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LOW BACK PAIN IN CAREGIVERS OF CHILDREN WITH CEREBRAL PALSY- A PREVALENCE STUDY

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ISSN 2063-5346 *Section A-Research paper*

Abstract:

Background: The term "chronic low back pain" (CLBP) refers to discomfort that lasts longer than three months. The most frequent disability linked to caring for children with CP is chronic low back pain (44.7% prevalence). **Methodology:** A Cross Sectional Survey with a Convenient Sampling. Study Population includes Caregivers of CP children with chronic low back pain mainly Pain in lumbar or buttock region last more than 3 months**,** age between (18 -60 years) [1]**.** .The outcome measures were VAS Scale and JRPD Questionnaire **Results:** The biomechanical factors like (Bending forward & backward with a mean of (2.93±0.521), Lifting heavy weights with a mean of (2.97±0.556), Twisting of the body with a mean of (2.57±0.626) played a major role in causing low back pain. The VAS Score for the pain was found to be with a mean of (5.83±0.913).The total JRPD scoring was given with a mean of (62±5.766).**Conclusion:** There is prevalence of low back pain in caregivers of children with Cerebral Palsy and that was in association of performing sternous physical activities.

Key words: Chronic Low back Pain, Care giver, Cerebral Palsy, Visual Analogue scale, Job-Related Physical Demands questionnaire.

Introduction:

Chronic low back pain (CLBP), which may or may not include leg pain, is defined as discomfort that lasts more than three months, is located below the costal margin and above the inferior gluteal folds. Chronic Low Back Pain is the most prevalent disability associated with providing care in mothers of children with CP (44.7%). Furthermore, it is the primary cause of these mothers' disabilities and has a negative impact on their quality of life [(1).] LBP is a significant issue across the globe, particularly in low- and middle-income regions.[(2)]

80% of people will experience LBP at some point in their lives, according to a 2003 report from the World Health Organization (WHO). According to a survey, housewives made up the majority of patients (58.8%), followed by those who worked for the government (19.6%), businesses (10.8%), the labour force (6.9%), the private sector (2.9%), and the military (1%).(3)

ISSN 2063-5346 *Section A-Research paper*

Women are more likely than men to have LBP, and they do so earlier, as compared to most other nations. Another study found that both men and women are more likely to experience back problems after having a child who is disabled [(2).] Additionally, LBP prevalence is higher among adult female primary carers of children with physical disabilities than it is in adult female primary carers of children with non-physically debilitating medical illnesses. Low back pain can be divided into three categories based on how long it has been present: acute, subacute, and chronic.

The umbrella name for the non-progressive brain disorder that identifies cerebral palsy causes a variety of neurological, motor, and postural impairments in the developing child. Globally, geographic differences can be seen in CP data, although population-based reports have generally shown a rate of 1 to 1.5 per 1,000 live births.

Mothers of children with cerebral palsy frequently spent 6 hours per day and 8.3 hours per day, respectively, caring for their affected children on weekdays and weekends, according to a study by Sawyer MG & Bittman Metal. Studies have demonstrated a large increase in care requirements due to the additional needs of children with cerebral palsy (on top of usual kid needs), which has a detrimental effect on parents' physical, social, and financial stability. Therefore, even while caring for a young child is a normal responsibility of parenting, it can be challenging to provide the high level of care that a child with long-term functional impairments requires. During this process, the carers frequently fail to pay attention to their own health problems.(6)

In terms of personal care, transfer, dressing, transferring, and feeding, as well as forward bending, rotating, and lifting daily life activities and treatment during which they may be exposed to physical trauma and heavy loads, the mothers of children with CP actively support their children. The amount of strain placed on the back's musculoskeletal structures depends on the load that is placed on the spine and corresponding muscles during both dynamic and static postures. Chronic physical loading is known to cause issues with the musculoskeletal system.

ISSN 2063-5346 *Section A-Research paper*

Low-income countries typically have limited access to assistive devices because of poverty and a lack of resources, which forces carers to perform more physically taxing duties and increases the risk of low back pain and other health problems.

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Low-income countries typically have limited access to assistive equipment due to poverty and a lack of resources, which exposes carers to physically demanding duties and increases the risk of low back discomfort. These include spinal problems. Heavy lifting and keeping the child in diverse positions for a lengthy amount of time are two of the causes. Numerous musculoskeletal problems might arise as a result of uncomfortable posture, poor ergonomics, and delayed reporting.

