignorance related to menopause. The women displayed various health seeking behaviours. These are presented as a model which illustrates the women's perceptions regarding menopause



Discussion

The present study was focused to assess menopausal symptoms and perceptions regarding menopause among perimenopausal women.

In the present study, 66.85% of women reported mild or moderate symptoms of hot flushes and sweating. This finding was unified with a cross sectional study conducted at Sarawak, Malaysia which revealed that 60.6% of women had hot flushes and sweating. [9]In general peri and postmenopausal women significantly presented higher rates of menopausal symptoms when compared to premenopausal symptom.[10]

Current study findings revealed that 26% of the women had heart discomfort. Similar findings were observed in the study prevalence of menopausal symptoms and awareness regarding menopauseconducted in Malaysia which revealed that 18.3% of women had symptoms of heart discomfort.[11]

Incidence of depression is another typical menopausal symptom. In the present study it was found that 71.42% of women reported mild or moderate symptoms of depression. This findings is in agreement with the studies at Malaysia and West Bengal which revealed that 74.6% and 88% of women had depression.[12]

In India, the incidence of physical and mental exhaustion is 64.7%. These findings are in accordance with the present study which showed that 71.13% of women had mild or moderate symptoms of physical and mental exhaustion.

Vaginal dryness is another menopausal symptom. In the present study it was found that 12.28% of women reported mild symptoms of vaginal dryness and this finding is incongruent with a descriptive study conducted to assess menopausal symptoms among healthy middle aged women using the Menopause Rating Scale revealed that 20.7% of women had vaginal dryness.[13]

Prevalence of joint and muscular discomfort is another important menopausal symptom. The present study showed that 68.85% of women had mild or moderate symptoms of joint and muscular discomfort. This study finding is supported by the study conducted in Saudi Arabia which revealed that 80.7% were joint and muscular discomfort were much higher in a study conducted at Saudi Arabia.[14]

In the current study perceptions regarding menopause showed that women experienced various physical, psychological, urogenital, relationship problem and have misconceptions and ignorance related to menopause. They displayed various health seeking behaviour.

The present study finding was supported by the findings of the study to describe the perceptions of Jordanian midlife women about making the menopausal transition. Audio taped interviews were conducted with 25 peri-menopausal Jordanian women. Interviews were analyzed as appropriate for descriptive qualitative inquiry. The major theme generated was 'A Life Transition', which included a time of no more reproductive obligations, changing from the burdens and obligations of reproductive roles and responsibilities to freedom, relief and rest, a time for managing peri-menopausal symptoms and a time for growing into a wise woman and accepting aging as a part of life.[15]

Conclusion

The present study was done to assess the menopausal symptoms and perceptions regarding menopause among women in the age group of 45-55 years.

Based on the study findings, following conclusions were drawn.

- Most of the women had menopausal symptoms such as joint and muscular discomfort, hot flushes, irritability, symptoms of depression, physical and mental exhaustion and sexual problem.
- With regard to the perceptions regarding menopause, women had unpleasant feeling and misinterpretation related to menopause and expressed that they would like to attain menopause as early as possible.Women experienced various physical, psychological, urogenital, relationship problem and have misconceptions and ignorance related to menopause. They displayed various health seeking behaviour.

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A Study to Assess Knowledge And Practice on Care of Children With Nephrotic Syndrome Among Mothers at A Tertiary Care Hospital in Thiruvananthapuram

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Abstract

Nephrotic Syndrome is the most common manifestation of glomerular disease in childhood. Aim of the study was to assess mothers' knowledge and practice regarding care of their children with Nephrotic Syndrome. A descriptive cross-sectional design was used. Samples for the study were mothers of children with Nephrotic Syndrome attending Nephrology OPD of Sree Avittam Thirunal Hospital (SAT) Thiruvananthapuram. Data on mothers' knowledge and Practice regarding the care of children were collected from mothers through one-to-one interview. Interview schedule and rating scale were used to collect data on knowledge and reported practice of mothers. Findings of the study revealed that 40.7% of mothers had poor knowledge, 52% had average knowledge and only 7.3% had good knowledge. Most of the mothers had average (90.7%) practice score and only 9.3% had good practice. None of the mothers had poor practice score. The study also revealed that there is a positive correlation between knowledge and practice score of mothers. Study findings point out need for educational interventions for mothers to provide better care for their children with Nephrotic syndrome.

INTRODUCTION

Each nation will be moulded to a healthier and stronger one, if its children are stronger and healthy. One-third of India's population is children below the age of 15 years[1].

Nephrotic Syndrome in children is a common, yet challenging, relapsing and remitting renal disorder and exhibits a heterogeneous clinical pheno-type ranging from a single episode, infrequently relapsing, frequently relapsing to steroid resistant disease[2]. The nephrotic syndrome can be broadly divided into two, based on the etiological factors. They are the primary and secondary Nephrotic syndrome. In the primary nephrotic syndrome, the causes are glomerular disease intrinsic to the kidney. It is the most common type of nephrotic syndrome in

the children. In the secondary nephrotic syndrome, the etiological factors are mainly extrinsic to the kidney. The proportion of children coming in this category is minimal[3].

