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**Original Research Article**

# Physical disabilities in pregnant women: impact on care and pregnancy outcome

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## ABSTRACT

**Background:** Health care providers are often insensitive to and unfamiliar with the needs of pregnant women with disability. Medical services are many times not tailored to the needs of the disabled. This study analyzes the impact of disabilities on pregnancy in women delivering in a tertiary care hospital in India.
**Methods:** Prospective study of total of 50 pregnant women with various disabilities was conducted in a tertiary care hospital in Mumbai, India. Each patient's antepartum, intrapartum and postpartum course were noted. Patients were also interviewed with help of a structured questionnaire for difficulties accessing services, and impact on their daily life, pain.
**Results:** Rate of cesarean deliveries due to pelvic problems, and complications like urinary tract infections which arise due to mobility issues were significantly higher in patients with physical disabilities. 30% participants found examination tables unsuitable and 20% found it difficult access toilets. Over all patients were satisfied with skills of health workers.
**Conclusions:** Healthcare facilities have to be equipped for receiving patients with disabilities and should train health workers in management of these clients. They require pre-conceptional counseling and planning.

**Keywords:** Activity limitation, Disabilities, Disabled mothers

## INTRODUCTION

Disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. Impairment refers to structural and functional problem. Activity is limited due to pain, fixed deformities or sensory problems like blindness. And hence the disabled can't perform tasks.[1] Visual impairment, cerebral palsy, spinal cord injury, orthopedic problems like orthopedic implants, amputation, kyphoscoliosis, ankylosing spondylitis, Spondylosis and poliomyelitis, chronic conditions like rheumatoid arthritis and even morbid obesity are examples of disability that hamper person's mobility and potential for fruitful participation in daily activities.

Common morbidities across various disability conditions include urinary tract infections, decreased mobility and independence, skin ulceration, respiratory compromise and pneumonitis, interpersonal abuse, stress, and depression. Medical management requires multidisciplinary approach for select patients like cases of multiple sclerosis, paraplegics, those with severe respiratory compromise. Rest may do well with definitive measures to enhance their access to health facilities, one stop care, physical and audiovisual aids and last but not the least, sensitivity of providers. Socioeconomic, physical, and attitudinal barriers to antenatal care and independent parenting can be problematic. Young physically challenged women who are yet to complete their reproductive needs are seriously affected by unprepared health system and providers. In classic obstetric teaching

little stress is laid upon women with disabilities. Even incidence of intimate partner violence is more than double in people with disabilities. A study by Redshaw et al described physically disabled women had less choice about labor and birth.[2] They proposed areas of improvement including infant feeding and better communication in the context of individualized care.[3]

The recognition of the onset of labor may be difficult in women with impaired sensory innervation to the uterus ($T_{10}$ to $T_{12}$). Finding a good position for labor can be challenging. Paralysis is not an indication for cesarean delivery, which should be considered only when a valid obstetrical indication exists. Perineal distension due to the presenting part, vaginal instrumentation, augmentation with oxytocin, amniotomy, and the labor itself may precipitate autonomic hyperreflexia in women with spinal cord injury at the T6 or higher level. This can lead to hypertensive encephalopathy, cerebrovascular accident, intraventricular and retinal hemorrhage, and death in mothers. Uteroplacental vasoconstriction may result in fetal hypoxemia.[4]

Morbid obesity in pregnancy is also associated with early and recurrent pregnancy loss, preterm delivery, deep vein thrombosis and thromboembolism and many increased obstetrical, medical and surgical complications with pregnancy, labor, delivery, and the puerperium. This results in increased need to visit the facilities and emergency services and adds to the costs.[5,6] Increased rates of puerperal infection and decreased rates of breastfeeding initiation or continuation are common. These women frequently require instrumental delivery and are exposed to associated risks of trauma and hemorrhage. Adverse pregnancy outcomes due to a higher incidence of low birth weight and preterm birth have been reported in women with physical disabilities like deafness.[7] Though incidence of kyphoscoliosis in pregnancy in India is not documented, world over Incidence of kyphoscoliosis in pregnancy has been reported to be from 1:1500 to 1:12,000.[8] These patients are susceptible to respiratory infections and cardio-respiratory complications and it is beneficial to consult with an anesthesiologist and physiotherapist before delivery.[9]

## METHODS

This was a observational study of cohort of pregnant women with disabilities. Our objectives were as follows

- To study the impact of physical disabilities on antepartum, intrapartum and postpartum care
- To analyze obstetric outcome in physically disabled women.
- To study the institutional readiness for such women.

After permission from the institutional ethics committee, 50 patients with physical disabilities attending the outpatient and emergency obstetric services at a tertiary hospital were enrolled for the study over 18 months. They were interviewed about their history of disability, any special investigations, disability specific treatment in this pregnancy, health outcomes, and access difficulties encountered by them. Cured cancers were excluded as cause of disability. Patients were followed through their ante partum, intrapartum and post-partum period. Their investigations like hemoglobin, renal and liver function tests, imaging studies for disabilities were noted. Antepartum difficulties and complications, obstetric outcome and post-partum difficulties were noted.