Caregivers of children with cerebral palsy typically report back pain, according to a research by Almeida et al. The most affected spinal section, according to the same scientists, is the lumbar area. Along with not knowing the optimal manner to carry their children, many mothers often fail to get physiotherapy or medical assistance during the difficult stage.

The pain that carers felt interfered with daily activities, mood, walking, regular work, sleep quality, and enjoyment of life to a moderate to severe extent. Chronic low back pain may develop if low back pain occurs frequently and gets worse. Chronic low back pain may impair functional abilities, interfere with work, cause psychological suffering, and alter the level and calibre of care provided to the disabled. Therefore, it's important to manage chronic low back discomfort.

ISSN 2063-5346 *Section A-Research paper*

Therefore, it is crucial to take into account the impact of caregiving leading to low back pain and its impact on daily life among primary carers who play a vital part in the rehabilitation process for the cerebral palsy kid, which has to be examined.

METHODOLOGY

This study is a Cross Sectional Survey with a Convenient Sampling. Study Population includes Caregivers of CP children with chronic low back pain**.** Patients were taken from the department of Therapeutics, Physiotherapy Division in National Institute for Empowerment of Persons with Multiple Disabilities(NIEPMD) ,Chennai from May 2022-Dec 2022 .All the patients were explained involved in the study before the enrolment in the study .Institutionally approved written consent was obtained from the study who fulfilled both the criteria.

Inclusion Criteria were Caregivers of children with cerebral palsy. History of pain in lumbar and/or buttock region for longer than 3 months**.**Age between (18 -60 years) [1]**.**Exclusion Criteria were Recent Fractures, Surgeries, Subluxation, Unexpected weight loss, Current Pregnancy, Caregivers caring more than 1 child [1] .The outcome measures were VAS Scale and JRPD Questionnaire[1]

Out of 45 clients, 30 clients within mean age of 37.27 and standard deviation of 6.948 were included as they fulfilled the inclusion criteria i.e. They were experiencing low back pain more than 3 months. Out of 30, there were 21 female caregivers and 9 male caregivers. All the patients were explained about procedure involved in the study. Before the enrolment in the study Institutionally approved written consent was obtained from the study who fulfilled both the criteria. At first, their demographical data, history, pain assessment and complete physical assessment was taken. The outcome measure used for Pain Assessment was **Visual Analogue Scale (VAS)** and the special test was **Straight Leg Raise Test (SLR).**The straight leg raise test also called the **Lasegue** test, is a fundamental neurological maneuver during physical examination of the patient with lower back pain aimed to assess the sciatic compromise due to lumbosacral nerve root irritation. After completing the assessment, they were given the **Job-Related Physical Demands questionnaire (JRPD)**, as shown in picture given below. The JRPD questionnaire had 38 items that examine both types of exposure and the duration of such

ISSN 2063-5346 *Section A-Research paper*

exposures. Three items of the JRPD were included and the selected items included the following: (1)forward-flexionmovements—I lean forward continually when I work (when sitting, when standing, when pushing carts, etc.); (2) repetitive bending—I repeatedly bend my back (e.g., forward, backward, to the side, or twist) in the course of my work; and (3) lifting movements—I lift materials that weight more than 25 pounds. Participants were asked to answer each item in five-point Likert-type scales: 1(never), 1 (≤5 hours/week), 2 (≤2 hours/day), 3 (2 to 4 hours/day), and 4 (≥4 hours/day). After completion of the questionnaire, the scores were summed and they were awarded the scores respectively. The total score for the questionnaire is 152, out of that they were given the score. As the score increases there is a risk of increase in biomechanical factors that led to low back pain. Then through SPSS version 26 the data analysis is done and the result is calculated.

DATA ANALYSIS & INTERPRETATION

All descriptive information was expressed as mean ± standard deviation because the data had a normal distribution. IBM SPSS version 26.0 statistical software, statistical package for the social sciences (SPSS), was used to analyze the data (IBM Corp., Armonk, NY, USA).

