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RESEARCH ARTICLE

Perception and Preparedness of Menstrual Hygiene and Care in Parents and Caregivers of Cerebral Palsy Affected Girls

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Abstract: ***Background of the study:*** Girls with cerebral palsy have limited capacity and scope to cope with menstrual issues. It results in additional burden for the Parents/Guardians in handling their response to menarche, premenstrual and menstrual symptoms. The lack of information regarding menstrual care and support causes parental stress. This can also lead to secondary infection also leading to more serious complications and diseases. ***Method:*** A cross- sectional observational study was conducted among purposively selected parents and caregivers of cerebral palsy affected girls using a self- constructed and statistically standardized questionnaire in which questions related to the menstrual hygiene, issues faced by the parents and caregivers, their knowledge about managing the menstrual symptoms were included. ***Results:*** Most of the parents and caregivers reported that menses places additional burden on caregivers. There is lack of knowledge and awareness about menstruation and are interested in getting additional information and support from health care providers. Caregivers and parents require physical and mental support from their family. ***Conclusion:*** This pilot study concluded that more information, awareness and support is required for the caregivers and parents to cope with difficulties during menstruation and to avoid secondary complications.

Keywords: cerebral palsy, menstrual hygiene, menstrual symptoms, parents and caregivers, perception, awareness.

INTRODUCTION

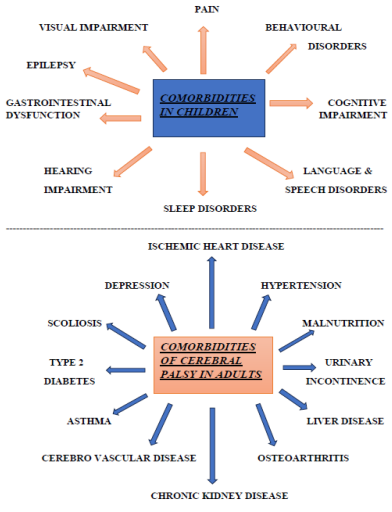
Cerebral palsy (CP) is a group of permanent, though not unchanging, disorders of movement, posture, and motor function caused by non-progressive interference, lesions, or abnormalities in the developing or immature brain (Mutch et al.). Rosenbaum et al. further define CP as a group of permanent disorders affecting the development of movement and posture, leading to activity limitations, and attributed to non-progressive disturbances in the developing fetal or infant brain. These motor disorders are often accompanied by disturbances in perception, sensation, communication, cognition, behavior, epilepsy, and secondary musculoskeletal problems.

Although definitions vary among authors, some common terms recur: CP involves permanent disorders of movement and posture, resulting in motor impairment; it arises from cerebral abnormalities or insults during the early stages of life (Cerebral Palsy: A Multidisciplinary Approach, 2018). The insult or abnormal brain development may occur in the prenatal, perinatal, or postnatal period. CP is one of the most common causes of childhood disability, with both physical and mental impairments, occurring in 1.5 to 2.5 per 1,000 live births. The severity of motor impairment and functional ability varies depending on the etiology.

Prematurity and low birth weight are major risk factors for CP. Its prevalence is highest among children with low birth weight, particularly those weighing between 1,000–2,500 grams. Within this group, children weighing 1,000–1,500 grams are at the highest risk. Similarly, prevalence is significantly higher in children born before 28 weeks of gestation. Overall, CP prevalence is inversely proportional to both birth weight and gestational age (Oskoui et al., 2013).

Common comorbidities associated with CP include language and speech impairments (such as difficulty in comprehension), visual impairments (squint, reduced visual acuity), intellectual disability, epilepsy (more common in the spastic type), sleep impairments (daytime sleepiness, delayed onset of sleep), pain, and gastrointestinal dysfunction. Gastrointestinal issues may involve chewing and swallowing difficulties, regurgitation, vomiting, poor appetite, and coughing during feeding. Children with mild swallowing problems may require chopped or mashed food, while those with moderate dysfunction benefit from well-moistened, chopped, or mashed foods (Viswanath et al., 2023).