Minimal change disease, also known as Minimal Change Nephrotic Syndrome (MCNS) is the most common form of nephrotic syndrome seen in children[4].

The basic pathology in Nephrotic syndrome result from increased glomerular permeability results in the passage of larger plasma protein through the glomerular basement membrane. This causes excess loss of protein (albumin), in the urine and decreased albumin in the blood. Hypoalbuminemia results in a change in osmotic pressure, and fluid shifts from the bloodstream into the interstitial tissues causing oedema. The decrease in blood volume triggers the kidney to respond by conserving sodium and water, leading to further oedema. The liver senses the protein loss and increases production of lipoproteins. Hyperlipidemia develops as the excess lipids cannot be excreted in the urine[5].

A child with nephrotic syndrome should be observed for oedema (periorbital generalized, or abdominal ascites). Urine dipstick reveal marked proteinuria, serum protein and albumin levels will be low. Serum cholesterol and triglyceride levels are elevated[5].

The management of idiopathic nephrotic syndrome in children includes immuno-suppressive and symptomatic treatments[6].

The standard medication for treatment is prednisolone. The medication is administered after meals to reduce its gastrointestinal side effects. The initial episode of nephrotic syndrome be treated with prednisolone at a dose of 2mg/kg per day (maximum 60mg in a single or divided doses) for six weeks; followed by 1.5mg/kg (max. 40mg) as a single morning dose on alternate days for the next six weeks; therapy is then discontinued[7].

A study to assess the knowledge on nephrotic syndrome among mothers of children admitted with nephrotic syndrome in Indira Gandhi Institute of Child Health, Bangalore, revealed that 70 percent of mothers had inadequate knowledge, 18.3 percent had the moderate knowledge, and 11.7 percent had adequate knowledge regarding nephrotic syndrome[8].

A study conducted in a teaching hospital at Baghdad on knowledge and practice of mothers of children with nephrotic syndrome revealed that 55 percent of mothers had poor knowledge and 61.3 percent had poor practice regarding the care of these children[9].

Since most of the patients with nephrotic syndrome are young children, the role of families in caring them is important [10].

A cross-sectional study to assess the problems of children with nephrotic syndrome reported that more than half of the mothers (54%) had low knowledge,medium knowledge was found in (46%)and no mothers had high knowledge regarding the care of their children with nephrotic syndrome[11].

As per the medical records of SATH Thiruvananthapuram, it was found that percentage of children admitted with nephrotic syndrome, among the total number of children admitted with renal problems is increasing as shown below:

Table 1: Statistics in Sree Avittom Thirunal (SAT) Hospital, Thiruvananthapuram

Year	*Total no. of renal cases*	*Nephrotic Syndrome*	*Percentage (%)*
2010	920	342	31
2011	975	343	33
2012	997	330	32
2013	988	361	36
2014	488	277	56
2015	533	286	53

The researcher had opportunities to observe and give care to children with nephrotic syndrome and their families. It is disheartening to see, children with nephrotic syndrome having ascites, cushingoid face, not engaged in any activities, weak and irritable. While interacting with mothers, it was found that many mothers do not know, how to care their child and are worried about their child's disease condition. Hence the researcher was interested to conduct a study among mothers of children with nephrotic syndrome on their knowledge and practice regarding care of their children.

OBJECTIVES

1) To assess mothers' knowledge regarding the care of children with nephrotic syndrome.
2) To assess mothers' practice regarding the care of children with nephrotic syndrome.
3) To find out the correlation between knowledge and practice of mothers of children with nephrotic syndrome

MATERIALS AND METHODS

Descriptive Cross-Sectional Design

Study Population

The population for the study was Mothers of children with nephrotic syndrome.

Sample

The sample for the study consisted of 150 mothers of children with nephrotic syndrome attending Paediatric Nephrology OPD of Sree Avittam Thirunal Hospital (SAT) Thiruvananthapuram.

Sampling Technique

For the study, purposive sampling technique was used. Based on the inclusion-exclusion criteria, subjects were interviewed for the required data.

Setting of the Study

The study was conducted at Paediatric Nephrology OPD of Sree Avittam Thirunal Hospital (SAT) Thiruvananthapuram.

Tools

1. Structured interview schedule: To assess the knowledge of mothers regarding the care of children with nephrotic syndrome.
2. Rating scale: To assess the mothers' reported practice on care of children with nephrotic syndrome.

The Research Tools (Tool 1, and 2) (i.e., interview schedule and rating scale) were prepared by the investigator on the basis of review of related literature and under the guidance of subject experts and it was validated by the experts from medical and nursing fields. The reliability of the prepared tool was calculated using 'Spearman Browns prophecy formula'. The reliability of the tool was 0.82 and 0.80 respectively for the knowledge and practice tools.