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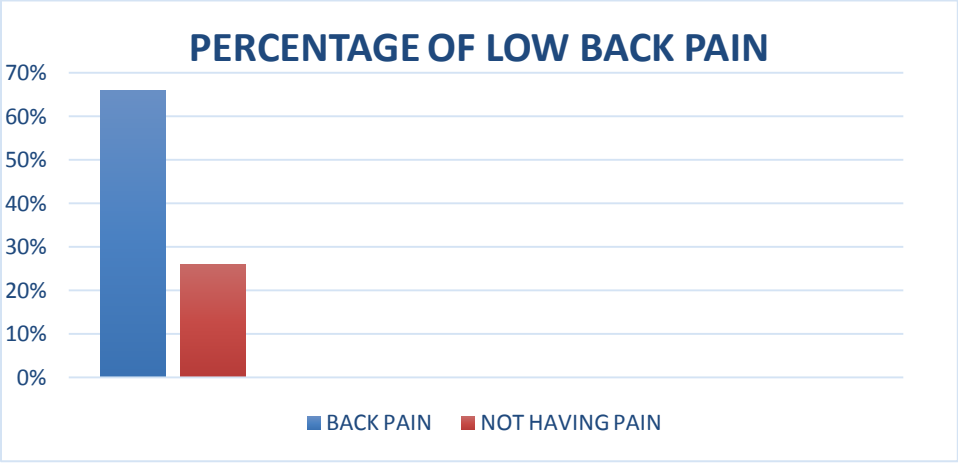
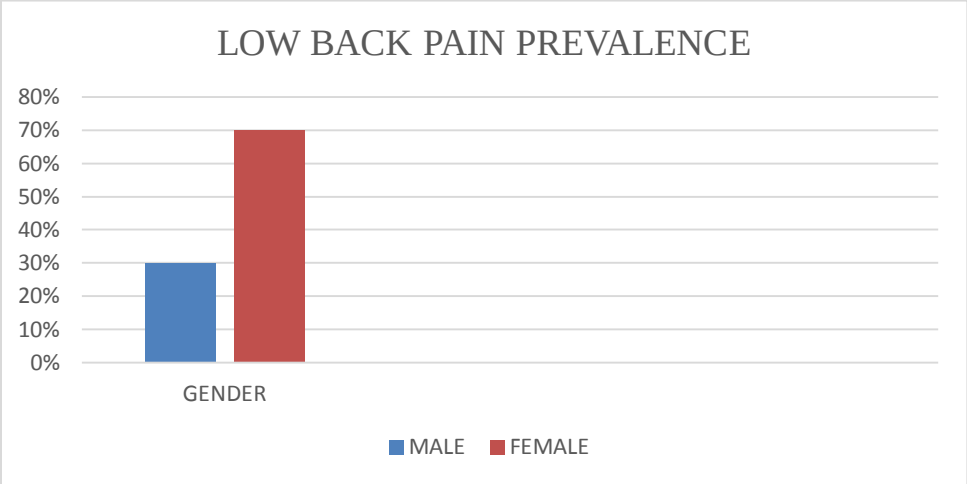


ISSN 2063-5346 *Section A-Research paper*

GRAPH 5.1: shows the percentage of low back pain in caregivers. A total of (n=45) participants were included in this study in which n=30 (66%) participants had low back pain and n=12 (26%) didn't have low back pain.