Comorbidities of cerebral palsy:



CHRONIC KIDNEY DISEASE

Speech disorders occur in about 20% of children with cerebral palsy (CP), with dysarthria and dyspraxia being the most common motor-related speech impairments. Speech ability is influenced by the type of CP, cognitive level, and gross motor function, with spastic CP often linked to deficits in resonance and voice production, while dyskinetic CP is associated with poor coordination and timing of speech. Neuroimaging shows that bilateral brain lesions and cognitive impairment significantly increase the risk of speech disorders (Nordberg et al., 2013). Epilepsy is another common comorbidity, with a prevalence of 20–45% in children with CP, rising to 35–50% in India. Risk factors include family history of epilepsy, low birth weight, neonatal seizures, and onset within the first year of life. Seizure types are classified by the International League Against Epilepsy (2017) as focal, generalized, unknown, or unclassified. Prevalence varies with CP type, being highest in spastic hemiplegia (30.4%) and quadriplegia (28.7%), and shows a strong correlation with gross motor function, particularly in children classified at level V (52.9%) (Archana et al., 2022).

Menstruation:

Menstruation is a physiological process regulated by hormones. The hypothalamus releases gonadotropin-releasing hormone, which stimulates the anterior pituitary gland to secrete luteinizing hormone (LH) and follicle-stimulating hormone (FSH). These hormones act on the ovaries, leading to the production of progesterone and estrogen, which regulate endometrial function. If fertilization and implantation do not occur after ovulation, the corpus luteum degenerates, resulting in a decline in progesterone levels and shedding of the uterine lining, causing menstruation (Reavey et al., 2019). Menstruation marks the shedding of the endometrium, with menarche being the onset of the first cycle. It is a transitional phase associated with growth, psychological changes, and sexual maturity. On average, 30 ml of blood is lost during menstruation, and the typical menstrual cycle lasts 28 days (Reed et al., 2000).

Menstrual disorders include menorrhagia (heavy or prolonged bleeding), amenorrhea (absence of menstruation), oligomenorrhea (infrequent menstruation), polymenorrhea (cycles shorter than 21 days), and dysmenorrhea (painful menstruation). Amenorrhea can be primary, defined as the absence of menarche by age 16, or secondary, defined as the cessation of menstruation after it has already begun (Women and Health, 1999). Another common disorder is premenstrual syndrome (PMS), which occurs a few days to a week before menstruation. It is characterized by physical and emotional symptoms such as depression, irritability, fatigue, abdominal and back pain, headaches, mood swings, food cravings, and sleep disturbances. Most girls experience at least one symptom, with mood changes being the most commonly reported (Hashim et al., 2019).

Adolescent girls often face psychological challenges during menstruation, including mood swings, restlessness, irritability, depression, and stress. At menarche, many girls report feelings of embarrassment, guilt, or shame, which are aggravated by cultural restrictions such as being barred from kitchens or holy places. Additional challenges include lack of privacy, poor access to sanitary materials and clean water, limited knowledge of menstrual health, and inadequate family or healthcare support (Sundari et al., 2022).

Management of menstrual cramps and related disorders includes lifestyle modifications, diet, nutritional supplements, herbal remedies, aromatherapy, physical activity, and acupressure. Dietary recommendations include avoiding refined carbohydrates, sugars, processed foods, dairy products, and egg yolks, as these may exacerbate inflammation. Nutritional supplements such as vitamin A, magnesium, and omega-6 fatty acids can reduce cramps by relaxing smooth muscle. Herbal remedies like fennel seeds, ginger, cinnamon, chamomile, basil, motherwort, cramp bark, and red raspberry leaves are effective in reducing menstrual pain and premenstrual symptoms. Aromatherapy using heat packs and lavender oil may also relieve pain and anxiety. Acupressure applied to specific points on the abdomen, back, and arms has been shown to alleviate PMS symptoms and reduce menstrual discomfort (Begum et al., 2016).

Menstruation and disabled people:

The onset of menarche and puberty in girls with cerebral palsy (CP) varies depending on the nature and severity of disability, with many showing earlier sexual development and a higher risk of central precocious puberty compared to the general population (Dickson et al., 2018; Yaacob et al., 2012). Studies report breast development around age 11 and pubic hair development slightly later, with many experiencing menstrual irregularities, dysmenorrhea, infections, and poor menstrual hygiene due to restricted mobility and cognitive limitations (Rao et al., 2019). Children with CP face up to 20 times greater risk of early puberty, largely idiopathic but also linked to CNS insults such as trauma, tumors, or infections (Bruzzi et al., 2017; Kota et al., 2024). Managing menstruation poses significant challenges for both individuals and caregivers, raising concerns about hygiene, vulnerability, and quality of life. Gynecological support is essential to address menstrual health, provide education on hygiene and symptom relief, and guide families through management options. Menstrual suppression methods, ranging from hormonal therapies such as DMPA and OCPs to surgical interventions like hysterectomy, are sometimes considered for individuals with severe disability when menstrual care becomes difficult (Kirkham et al., 2013; Quint et al., 2014).