The data collection period was 3 months ie May 2016 to July 2016. The investigator introduced herself to the mother, purpose of study was explained and obtained written consent from them. Data were collected from mothers through one-to-one interview. Time taken for each mother was around 30minutes. Data obtained were analysed by both descriptive and inferential statistics using SPSS version 22.

RESULTS

Section A. - Socio-personal Data

Table 2: Distribution of Mothers of Children with Nephrotic Syndrome based on their Age, Family income, Education, Occupation and Health education status (N = 150)

Socio-personal data of the mother		*Frequency*	*Percent*
Age	≤ 30	33	220
	30-40	90	60.0
	>40	27	18.0
Family Income	APL	43	28.7
	BPL	107	71.3
Education	Below high school	11	7.3
	High school	74	49.3
	Higher secondary	35	23.3
	Degree	25	16.7
	Post graduates/professional	5	3.4
Occupation	House wife	125	83.3
	Manual labourer	8	5.3
	Office work	4	2.7
	Professional	7	4.7
	Skilled labourer	6	40
Exposure to health education on care of children with nephrotic syndrome	Yes	26	17.3
	No	124	82.7

Table 2 illustrates that age of majority of mothers (60%) were between 30-40 years and (71.3%) of mothers belonged to below-poverty line. Majority of mothers' (49.3%) educational qualification was high school. Most of the mothers(83.3%) were housewives. It is evident from the table that most of mothers (82.7%)had no exposure to health education regarding the care of children with nephrotic syndrome.

Section B - Distribution of Knowledge of mothers regarding the care of children with Nephrotic Syndrome

Table 3: Distribution of the Mothers of Children with Nephrotic Syndrome based on their Knowledge regarding the Care of Children (Overall and Domain-wise) (N = 150)

Knowledge	*Poor*		*Average*		*Good*	
	f	*%*	*f*	*%*	*f*	*%*
Overall Knowledge	61	40.7	78	52.0	11	7.3
NS General	24	16.0	96	64.0	30	20.0
Drug Management	37	24.7	85	56.7	28	18.7

Oedema management	83	55.3	66	44.0	1	0.7
Infection Prevention	52	34.7	80	53.3	18	12.0
Dietary Management	33	22.0	91	60.7	26	17.3
Follow up	51	34.0	75	50.0	24	16.0
Immunization	99	66.0	36	24.0	15	10.0

Table 3 depicts that (40.7%) of mothers had poor knowledge, (52%) had average knowledge and (7.3%) had good knowledge regarding the care of children with nephrotic syndrome.

On analysis of domain-wise distribution of knowledge of mothers,it was seen that majority of mothers had poor knowledge on the domains 'immunization and oedema management' (66% & 55.3%) respectively.

Section C :Distribution of Practice of mothers regarding the care of children with Nephrotic Syndrome.

Table 4: Distribution of Mothers of Children with Nephrotic Syndrome based on their Practice regarding the Care of Children (Overall and Domain-wise) (N = 150)

Practice	*Poor*		*Average*		*Good*	
	f	*%*	*f*	*%*	*f*	*%*
Overall	-	-	136	90.7	14	9.3
Drug management	-	-	4	2.7	146	97.3
Dietary management	13	8.7	78	52.0	59	39.3
Edema management	88	58.7	60	40.0	2	1.3
Infection control	24	16.0	114	76.0	12	8.0
Follow-up	21	14.0	122	81.3	7	4.7
Mother's interaction	-	-	77	51.3	73	48.7

Table 4 shows that (90.7%) of children with nephrotic syndrome had average practice score and only (9.3%) had good practice score regarding the care of children with nephrotic syndrome. On domain-wise analysis, it is seen that (97.3%) of mothers had good practice score on drug management. More than half of them (52%) had average practice score on the domain "dietary management". Majority of the mothers (58.7%) had poor practice on the oedema management. Most of the mothers (76%) had an average practice score for the infection control and most of the mothers (81.3%) had average practice score for follow-up. Mothers interaction with children was good among 48.7% of mothers.

Section D - Correlation between Knowledge and Practice

Table5: Correlation between the Knowledge and Practice Score of the Mothers of Children with Nephrotic Syndrome

Variable	*n*	*Pearson Correlation (r)*	*p*
Knowledge score and Practice score	150	0.38	<0.001