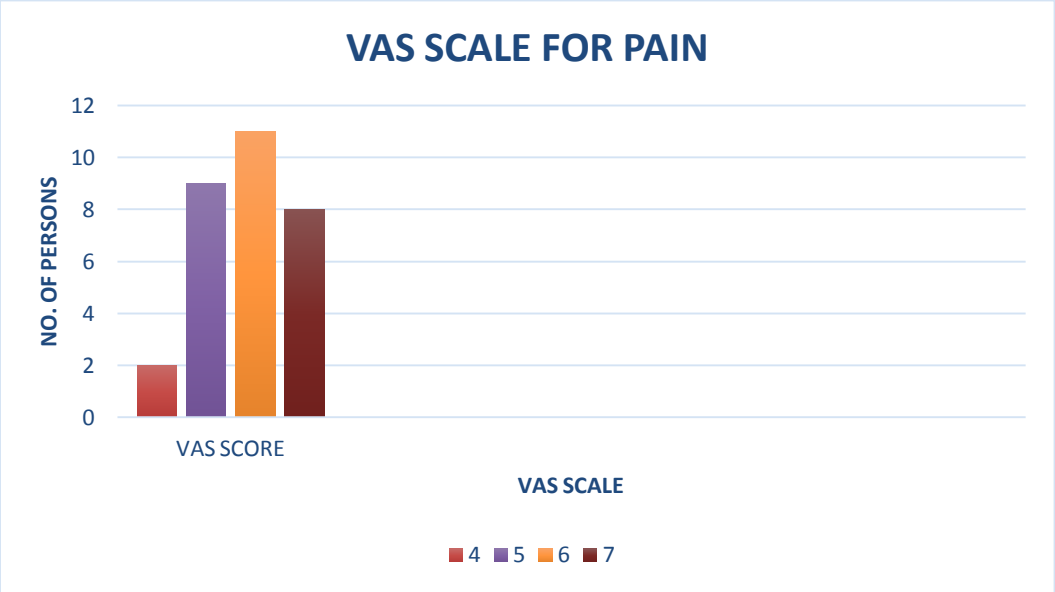


GRAPH 5.2: Shows the number of male and female caregiver who are experiencing chronic low back pain. There are 9 male caregivers and 21 female caregivers. Here it shows that there is a prevalence of low back pain in female caregivers mainly (70%) and less in male caregivers(30%).

Table 5.1: Descriptive statistics of VAS

OUTCOME MEASURE	MEAN	MODE	MEDIAN	MEAN +STANDARD DEVIATION
VAS	5.83	6	6.00	5.83±0.913

ISSN 2063-5346 *Section A-Research paper*

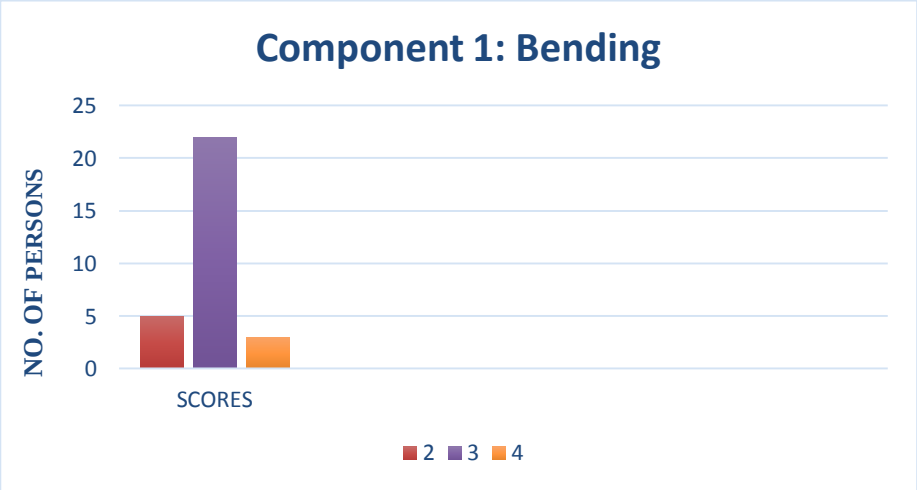


GRAPH 5.3: shows that VAS for the pain assessment. It mainly ranged between (4 to 7) andthe graph shows that 11 of the people marked 6 as the VAS score.