Hospital facilities to support pregnant disabled women including elevators, ramps to facilitate wheelchairs, railings, facilities of bedside toileting, suitable beds and labor tables were assessed in terms of accessibility and availability of equipment to ease mobility of women. Participants were asked about their experiences with health systems.

## RESULTS

Mean age of the population studied was 27 years with a standard deviation of 4 years.

**Table 1: Disabilities in Pregnancy.**

| Disabilities in Pregnancy | Number |
|---|---|
| Paraplegia | 03 |
| Deformity of joint | 04 |
| Poliomyelitis | 06 |
| Limb shortening | 02 |
| Blind, Deaf and Mute | 01 |
| Spondylolisthesis | 01 |
| Kyphoscoliosis | 03 |
| Left clubfoot | 02 |
| Giant cell tumor (Knee) | 01 |
| Morbid Obesity | 18 |
| Paraparesis | 01 |
| Paraspinal spasm with inability to walk | 01 |
| Pott's spine | 02 |
| Visual impairment | 01 |
| Rheumatoid Arthritis | 01 |
| Hemiplegia | 01 |
| Scoliosis | 02 |
| Systemic lupus erythematosus with bilateral avascular necrosis of femur head | 01 |

The most common disability was morbid obesity followed by bone deformities (congenital and acquired). 40% women were anemic at least at one time during antenatal period. Incidence of respiratory compromise in the study population was 8%.

Pre-conceptional X-ray chest was done in 8 patients. 6 patients underwent CT scan for the following:

- Avascular necrosis of head of femur,
- Giant cell tumor of knee,

- Pott's spine,
- Paraparesis,
- Neuromyelitis optica,
- Scoliosis.

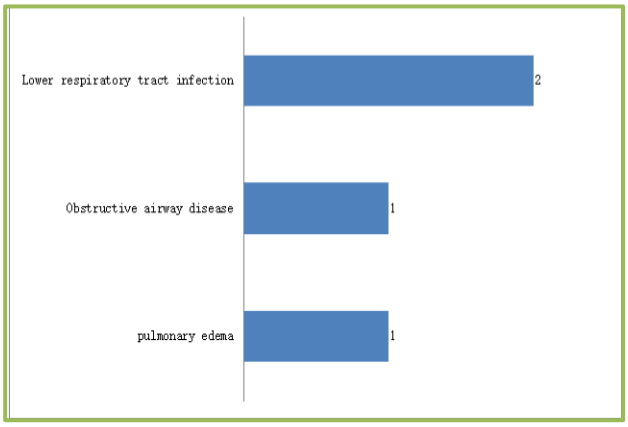


**Figure 1: Etiology of respiratory compromise.**

36% patients required help in performing daily activities. (42%) patients underwent physiotherapy, 14 to prevent joint immobility, disuse atrophy of muscles, 4 for deep venous thrombosis and 3 for hypostatic pneumonia.

**Table 2: Referral care.**

| Specialty care sought besides physiotherapy | Number |
|---|---|
| Orthopedics | 11 |
| Rheumatology | 02 |
| Ophthalmology | 12 |
| Neurology | 03 |
| Urology | 01 |
| Nephrology | 02 |
| Gastroenterology | 01 |
| Endocrinology | 05 |
| Hematology | 02 |
| Pulmonary Medicine | 02 |
| None | 09 |
| **Total** | **50** |

32% patients experienced loss of balance with advancing pregnancy. 29 patients (58%) experienced joint pain. 11 patients acquired new health issues during antenatal period, comprising of gestational diabetes, gestational hypertension, trauma and severe pain.

44 out of 50 patients faced no problems while travelling to the antenatal clinic/hospital. 6% had difficulty accessing services in other healthcare centers, where OPD/wards were on higher floors, with no elevators. 15 (30%) patients found the examining table too high. It was due to joint problems, excess obesity and spine problems. 20% patients found it inconvenient to navigate to the toilet.

47 patients were satisfied with knowledge of nursing staff about specific needs of disabled women. Besides lack of knowledge, there were no other issues with staff and personnel. 1 patient, who was deaf, mute and blind faced difficulty in communication with staff. 11 out of 50 patients reported financial difficulties.

**Table 3: Mode of termination of pregnancy.**

| Mode of termination | Number |
|---|---|
| Vaginal delivery | 20 |
| Instrumental delivery | 03 |
| Caesarean section | 23 |
| MTP | 04 |
| **Total** | **50** |

Medical termination of pregnancy was done in 2 patients (consumption of therapeutic drugs which were teratogenic). Cesarean section rate in the study population was 46% - double that of hospital population- It was statistically significant as the institutional cesarean arte is around 25-30% being a tertiary care center.

**Table 4: Indications for cesarean section.**

| Number | Number |
|---|---|
| Breech presentation | 01 |
| Cephalopelvic disproportion | 07 |
| Failure of induction | 01 |
| Fetal distress | 09 |
| Previous 2 LSCS | 05 |
| **Total** | **23** |

Out of 34 patients who were in labor, 23 patients (67%) had difficulty while being positioned on labor table. All of these patients had difficulty in flexing lower limbs, which was required for induction of labor, vaginal examinations, delivery and episiotomy suturing. Difficulty in anesthesia (spinal), i.e., difficulty in finding intervertebral space either due to obesity or deformed spine, was encountered in 13 out 26 (50%) patients.