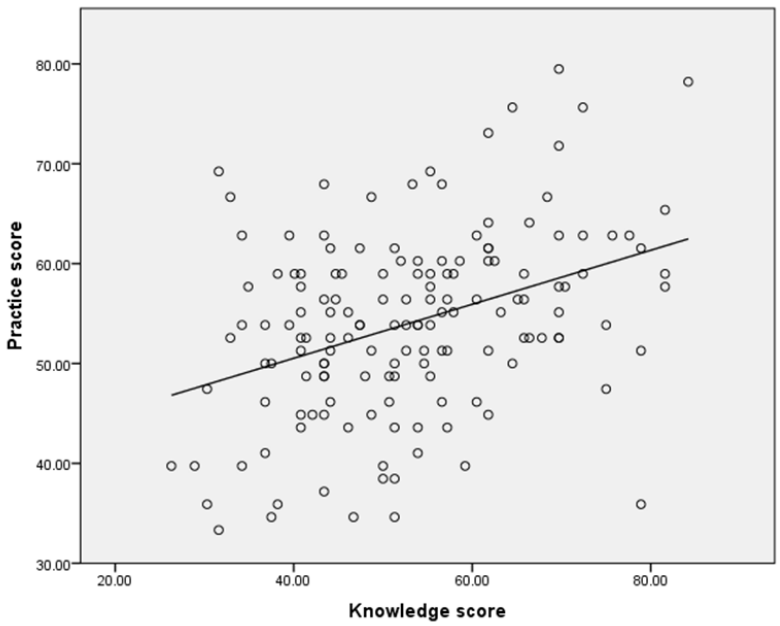

Figure1: Correlation between the Knowledge and Practice score of the Mothers of Children with Nephrotic Syndrome

Table 5 and Figure 1 shows correlation between the knowledge and practice score of mothers of children with nephrotic syndrome. Pearson correlation coefficient ($r=0.38$ is significant at $p<0.05$). It indicates that practice score of the mothers increases with increase in their knowledge score.

DISCUSSIONS

The aim of this study was to assess knowledge and practice of mothers on the care of children with nephrotic syndrome.

The study findings showed that 40.7 percent mothers had poor knowledge that is below 50 per cent of the total knowledge score and 90.7 per cent mothers showed average practice score and only 15.3 per cent of mothers had good practice score regarding the care of children with nephrotic syndrome. These findings are congruent with findings of a study on assessment of mother's knowledge and practice towards children with steroid-sensitive nephrotic syndrome found that 55 percent mothers had poor knowledge and 61.3 percent had poor practice score[9]. Whereas in the present study, no mothers showed poor practice score and 90.7 percent showed average practice score.

A descriptive study among the mothers of children admitted with nephrotic syndrome regarding their knowledge on the disease showed that 70 percent of mothers had inadequate knowledge[8].

A study conducted on assessment of knowledge and practice of mothers regarding home management of children with nephrotic syndrome at selected hospitals of Haryana, India reported that majority of parents (80%) had below average knowledge regarding home management of children with nephrotic syndrome, (15%) had average score and only five percent had good knowledge. Study also reported that the majority of the parents had poor practices (93.3%) regarding home management of children with nephrotic syndrome[12]. These study results are not in line with the present study results. In the present study, the percentage of poor knowledge score among mothers was only (40.7%), and no mothers had poor practice score as shown above. The difference may be due to the increased literacy rate as well as the advanced socio-economic status in Kerala.

Discrepancy in the practice score found with

above studies may be due to the fact that the setting of the present study was done in one of the tertiary care centres in the state where patients gets specialized services. Under the government sector in Kerala, SAT Hospital is the only hospital where Paediatric Nephrology Department is established.

CONCLUSION

The study revealed that 40.7% of mothers had poor knowledge regarding care of children with nephrotic syndrome. Majority of them (52%) had an average knowledge score and only 7.3% had good knowledge score. Regarding practice score of mothers, it was found that most of the mothers (90.7%) had average practice score and only 9.3% had good practice score. None of the mothers had poor practice score. Study also pointed out that practice score of mothers increases with increase in the knowledge score. The study gives an insight into the mother's knowledge and practice regarding care of their children with nephrotic syndrome. Study recommends educational intervention for mothers.

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Clinical Profile of Children with Cerebral Palsy

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Abstract

A study titled "Clinical profile of children with Cerebral palsy" was a descriptive survey conducted among 70 children with cerebral palsy attending Sree Avittom Thirunal Hospital and Physical Medicine & Rehabilitation Department, Medical college hospital, Thiruvananthapuram. The objective of the study was to assess the clinical profile ofchildren with cerebral palsy.Clinical profile is a set of data exhibiting significant features of cerebral palsy includes developmental delay, sensory deficits, speech and language delay, feeding difficulties, elimination problems, motor deficits & other co morbid conditions. Theoretical framework of this study wasbased on Betty Neuman's system model. Data was collected by semi structured interview schedule. The nutritional problems identified were 44.2% of CP children had first degree malnutrition and 18.5% had first degree stunting. All the children (100%) had developmental delay and 68.6% children had speech delay. Sensory problems include 35.7% had squint, 22.9% had hearing loss. Feeding problems identified were poor head control (30%), tongue thrust (38.6%) and drooling (48.5%). Elimination problems identified were bowel incontinence (30%) and constipation (70%). Motor problems include majority of children had spasticity (90%), dyskinesia (24.3%) and hypertonia (77.1%). More than half of children (62.9%) had dental caries. Respiratory tract infections (71.4%) were common in children with cerebral palsy and the other type of infections reported were urinary tract infection (30%), gastrointestinal infection (8.6%). Co morbid problems identified were 51.4% had epilepsy and 42.8% had mental retardation.