COMPONENT 1:	MEAN	MODE	MEDIAN	MEAN±STANDARD DEVIATION
BENDING	2.93	3	3.00	2.93±0.521

Table 5.2: Descriptive statistics of component 1: Bending forward, backward

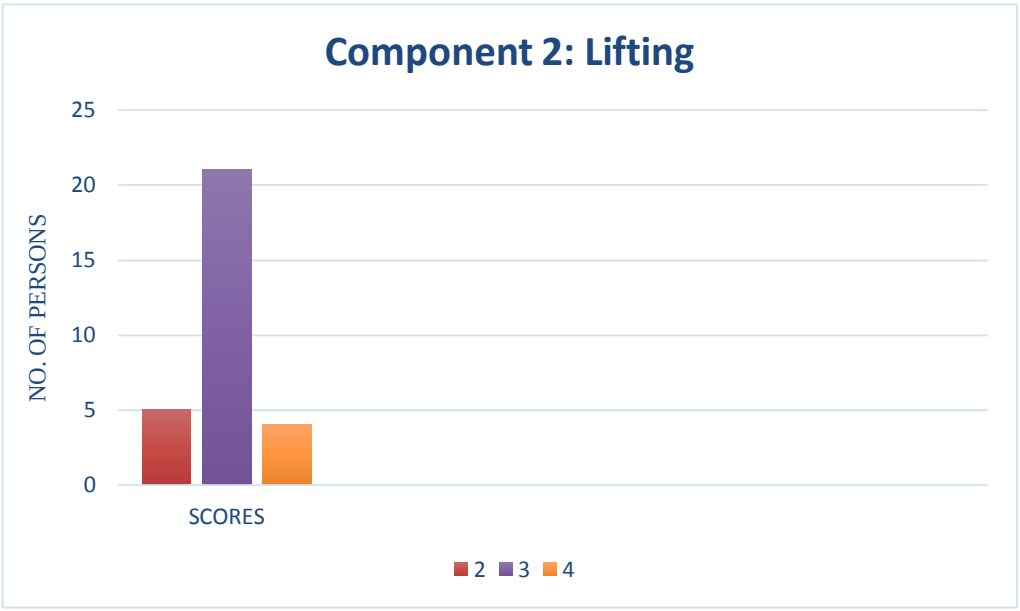
ISSN 2063-5346 *Section A-Research paper*



GRAPH 5.4: shows the frequency of component 1 that is bending forward and backward.

Table 5.3: Descriptive statistics of component 2: Lifting

COMPONENT 2:	MEAN	MODE	MEDIAN	MEAN+ STANDARD DEVIATION
LIFTING	2.97	3	3.00	2.97±0.556

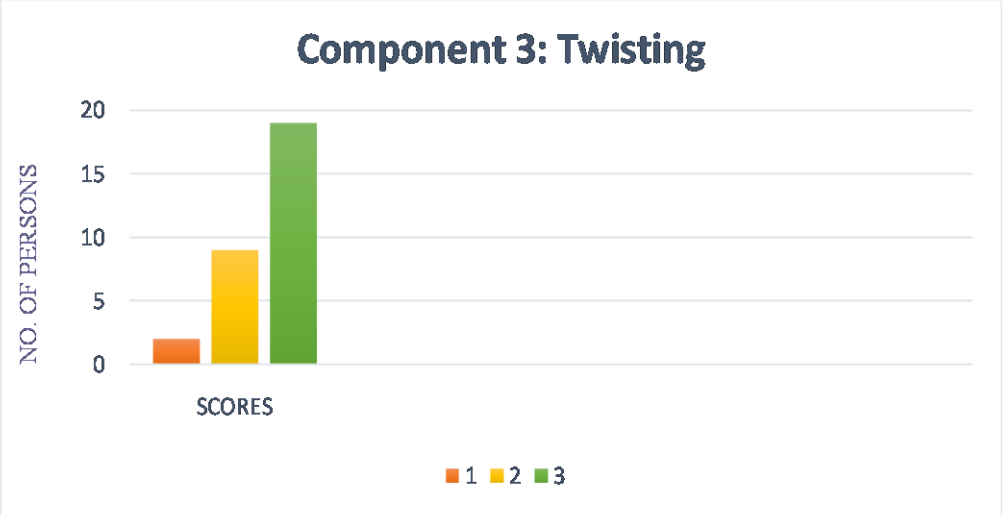


ISSN 2063-5346 *Section A-Research paper*

GRAPH 5.5: shows the frequency of component 2 that is lifting bulky items or lifting weights more than 10 kgs.