Caregivers and parents of disabled individuals:

Parents and caregivers of girls with cerebral palsy face significant challenges during menstruation, including managing premenstrual symptoms, maintaining hygiene, and fears of sexual abuse or pregnancy, sometimes leading to consideration of sterilization or hysterectomy (Devesa et al., 2010; Chen et al., 2015). Caregiving stress correlates with the severity of the child's disability and is worsened by behavioral problems, often resulting in caregiver depression, fatigue, and musculoskeletal pain from heavy lifting and physical strain (Ketelaar et al., 2008; Vadivelan et al., 2020). Low back pain is especially prevalent among primary caregivers of physically disabled children, with risk factors including improper lifting, depression, and the child's high dependence for transfers and mobility (Tong et al., 2003). To address these issues, this study collects caregiver-reported data through questionnaires and, in its second phase, aims to provide tailored strategies to support parents in managing menstrual hygiene and related challenges.

Need and significance of the study

Parents and caregivers play a vital role in disabled children's life. Their awareness about the health condition and essential needs of the children is major factor contributing to the better quality of life. They undergo varies difficulties in managing their children particularly those with female adolescents who attained menarche.

There are various studies addressing the burden and quality of life of disabled children but there is a paucity of literatures that addressing the perspectives of parents and caregivers about menstruation and complexity of caregiving.

The objectives of the study are to understand the knowledge and perceptions that prevail among caregivers in fostering girls affected by cerebral palsy (CP) and to incorporate tailored measures to manage the cascade of events that may occur either before or after the menstrual cycle.

MATERIALS AND METHODOLOGY

Research design:

Mixed research design.

- PHASE-I: Non-experimental study design (focus group survey)
- PHASE- II: Experimental study

Study setting:

- Multi centred community setting

Sampling technique:

- Purposive sampling

Sample size:

- The study applied proper statistical methods to conclude the sample size of 30

Inclusion criteria:

- Parents and caregivers of CP affected girls who attained menarche
- Care givers and parents following under all gender
- Parents and caregivers who are able to understand and communicate
- Parents and caregivers who have good linguistic presence.

Exclusion criteria:

- Parents who are in medical profession
- Caregivers of children accompanied by profound mental illness
- Parents of children with clinically proven psychiatric illness
- Parents and caregivers of sterilized girls.

Procedure:

A pilot study was conducted to evaluate the understanding and preparedness for menstrual hygiene and care in parents and caregivers of cerebral palsy affected girls. The study was conducted with 30 participants who satisfies the inclusion criteria. In this study the participants are selected irrespective of age limit. It is conducted as two phases the first phase of the study involves collecting information from the parents and caregivers using a questionnaire and based on the result obtained from phase one the phase two of the study is conducted.

Phase-I

The data was collected from parents and caregivers at rehabilitation centres and home. The participants in the study were voluntary to provide information about the girl menstruation, difficulties faced by them and if anyone not willing to participate were excluded. The purpose of the study is clearly explained to the participants and the informed consent was obtained.

Information regarding the girl's menstruation and the experience of the parents are obtained using the self - structured inter and intra rated validated questionnaire (Annexure-II). The questionnaire consists of the demographical data of parent and the girl with cerebral palsy and 15 questions addressing the menstrual hygiene practice and awareness of menstruation with four- point Likert scale for each question. Each question the respective options are clearly explained and the participants are informed to select one appropriate option. The questionnaire consists of the following information.

Demographic information of the parent such as the name, age, sex, and occupation, and name and age of the girl are collected. The questions about girl's reaction towards menarche such as scared, anxious, embarrassed and difficulties faced by the parents in handling the girl

during menstruation which involves hygiene management, pain management and emotional support and access to the resources to provide menstrual hygiene , type of absorbent materials used like sanitary pads and cloth pieces, number of times the absorbent is changed per day, idea about menstruation, awareness about premenstrual syndromes, home remedies used to relieve menstrual pain which involves hot packs, fenugreeks seeds and medications, suggestions received about permanent contraception and managing the menstrual symptoms, type of support received from the family which involves financial, emotional, physical, social support and communication strategies of the girl in expressing their menstruation. The parents and caregivers also share any barriers or challenges faced by them in handling the menstruation and offer suggestions for improvement. The study aims to enhance understanding of menstrual care for girls with cerebral palsy, with participants' responses contributing to advancements in this area.