Key Words: cerebral palsy, clinical profile

INTRODUCTION

Cerebral palsy is a common developmental disability first described by William Little. The condition poses considerable diagnostic and therapeutic challenges with degree of involvement ranging from mild with minimal disability to severe, associated with several co morbid conditions. It is defined as an umbrella term covering a group of non-progressive, but often changing, motor impairment syndromes secondary to lesions or anomalies of the brain arising in the early stages of its development"[1]. Cerebral palsy occurs in about 2.1 per 1000 live births[2]. Rates appear to be similar in both the developing and developed world. Cerebral palsy is a static neurologic condition resulting from brain injury that occurs before cerebral development is complete. Because brain development continues during the first two years of life, CP can result from brain injury occurring during the prenatal, perinatal, or postnatal periods[3,4]. Birth complications, including asphyxia, are currently estimated to account for about 6% of patients with congenital cerebral palsy. Neonatal risk factors for cerebral palsy include birth after fewer than 32 weeks' gestation, birth weight of less than 5 lb, (2,500 g), intrauterine growth retardation, intracranial hemorrhage, and trauma. In about10 to 20% of patients, cerebral palsy is acquired postnatally, mainly because of brain damage from bacterial meningitis, viral encephalitis, hyper-bilirubinemia, motor vehicle collisions, falls, or child abuse. A study conducted in South Jordan that spastic CP was the predominant type (82.7%) with quadriplegic subtype being the most common (34.4%)[5]. Speech delay was the most common associated problem (71.3%) followed by mental retardation (61.5%), seizures (35.2%), hearing problems (26.2), and autism (4.9%) being the least.

Cerebral palsy is the most common chronic disability of childhood today. It is ubiquitous and it occurs all around the world. In spite of improved obstetrical and perinatal care, CP remains with us. As a result of injury to the brain, these children have motor defects which will affect them for their entire lifetime. Treatment often starts when they are infants, and continues throughout their life, even into adulthood. The problems involved are complex; not only do these children have problems of mobility, but they can also have seizure disorders, gastrointestinal system problems, learning and perceptual difficulties, visual problems, hearing problems, and growth deficiency. Comprehensive assessment and early management of these problems is emphasized, which can minimize the extent of disabilities.

STATEMENT OF THE PROBLEM

A study to assess the clinical profile of children with cerebral palsy attending a tertiary care centre, Thiruvananthapuram.

OBJECTIVE

Assess the clinical profile of children with cerebral palsy attending Sree Avittom Thirunal Hospital and Physical Medicine & Rehabilitation Department, Thiruvananthapuram.

MATERIALS AND METHODS

The research approach used in this study was quantitative.The research design adopted for this study was descriptive design. The study variable in this study was the clinical profile of children with cerebral palsy. The study was conducted in Pediatric Neurology Outpatient Department and medical wards of Sree Avittom Thirunal Hospital and Physical Medicine & Rehabilitation Department, Medical College Hospital, Thiruvananthapuram. Population is children with cerebral palsy. Samples for the present study consisted of all children with known case of cerebral palsy (1-6 years) who attended the SAT hospital and PMR during the time of data collection (six weeks). Samples who fulfilled the inclusion criteria were selected consecutively. Information regarding socio demographic data and

clinical data of child & mother were collected by using interview schedule. Interview schedule, clinical record review, anthropometric measurement, Trivandrum Development Screening Chart, Language Evaluation Scale Trivandrum and Brief Intellectual Disability Scale were used for the assessment of clinical profile.

DESCRIPTION OF TOOL

The tool used in the present study was a semi structured interview schedule for assessing clinical profile of children with cerebral palsy which consists of three sections: Section A: Socio demographic data**,** Section B: Clinical data of child & mother & Section C: Clinical profile of children with cerebral palsy.

The clinical profile of children with cerebral palsy was assessed with the help of the following tools:

- Development delay assessment by using Trivandrum Developmental Screening Chart (TDSC: delay in >3 items - developmental delay)
- Speech delay assessment by using Language Evaluation Scale Trivandrum (LEST: delay in >3 items - speech delay)
- Mental retardation screening by using Brief Intellectual Disability Scale (BIDS:Score >11 - mental retardation.

The tool was prepared after detailed review of literature under the guidance of subject experts and guide. Content validity of the tool was checked by subject experts from nursing colleges, Department of Pediatrics of Sree Avittom Thirunal Hospital, Department of Child Development Centre and Department of neurology in Physical Medicine and Rehabilitation Centre.

RESULTS OF THE STUDY

The socio demographical findings of the study participants were 37.1% of the children belonged to 0-2 years of age and 54.3% were male. Birth order distribution of sample showed that 40% children were first born. More than half of children had one sibling (54.3%). Half of the sample (50%) belonged to extended nuclear family. In this study 65.7% children had no schooling. Majority of study participants (68.6%) residing in panchayath and 60 % of sample belonged to BPL.