Table 5.4: Descriptive statistics of component 3: TWISTING

COMPONENT 3:	MEAN	MODE	MEDIAN	MEAN±STANDARD DEVIATION
TWISTING	2.57	3	3.00	2.57±0.626

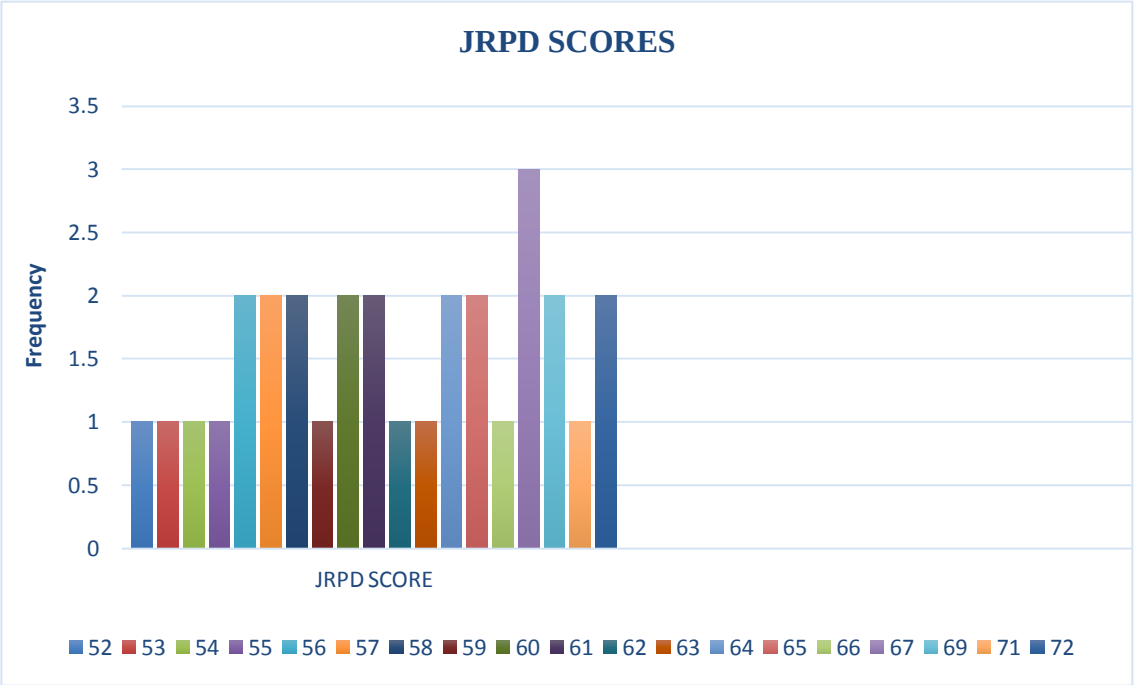


GRAPH 5.6: shows the frequency of component 3 that is twisting the body while doing any activity.

ISSN 2063-5346 *Section A-Research paper*

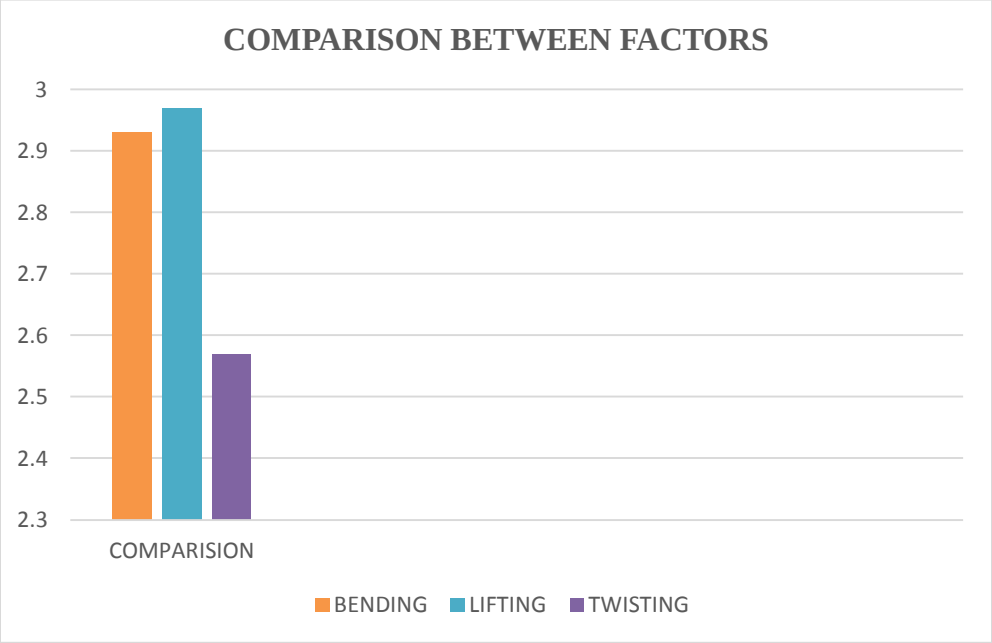
JRPD SCALE	MEAN	MODE	MEDIAN	MEAN±STANDARD DEVIATION
SCORING	62	67	61.50	62±5.766

Table 5.5: Descriptive statistics of JRPD Score



GRAPH 5.7: shows that frequency of total score of JRPD Scoring, 19of them got the total score more than 60.