Fig 1. Interaction with the caregivers at rehabilitation centre

Fig 2. Interaction with the parent at home

Phase - II pre -pilot experimental trail:

By analysing the results from the first phase of the study it is further extended as a pre -pilot experimental study. In this phase parents and caregivers are thought about how to manage the girl during menstruation, pain relieving methods and suggestions regarding the hygiene management.

Among 30 participants from phase one only five participants are selected for this phase. The parents, caregivers and the girl with cerebral palsy are involved in the study.

As reported by the parents and caregivers the most common complaint of the girl's during menstruation is abdominal cramps and backaches. To reduce these symptoms deep breathing exercises, and use of warm compress are suggested to the parents and caregivers.

Deep breathing exercise:

DBE is a relaxation technique which involve taking deep breath and then slowly exhale. Relaxation technique reduces the cortisol levels there by decreasing the stress. Box breathing is a type of deep breathing exercise which is used to relieve pain, stress and depression. This can be done by placing the individual in the comfortable position like sitting and supine lying. It consists of four steps and the duration of the steps can be adjusted based of the individual's capacity.

Procedure:

The patient is instructed as follows;

- Breath in through the nose for 4 seconds
- Hold the breath for 4 second
- Breath out through the mouth for 4 seconds
- Hold breath for 4 seconds
- Repeat the process
- While inhaling the abdomen should bulge out and during exhaling should contracts.

- Exercise is performed 5 times in each set for three to five times a day.

Warm compresses:
Warm compress is a method of applying heat to the body to improve circulation and to reduce pain. It is used to relieve the symptoms of dysmenorrhoea such as abdominal cramps and backache. The heat that ranges from 40-45 °c when applied superficially relaxes the abdominal muscle thereby decreases the pain. Warm compress can be given any form such as hot packs, heating pads, towel or bottles for 10 minutes on the painful part of the body. In this study hot packs are used. A thin cloth is wrapped over the hot pack to avoid direct contact with the skin.

These two methods are thought to the parents and also the girl based on their level of understanding. An alternative method for performing breathing exercise to make it more interesting to the children is thought to the parents. In this the parent or the caregiver hold a tissues paper near the children mouth and ask the child to blow the tissue or can ask the child to imagine smelling rose and blowing the candle. The parents or caregivers are instructed to follow these methods to relieve menstrual discomforts for the next two menstrual cycle.

Statistical analysis

TABLE 1 - Descriptive statistics.

Category	Percentage Mode	Percentage Range	Key Insight
Experienced Difficulty	36.67%	23.33%	Many caregivers face significant challenges.
Reaction at Time of Menarche	46.67%	36.67%	Varied reactions indicate differing experiences and preparedness.
Advice on Handling Menstrual Symptoms	46.67%	43.33%	Inconsistent information dissemination among caregivers.
Type of Absorbent	66.67%	63.33%	Significant use of specific types, reflecting differing levels of knowledge.
Number of Times Changed	43.33%	43.33%	Variability in changing frequency.
Remedies for Pain Relief	60.00%	50.00%	Varied approaches to pain relief.
Complaints of Girl During Mensuration	70.00%	70.00%	High level of discomfort or issues reported.
Situation that Makes Worried	46.67%	33.33%	Significant anxiety or challenges during menstruation.
Awareness of PMS	43.33%	26.67%	Inconsistent awareness of PMS among caregivers.
Interest in Getting Info	60.00%	60.00%	Strong desire for more information.
Extra Burden	43.33%	40.00%	Differing perceptions of menstrual cycle's impact.
Difficulties in Handling	73.33%	70.00%	Major challenge a rea in menstrual management.
Suggested for Permanent Contraception	56.67%	56.67%	Significant consideration among caregivers.
Indicate About Mensuration	43.33%	36.67%	Notable portion discuss or indicate menstruation.
Support from Family	36.67%	20.00%	Family support levels differ widely among caregivers.