Distribution of children with CP according to problems during immediate postnatal period (n= 70)

Problems during immediate postnatal period	***Frequency***	***Percent***
No problems during immediate postnatal period	3	4.3
Hypoglycemia	24	34.3
Jaundice	38	54.3
Respiratory Distress Syndrome	25	35.7
Neonatal infections	9	12.9
Birth Asphyxia	18	25.7
Neonatal seizure	1	1.4

The study findings related to clinical profile showed that 4.2% had first degree malnutrition and 18.5% had first degree stunting and all the children (100%) with cerebral palsy had developmental delay. Majority of the children had vision problems, among squint (35.7%) were more prevalent, 22.9% had hearing loss, only 2.9% had no response to touch, and all the children (100%) were normally responding to taste. In this study 68.6% children had speech delay. Feeding difficulty wise distribution of sample showed that 30% had poor head control, 38.6% had tongue thrust, 45.7% had inability to close or open mouth, 48.5% had drooling, 60% had difficulty in self feeding, 58.6% had spillage during eating, 52.9% had rejection of solid foods, 50% had slowness on oral intake and 22.9% had vomiting. 30% of children had bowel incontinence, 70% had constipation, 31.4% had bladder incontinence, 10% had bladder retention and 1.4% had dysurea. Majority of children

(90%) had spasticity, 24.3% had dyskinesia, 82.9% hadparesis, 77.1% had hypertonia, 14.3% had hypotonia and 8.6% had contracture. More than half of children (62.9%) had dental caries, 5.7% had gingivitis, 37.1% had malocclusion of teeth and remaining 10% had staining of teeth. Respiratory tract infections (71.4%) were common in children with cerebral palsy. Among the 70 study participants, 51.4% had co morbid problems such as epilepsy and 42.8% had mental retardation.

DISCUSSION

In the present study, maximum number of the children belonged to the age group of 2-4 years (45.7%), 54.3% were male and 45.7% were female children. The study finding was consistent with the findings of Al-asmariet. al which showed that 62.62% boys and 37.38% girls (slightly more than one third of the boys) in the total sample[6].

The study revealed that among 70 study participants, 62.9% diagnosed with spastic diplegia, 25.7% sample diagnosed with spastic quadriplegia and 7.1% diagnosed with hemiplegia. The study finding was consistent with a retrospective study showed that 91.4% cases were of spastic type[7].

The study findings showed that all the CP children (100%) had developmental delay, 35.7% had squint, 22.9% had hearing loss, 68.6% children had speech delay. The findings was supported by anetiopathological study on cerebral palsy which showed that major signs and symptoms are developmental delay in 100%, feeding problems in 93.75% and language impairment in 100%.[8]

CONCLUSION

It was found that among the 70 study participants studied 44.2% had first degree malnutrition, 18.5% had first degree stunting, and all the children with cerebral palsy had developmental delay, 35.7% had squint, 22.9% had hearing loss, 68.6% had speech delay, 30% had poor head control, 38.6% had tongue thrust, 30% children had bowel incontinence, most of them had constipation and spasticity, 24.3% had dyskinesia and 62.9% had dental caries. Respiratory tract infections (71.4%) were common in children with cerebral palsy. 51.4% had co morbid problems such as epilepsy and 42.8% had mental retardation.

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Post COVID Syndrome

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Introduction

The COVID 19 pandemic in December 2019 has led to a new area of knowledge enquiry about the virus and the natural history of the diseases. The available literature suggest that many symptoms are being reported among the COVID -19 survivors, including those who with mild acute illness, young survivors, older patients. This is a challenge to the health care system.[1]WHO is working with researchers and patient groups around the world to study the patients beyond the initial acute course of illness to identify the proportion of patients who have long term effects, how long they persist, and why they occur. These studies will be used to develop further guidance for patient care.[2]

Post COVID syndrome

Post-acute COVID -19 (Long COVID) is a multisystem disease, where manifestations extending beyond three weeks from the onset of first symptoms and chronic COVID -19 extending beyond 12 weeks. Clinical management requires a whole patient perspective.

Pathogenesis

Coronal viral genome composed of 4 structural protein - CoV(E) envelope protein, CoV(S)spike glycoprotein, CoV(M) membrane protein and CoV(N) nucleocapsid protein.[4] The spike glycoprotein CoV(S) of corona virus bind to the host cell surface receptors via receptor binding domains (RBD). The SARS-CoV-2 uses angiotensin converting enzyme-2 (ACE-2) receptors, as main RBD[5] which are expressed on the surface of lung alveolar epithelial cells, venous and arterial endothelial cells, arterial smooth muscle cells, neural tissues and enterocytes of small intestine.[5,6]