ISSN 2063-5346 *Section A-Research paper*



GRAPH 5.8: shows that comparison between the three main factors i.e., bending, lifting, and twisting.

RESULT

30 participants were included with a mean (SD) age of 37.27(6.948) and it is found out that 70% of the caregivers were females as they were the primary caregivers responsible for transfer, carrying. They were suffering from chronic low back pain. It is found that biomechanical factors like (Bending forward & backward with a mean of (2.93±0.521), Lifting heavy weights with a mean of (2.97±0.556), Twisting of the body with a mean of (2.57±0.626) played a major role in causing low back pain. The VAS Score for the pain was found to be with a mean of (5.83±0.913)The total JRPD scoring was given with a mean of (62±5.766)

ISSN 2063-5346 *Section A-Research paper*

DISCUSSION

The present study was conducted to assess the prevalence of low back pain in caregivers of children with cerebral palsy. After showing positive response to the assessment and then using JOB RELATED PHYSICAL DEMANDS (JRPD) questionnaire, it showed the factors associated with chronic low back pain.

Screening shows that in 45 caregivers, 66% of caregivers had chronic low back pain (more than 3 months) and 26% didn't have not experienced low back pain in past 3 months. The screening also shows that out majority of caregivers who had chronic low back pain were female caregivers 70% as they are the primary caregivers who involve in activities like carrying, transferring, personal hygiene and the rest 30% were male caregivers. These findings are supported by the study conducted by Eda Tongaa, and Tulin Duger [12]. In the study it was estimated that 91% of disabled children's parents had low back pain.

Out of 38 factors, only Main factors were observed and were taken into account and the major factors responsible for causing low back pain are as follows: Factors like Bending forward, backward were repeatedly done and 22 people scored 3 i.e., they were doing the activity for (2 to 4 hours/ day) in the factors and the mean was 2.93., Twisting was given mean score of 2.57and 19 people scored for 3 i.e. they were doing the activity for (< 2 hours/day), Lifting weights more than 10 kgs with hands were given mean score of 2.57and 21 people scored for 3 **(**2 to 4 hours/ day).

In line with the findings of this study in terms low back pain, Mehdi Ramezan [1], found out that mothers who engaged in lifting activities had a 13.7 higher risk of developing CLBP than mothers who did not. Lifting activities have been linked to low back pain, according to earlier studies. The impact of lifting at work on the prevalence of low back pain in occupational populations exposed to lifting was examined by Coenen and colleagues. They concluded that the frequency and intensity of lifting could considerably raise the yearly incidence of low back discomfort. When lifting, the paraspinal muscles are overworked and subjected to high stresses, which causes muscle fatigue.

ISSN 2063-5346 *Section A-Research paper*

Caregivers who frequently bent over had higher risk of having CLBP than caregivers who did not. Previous research has also demonstrated the link between repetitive bending and low back discomfort, which is consistent with our findings. Additionally, when choosing the forward-flexion movements, we considered the relationship between CLBP and forward flexion of the lumbar during caregiving activities, such as moving a baby wheelchair, stroller, or doing other activities of a similar kind.

Sustained trunk twisting elicits significant trunk rotational creep. It causes an individual erector spinae muscles to become active longer during anterior flexion as well as extension, which may be linked to the decrease of the tension ability of passive tissues in low back area, indicating a higher risk in developing LBP.[58]

Therefore, it was concluded that mostly lifting heavy weights, repetitive bending movement, twisting movement, during handling, or lifting a child were the factors which played a major role in causing low back pain in caregivers.

So, from the results and previous research done favours that there is a prevalence of low back pain in caregivers in children with cerebral palsy.

CONCLUSION

The statistical analysis and result shows that 70 % of population who had low back pain were female caregivers as they are primary caregivers responsible for activities like feeding, carrying the child, transferring, bathing. There were factors which risk the biomechanical factors and cause low back pain. It was found that major factors leading to back pain were: Bending of the body, lifting bulky items or weights more than 10 kgs, twisting of the body. Comparing between them it was found that Lifting factor is greater in frequency. According to the effect of our study and all the review of literature, it is here concluded that there is prevalence of low back pain in caregivers of children with Cerebral Palsy and that the association of performing harmful physical activities (lifting, repetitive bending, and lumbar forward-flexion) with chronic low back pain.

ISSN 2063-5346 *Section A-Research paper*

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