4	13.33	46.67	46.67	23.33	20.00	60.00	0.00	13.33	16.67	16.67	3.33	3.33	0.00	43.33	26.67

Category	1	2	3
1.EXPERIENCED DIFFUCULTY	36.67	23.33	26.67
2.REACTION AT TIME OF MENARCHE.	10.00	33.33	10.00
3.ADVICE ON HANDLING MENSTRUAL SYMPTOMS.	33.33	16.67	3.33
4.TYPE OF ABSORBENT.	66.67	6.67	3.33
5.NO OF TIMES CHANGED.	0.00	36.67	43.33
6.REMEDIES FOR PAIN RELIEF.	13.33	16.67	10.00
7.COMPLAINTS OF GIRL DURING MENSES	70.00	16.67	13.33
8. SITUATION THAT MAKES WORRIED.	23.33	46.67	16.67
9. AWARE OF PMS	20.00	43.33	20.00
10. INTEREST IN GETTING INFO.	60.00	0.00	23.33
11. EXTRA BURDEN	43.33	20.00	33.33
12. DIFFICULTIES IN HANDLING.	73.33	16.67	6.67
13. SUGGESTED FOR PERMANENT CONTRACEPTION.	43.33	56.67	0.00
14.INDICATE ABOUT MENSES	6.67	23.33	26.67
15.SUPPORT FROM FAMILY	16.67	20.00	36.67

TABLE 2- Percentage of response for each category.

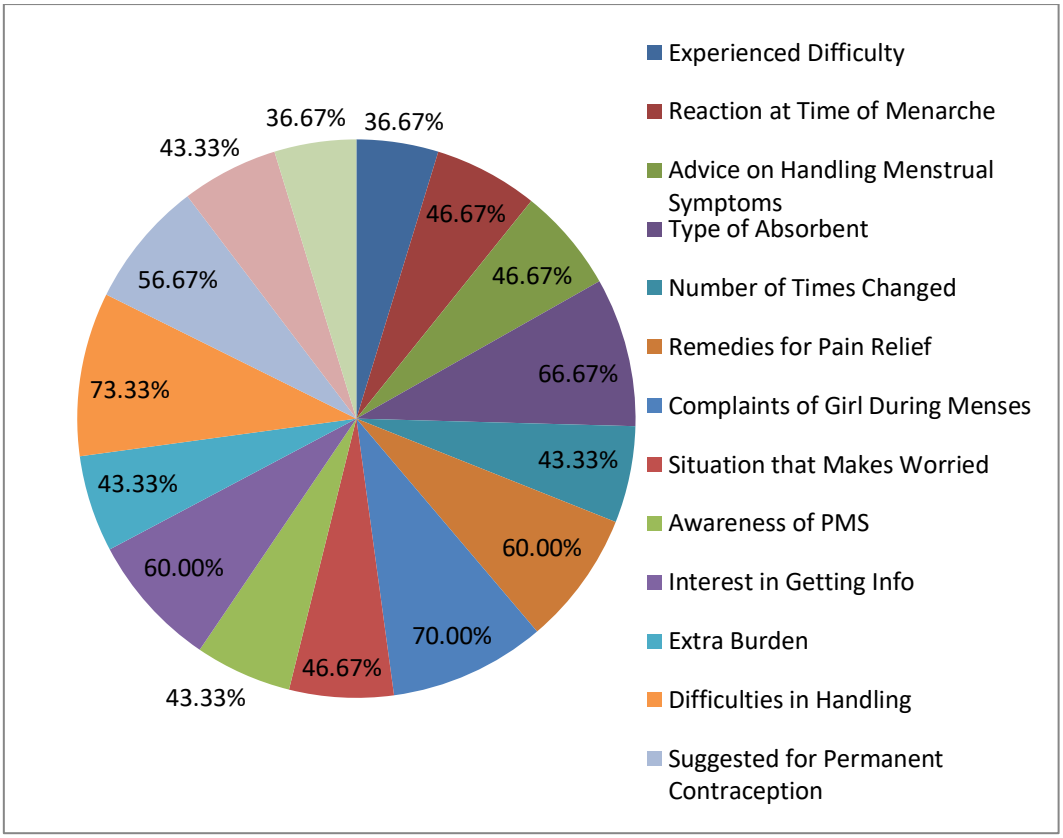


Fig 3. Pie chart representing the demographics

RESULTS

Phase- I

The data reveals key insights into the knowledge and perception among caregivers of girls affected by Cerebral Palsy (CP) regarding menstrual health. A notable portion of caregivers (36.67%) face significant difficulties, indicating the need for better support and resources. Varied reactions at the time of menarche (46.67%) highlight differing levels of preparedness among caregivers. Advice on handling menstrual symptoms is inconsistently disseminated, as evidenced by the 46.67% who received advice but with a high variability of 43.33%.