Cytokine Storm

Virion surface enables attachment to ACE-2 and the fusion of viral and cellular membrane is facilitated to enable viral host entry. This leads to innate immune system activation and local inflammation in upper airways or gastrointestinal system depending on the entry point of virus. Generation of cytokines (IL10) and chemokines such as CCL4, MIP 1˜(Macrophage inflammatory protein) and Interferon gamma induced protein occurs. Neutrophils, effector T cells, monocytes and macrophages accumulated at the entry point of virus leads to generation of additional cytokines such as Interleukin-6 [IL-6] and tumour necrosis factor. This causes

endothelial dysfunction, hyperinflammation and disruption of blood brain barrier thus allowing the entry of innate immune cells in the brain and further pro inflammatory cytokine cascade occurs. Cytokine storm and endothelitis cause immune dysregulation which may persist after infection in the form of persistent inflammation, immunosuppression and catabolism syndrome.[7] Cytokine storm induces tissue factor, fibrinogen synthesis, platelet production and compliment activation which further leads to a hyper-coagulable state.[8]

Aberrant cytokine expression and hyper-inflammation leads to persistent lung injury manifested by dyspnoea. Neutrophil activation with increase cytokine levels are associated with the pathogenesis of ARDS and extensive lung injury.Extravasation of neutrophils into the alveolar space were identified in the post mortem tissues of Covid-19 patients.[9]

Contribution of mast cells in postcovid syndrome

Recent studies indicate that in addition to the T lymphocytes and macrophages, mast cells in the respiratory mucous membrane will also be activated by SARS-CoV-2.This leads to the cytokine storm, characterized by the production of pro inflammatory cytokines such as IL1,4,5,6, and tumour necrosis factor despite exocytotic release of chemokines. Cytokines impair the recovery process from the lung injury and stimulate the activity of fibroblasts to produce collagen. Mast cells also produce fibroblast activating factors which in turn promote migration and proliferation of fibroblasts to produce collagen. This facilitates the progression of pulmonary fibrosis causing POSTCOVID SYNDROME manifested by dyspnoea, generalised fatigue, chest pain and joint pain.[10]

COVID-19 and its implications

Corona virus not only affect respiratory system, it also has deleterious effect on other systems. A retrospective study to find out the acute cerebrovascular disease following COVID 19 revealed that out of 219 patients confirmed with SARS CoV 2, 11 (5%) patients developed new onset of CVD following COVID 19 infection. Among these,10 patients (90.9%) were diagnosed with ischemic stroke and 1 (0.1%) had intracerebral haemorrhage. All these patients had high inflammatory response and were in hyper coagulable state with increased levels of WBC,CRP and D-dimer.The study concluded that patients with CVD were older and had severe infection and were more likely to have cardiovascular and cerebrovascular risk factors and also suggested that more attention should be paid to older patients with cerebrovascular risk factors.[11]

Corona virus affect CNS via 4 possible pathways 1) immediate viral injury -no clear evidence to state how it harms central nervous system. 2) cytokine storm –ongoing hyperinflammation and excessive immune response cause disruption of blood brain barrier and severely disturbs the brain homeostasis and death of neuronal tissues.3) unintended host immune response effect after an acute infection –GBS is a case of indirect injury. 4) COVID-19 can enter the nervous system via cribriform plate close to olfactory bulb, blood circulation or neuronal pathway.[12]

SARS CoV 2 interact with ACE 2 receptors in capillary endothelium leads to endothelial damage and subsequent cerebral bleeding in patients with COVID 19. Virus mediated cytokine storm especially IL-6, endothelitis and compliment activation promotes hypercoagulable state which further increases the chance of cerebrovascular disease among patients infected with SARS CoV 2.The pathobiology related to Covid-19 infection and inflammation predicts that acute and longer term neurological manifestations are to be expected especially in older individuals.[6]

NETs (Neutrophil extracellular traps) and immune thrombosis

Hyperactivity of the coagulation system is the common finding of Covid-19. Polymorpho-nuclear leukocytes produce NETs through regulated cell death process called NETosis. Virus induce NETosis and produce NETs which trap and kill microbes as part of immune system. When triggered by platelets NETosis will become dysregulated and lead to NET mediated tissue damage, hypercoagulability and thrombosis. Intravascular NET plays an important role in initiating and accreting thrombosis in arteries and veins. NETs interact with platelets in COVID 19 and contribute to thrombosis in COVID 19 ARDS and perhaps throughout the body.

Recent study results revealed the following findings related to NETs and thrombosis.