Most caregivers (66.67%) use specific types of absorbents, but the wide range (63.33%) suggests differing levels of knowledge or access to resources. The frequency of changing absorbents (43.33%) also shows considerable variability, pointing to inconsistent practices.

Pain relief methods are used by 60% of caregivers, yet approaches vary significantly (50%). High levels of discomfort are reported during menses, with 70% of caregivers noting complaints, reflecting the challenges faced by the girls. Significant anxiety is present, with 46.67% worried about certain situations during menstruation. Awareness of PMS is inconsistent, with only 43.33% being aware, and a substantial portion (60%) expressing interest in obtaining more information.

Extra burden is felt by 43.33% of caregivers, with perceptions varying widely (40%).

Handling difficulties are a major challenge for 73.33% of caregivers, indicating a critical area needing attention. Permanent contraception is suggested by 56.67%, reflecting significant considerations regarding menstrual management. Discussions about menstruation occur among 43.33% of caregivers, and family support is present in 36.67% of cases, although support levels vary greatly.

To address these findings, educational programs, resource distribution, support networks, professional guidance, awareness campaigns, and personalized care plans are recommended. These measures aim to enhance caregiver's knowledge and preparedness, ultimately improving the menstrual health management of girls with cerebral palsy.

Phase-II

The parents and caregivers reported that after using these two methods the intensity of the pain during menstruation have been reduced. The use of warm compresses and deep breathing exercise during menstruation reduces the girl's menstrual pain to the greater extent thereby reducing the parental concern about menstrual discomfort.

DISCUSSION

The study conducted to analyse the knowledge, awareness and perception of menstruation among parents and caregivers shows that almost half of the parents and caregivers 43.33% thought that menstruation add extra burden to their life. They faced various difficulties in handling and managing the girl with cerebral palsy. The children are highly dependent on the parents for their daily needs including the selfcare and hygiene needs along with this the occurrence of menstruation makes it more complicated. They underwent difficulties in various aspects such as in hygiene management, pain management and emotional management.

In this study 36.67% of the participants experienced difficulty in handling the girl almost every time during the menstruation. 23.33% of them experience difficulty only in the beginning and 13.3 parents and caregivers reported they does not experience that much difficulty in handling their girl. The awareness about premenstrual syndrome and its symptoms such as breast tenderness, mood swings, anxiety, irritability, body aches, backpain are less in parents and caregivers. Most of the participants are not that much aware and only 20% of the total participants are aware about premenstrual syndrome.

Managing the girl during the premenstrual and menstrual symptoms is a major problem and often challenging thing for the parents and caregivers. In this study only 33.33% of the participants received suggestions for managing the menstrual symptoms from medical professionals or health care workers and 16.67 % of them received advice and suggestions from their relatives. Nearly 46.67% of the parents and caregivers were not received any advice on how to handle the menstrual symptoms from any source. This lack of knowledge leads to increased stress among parents in handling the girl during menses and increases the work load, increased risk of developing infections during mensuration. Thereby decreases the quality of life of both parent and the girl.

Menarche is a transition phase every girl undergoes various physiological changes. The reaction of the girls during menstruation varies depending on their understanding and cognitive levels. In this study the reaction of the girl with cerebral palsy at the time of menarche are anxious 10%, embarrassed 10%, scared of seeing blood 33.33% and 46. 67 of them does not react when they attain menarche. Deo, D. S., et al., 2005 showed that the reaction of the girl during menarche are the feeling of guilt, scared, shame, anxiety and depression. Also reported that 44.8% of the girl become scared during the time of menarche.

The major complaint of the girl during menstruation is abdominal cramps 70% and second common complaint is back pain 16.67% and body pain 13.33%. This is in consistent with the result from the study conducted by Nurkhairulnisa, A. I., et al., showed that 47.7% of the girls with intellectual disability experienced pain or discomfort before the onset of menstruation and almost 50.5% complaints of mild dysmenorrhoea. The most severe and most common complaint among those individuals is abdominal cramps. Gebeyehu, M. B., et al., 2017 reported that the prevalence of dysmenorrhoea is 77.6% among this 35.2% of the participants experience moderate pain and 53% have experienced continuous pain which last for one to two days during menstruation in 47.8%. The most frequently experienced complaints are abdominal cramp 70.4%, back pain 69.7% and weakness and fatigue were experienced by 63.5% of the study population.

Most of participants 60% does not use any home remedies and pain- relieving methods during menstruation, 16.67% use fenugreek seeds as home remedy and only 13.33% have used hot packs for relieving menstrual pain and very least 10% of the participants use medication. The reason for no used medication as reported by the parents is the fear that medication will cause any adverse effects. The study conducted by Akhtari, E., et al., 2024 to analyse the effect of fenugreek seed shows that it is one of the most valuable medicinal plants used as a complementary and alternative medicine (CAM) for gynaecological problems.

Fenugreek seeds have a beneficial effect in women with dysmenorrhoea and polycystic ovarian syndrome. Another study on the effect of fenugreek seeds on the severity of dysmenorrhoea by Younesy, S., et al., 2014 shows that giving fenugreek seed powder in capsule form for the first three days of menstruation for individuals with dysmenorrhoea reported that the pain severity is reduced from 6.4 at the base line to 3.25 in the next cycle. This study also reported that this can be administered safely for dysmenorrhoea because no adverse effects. In our study 13.33% of the participants use hot packs as a home remedy to relieve the menstrual pain. Nurafifah, D., et al., 2020 showed that warm compresses using warm water (40-45 °C) kept in the bottle wrapped with the cloth and applied to the lower abdomen for the duration of ten minutes have shown to decrease the severity of dysmenorrhoea. 93.3% of the participants experienced the decrease in pain after using warm compresses.

In present study 73.33% of the parent and caregivers reported that the common difficulty experienced by them is in maintaining the hygiene of the girl during menstruation. Similar to the present study the study conducted by Karthikayani, S., et al 2021 showed that 83.6% of the intellectually disabled adults were not able to recognize the start of their menstruation and almost 80.9 % of them were unable to manage their menstruation and hygiene practices by themselves. The major challenges faced by the parents and the caregiver in managing the menstrual hygiene is refusal of the sanitary napkins.

The most commonly used absorption material is sanitary pads 66.67 % and nearly half 23.33% of the participants use both sanitary pad and cloth piece as the absorption material. Some parents and caregivers also reported that they use diapers during the days of heavy menstrual flow. Financial issues and increased expenses of buying sanitary pads leads the parents to choose cloth pieces.

There is lack of awareness of the parents and caregivers that use of cloth pieces can cause infections. This is similar to the study conducted by Parent, C., et al., 2022 in which disposable sanitary pads are most commonly preferred by 81% of the participants while the use of menstrual cups and tampons are low due to the risk of developing infections. Another study by Rao, A. P., et al., 2019 found that 69.4% of the girls with cerebral palsy use sanitary pads during their menstruation while the rest of the girls use cloth as an absorption material. In this 58.3% of the participants are found to have vaginal infections such as itching and burning urine. The most common complaint of the girl with cerebral palsy is white discharge from vagina which is seen in 71.4% of the participants.

The vaginal infection is due to the lack of menstrual hygiene among the girls with cerebral palsy. The study by Anand, E., et al., 2015 highlights the use of hygienic methods during menstruation and the co-relation between the hygiene methods used with the socio-economic status of the woman. Many girls living in the rural areas who used cloth or reuse old cloth are prone to genital infections. Vaginitis is seen in woman who does not practice hygienic methods during menstruation. Vaginal discharge and reproductive tract infections are higher in woman with unhygienic practices during menstruation.

For maintaining proper menstrual hygiene, the use of appropriate menstrual absorbent material is necessary along with this the frequency of changing the material per day also plays a vital role in the hygiene management. In this study the 43.3% of the parents and caregivers reported that the absorbent material is changed thrice per day and 36.67% and 20% reported twice and four or more times a day. None of the participants change the absorbent material only once per day. This is similar to the study conducted by Sivapatham, V., et al., 2017 in which less than 50% of the participants changed their menstrual absorbent material at least for three time a day. Another study by El-Gilany, A. H., et al., 2005 showed that on an average of 2-3 times a day the girls change their absorbent material.