- significant increase in plasma NET level in COVID 19 non survivors compared to COVID1D survivors and healthy donors. Myeloperoxidase DNA complex is detected as a measure of NET in plasma.
- significantly elevated levels of soluble platelet derived factor (PF4) that trigger NETosis.
- significantly elevated level of soluble marker of thrombosis (plasma D-Dimer)[13]

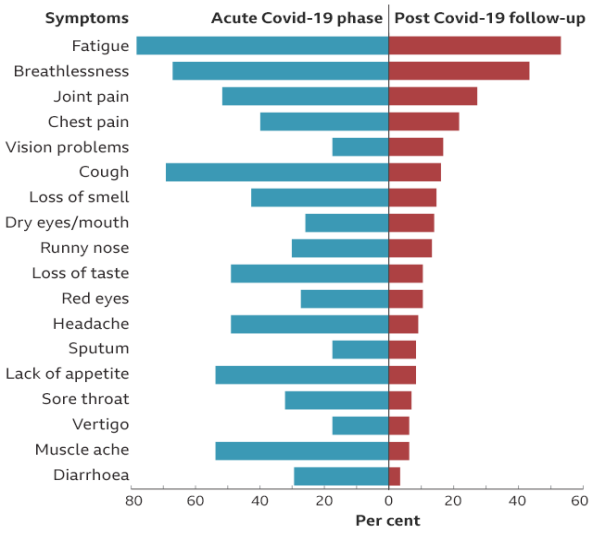
How this syndrome manifests?

The coronavirus disease may take weeks to overcome, however in some patients symptoms persists even after the original infection.

Other reported symptoms were muscle pain and weakness, cognitive blunting [brain fog], gastrointestinal upset, rashes, thromboembolic conditions, altered sense of smell, depression and other mental health conditions, sudden loss of bodyweight, ageusia ,sneezing, hot flushes vomiting, ear pain, eye problems and palpitation, increased resting heart rate and burning feeling in trachea.[15]

Persistent symptoms in Covid-19 patients

Patients followed up on average 60 days after first symptoms*



*143 patients assessed in Rome in April and May 2020

Source: Jama/Carfi, Bernabei, Landi et al BBC

Post-COVID Follow Up Protocol as the GoI, MoH & FW dated 13th Sept 2020 [16]

At individual level

- Continue COVID appropriate behaviour (use of mask, hand & respiratory hygiene, physical distancing).
- Drink adequate amount of warm water (if not contraindicated).
- If health permits, regular household work to be done. Professional work to be resumed in graded manner.

Mild/ moderate exercise

- Daily practice of Yogasana, Pranayama and Meditation, as much as health permits or as prescribed.
- Breathing exercises as prescribed by treating physician.
- Daily morning or evening walk at a comfortable pace as tolerated.
- Balanced nutritious diet, preferably easy to digest freshly cooked soft diet.
- Have adequate sleep and rest.

- Avoid smoking and consumption of alcohol.
- Take regular medications as advised for COVID and also for managing comorbidities, if any. Doctor to be always informed about all medicines that the individual is taking (allopathic/AYUSH) so as to avoid prescription interaction.
- Self-health monitoring at home - temperature, blood pressure, blood sugar (especially, if diabetic), pulse oximetry etc. (if medically advised)
- If there is persistent dry cough / sore throat, do saline gargles and take steam inhalation. The addition of herbs/spices for gargling/ steam inhalation. Cough medications, should be taken on advice of medical doctor or qualified practitioner of Ayush.
- Look for early warning signs like high grade fever, breathlessness, Sp02 < 95%, unexplained chest pain, new onset of confusion, focal weakness.

(i) At the level of community

- Recovered individuals to share their positive experiences with their friends and relatives using social media, community leaders, opinion leaders, religious leaders for creating awareness, dispelling myths and stigma.
- Take support of community-based self-help groups, civil society organizations, and qualified professionals for recovery and rehabilitation process (medical, social, occupational, livelihood). • Seek psycho-social support from peers, community health workers, counsellor. If required seek mental health support service.
- Participate in group sessions of Yoga, Meditation etc. while taking all due precautions like physical distancing.

In healthcare facility setting

- The first follow-up visit (physical/ telephonic) should be within 7 days after discharge, preferably at the hospital where he/she underwent treatment.
- Subsequent treatment/follow up visits may be with the nearest qualified allopathic/ AYUSH practitioner/medical facility of other systems of medicine. Poly-therapy is to be avoided due to potential for unknown drug interaction, which may lead to Serious Adverse Events or Adverse Effects.
- The patients who had undergone home isolation, if they complain of persisting symptoms, will visit the nearest health facility.
- Severe cases requiring critical care support will require more stringent follow up.

Post COVID Clinics in Kerala

The Non-Communicable Disease (NCD) nodal officer is responsible for setting up and facilitating post COVID clinics. As per the letter No 31 /F2/2020/ health dated 28th October 2020, Govt of Kerala initiated Post COVID Clinics is functioning in all primary Health Centre, Family Health Centres, Taluk Hospitals, District and Medical College hospitals at specific time on fixed days (eg 12 – 2pm every Thursday). All OCVID 19 recovered patients in the field shall visit the nearest

Conclusion

Covid-19 disease is just the beginning of an uncharted recovery path among Covid-19 survivors. A clear clinical picture of Covid -19 aftermath is vague as evidence on Covid-19 clinical history following acute phase and its mid and long outcomes are very limited. Hence it is of utmost important that health care services need to ensure a comprehensive follow up of people discharged from hospital.

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