Irrespective of the size, thickness of the material, menstrual flow, amount of staining, comfort the absorbent material should be changed at least of 3- 4 hours. The frequency of changing the pad depends on the flow of menstrual bleeding, convenience, availability of the absorbent material and access to the resources such as water and toilet facilities. To maintain the optimal hygiene and to prevent reproductive tract infections life itching, burning sensation while urinating and vaginal discharge during menstruation it is necessary that the absorbent is changed at least three to five times a day.

Parents and caregivers undergo various difficulties in providing care for their disabled children. Along with their daily work load, menstruation adds an extra burden. This increases the physical work load, mental stress and increases the fear in parents. The parents are concerned about the safety that someone can take advantage of the disability of the girl. In the present study the parents reported that which situation makes them worried about the safety. 46.67% of the participants reported that leaving the children alone in home makes them worried whereas 23.33% are worried to take their children for public gatherings and 16.67% and 13.33% are worried about the safety while staying out and while travelling respectively.

The caregiver knowledge is necessary for maintaining the proper menstrual hygiene practice and to provide better quality of care to their children. In this study 60% of the parents and caregivers are interesting in getting information about how to manage the menstrual hygiene and care. 16.67 % of the participants are already informed about how to manage the menstrual hygiene. None of the participants showed disinterest for getting information regarding managing the menstrual hygiene and care. The study conducted by Lin, L. P., et al., 2011 caregiver awareness on reproductive health issues shows that there is a lack of understanding among caregivers about the reproductive health issues in woman with intellectually disabled woman.

Most of the participants are unfamiliar about the menstrual issues and suggested the need of programs which educates the caregivers and to improve their knowledge about the about reproductive health care and issues. Draz, S. F., et al., 2021 conducted a study to identify the effect of supportive educational intervention for mother of female adolescents with cerebral palsy showed that there is a positive effect on knowledge of the parent and improving the practice about the routine care of the children with cerebral palsy. The educational programs provide knowledge about various aspects such as concept of cerebral palsy, physical and physiological needs of the children, menstrual discomforts, premenstrual symptoms and their management, reproductive care, routine care involving personal hygiene and exercises. After the educational program the parents reported to have a positive effect on managing their children.

Deep breathing exercise which involves slow and deep breathing given for four weeks have shown to reduce menstrual pain. The study conducted by Purnamasari, K. D., to identify the effectiveness of the DBE on menstrual pain which involves placing the patient in a comfortable

position and practice deep breathing exercise for the duration of thirty minutes during menstruation indicates the significant reduction of pain.Nurafifah, D., et al 2020 reported providing warm compresses using bottle method is effective to reduce the dysmenorrhoea. In this method a bottle containing warm water of 40-45°c covered with a thin cloth applied to the pain area. The physiological effects are pain relief due to the activation of gate control mechanism and vasodilatation which causes increase in circulation thereby reducing pain and stiffness.

The severity of pain during dysmenorrhoea have been significantly reduced after practicing physiotherapy exercises such as relaxation exercises, abdominal and pelvic floor strengthening exercises. The result of this study reported the use of warm compresses and deep breathing exercise for relieving menstrual pain as an effective and feasible method. Deep breathing exercises are used as a relaxation technique to relieve stress and pain. The implementation of these exercises to reduce pain in individuals with dysmenorrhoea have a positive impact on pain reduction. Warm compresses given by using hot packs to reduce symptoms of dysmenorrhoea is beneficial for managing menstrual pain among children with cerebral palsy.

CONCLUSION

The study concluded that parents and caregiver perceive menstruation as an extra burden and undergo various difficulties particularly in the hygiene management during menstruation. Most of them have basic understanding about menstruation but lack in-depth knowledge and awareness about premenstrual syndrome and menstrual symptoms and its management. Almost every parent and caregiver seek for the information and suggestions regarding menstrual management.

The use of warm compresses and breathing exercise to relive the common menstrual symptoms such as abdominal cramps and backpain are more beneficial among the girls with cerebral palsy. Along with this regular physiotherapy exercise for strengthening abdomen muscles will have a positive effect on reducing the menstrual discomfort.

Exercise prescription from physiotherapist along with enhanced guidance from medical professionals and healthcare workers, educational programs, are needed to enhance the parent and caregiver perception on menstruation and also to improve the standard of care being given to the girls with cerebral palsy. This thereby reduces the burden and increases the quality of life for both the parents and the children with cerebral palsy.

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