**Table 5: Fetal outcome.**

| Fetal outcome | Number |
|---|---|
| Live | 43 |
| Stillbirth | 03 |
| Aborted | 04 |
| **Total** | **50** |

There were 43 live births, 3 still births and 4 medical termination of pregnancy. 4 pregnancies were terminated in first trimester due to consumption of teratogenic drugs. The still births could not be attributed to disabilities. The rate difference is not significant. The still birth rate in all deliveries in the institute is around 35-40/1000 births considering high risk and transferred cases.

Out of 43 patients who had live births, only 2 faced difficulty in breastfeeding. Rest of 41 patients could establish breastfeeding successfully. 17 out of 47 patients (excluding 2 paraplegic patients and 1 patient on ventilator support) experienced difficulty in regaining ambulation in post-partum/post abortion period. The other 30 patients could regain ambulation successfully. No patients encountered post-partum depression.

**Table 6: Postpartum complications.**

| Postpartum complications | Number |
|---|---|
| Urinary tract infection | 11 |
| Wound gape | 03 |
| Lower respiratory tract infection | 02 |
| Prolonged catheterization | 01 |
| Post-operative fever | 01 |
| Deep vein thrombosis | 01 |
| Post-operative joint stiffness | 01 |

## DISCUSSION

Health care providers are often unfamiliar with the needs of pregnant women with disability, health professionals may be uninformed or even discriminatory, and services are often not specifically tailored to the needs of women with disability.[10] Antepartum period Nearly 9.4% of women who have recently given birth in the UK report some degree of disability as measured by the presence of an LLI (limiting longstanding illness). As quoted by Sumilo et al based on data from Millennium Cohort Study (2000-2002) shows that disabling chronic health conditions, such as backache, respiratory illnesses and depressive disorders are common.[11] Similar data, however, is not available for Indian women as no separate records of women who have a long term disability are maintained.

In our study, morbid obesity was the most common type of physical disability seen in patients visiting tertiary hospital accounting for 34% of the study population. It was followed by residual paralysis due to poliomyelitis (12%) with other deformities contributing less than 5% each. Obesity in pregnancy increases the risk of morbidities like preeclamsia.[12] Peripartum respiratory compromise was noted in 8% patients with half of them having fixed chest deformity (kyphoscoliosis). 1 patient had post blood transfusion pulmonary edema. 1 patient suffered from lower respiratory tract infection due to debilitated state. Scoliosis not only adds to maternal morbidity and increases risk of chest complaints but also causes pelvic anatomy distortion.[9] Postural problems and joint pains are among important indications for physical therapy in pregnancy.[13] In present study, 29 out of 50 patients reported joint pain during pregnancy (58%). 42% patients required assistance by physiotherapists. 9 (18%) patients had urinary tract infection during antenatal period. 41 patients (82%) remained infection free. In a study of women with spinal cord injuries, main complications during pregnancy included pyelonephritis and Urianry tract infections. 30% had pyelonephritis and 32% women had lower urinary tract infections.[14] 12% patients due to the nature of their disability found difficulty in travel, using public conveyance. Access barriers are a common complaint in disabled persons.

### *Intrapartum period*

3 pregnancies were terminated in first trimester as the medications they had consumed peri-conceptionally for management of their condition were potentially teratogenic. These patients comprised 6% of the study population.

The most common mode of delivery was vaginal delivery. However, almost equal number of patients had caesarean section. The most common indication for caesarean section was cephalopelvic disproportion (7 patients). Of these, 5 had skeletal deformities. In patients with kyphoscoliosis, pelvis was inadequate for vaginal delivery. This indicates that, in patients with skeletal deformities, shape of the pelvis is likely to be affected, increasing the requirement for caesarean delivery.[9] Rate of caesarean section in India as per ICMR study conducted in 33 tertiary care hospitals is 32%.[15] In pstudy, 46% women underwent caesarean section (Odds ratio 1.81).

34 patients were given trial of labor. However, 13 of these required caesarean section various indications like failure of induction and fetal distress. Of the 34 patients who went through labor, 67.6% (23 patients) had difficulty assuming dorsal lithotomy position. Difficulty in anesthesia occurred in 50% of the population who underwent caesarean section or medical termination of pregnancy. Higher rate of difficult spinal anaesthesia in this study may be attributed to higher percentage of spinal deformity and obesity, which themselves are causal factors for failed regional anaesthesia.[16]

### *Neonatal outcome*

In our study, 94% patients had live births while 6% patients had still births (60 per thousand births). Still birth rate in India as per WHO (2009) is 22.1 per thousand births.[17] Relative risk of still birth being 2.89 in women with disabilities.

### *Postpartum period*

There were 18 patients with BMI more than 40 kg/m$^2$ (16%). Their average weight was 98.6 kg with a (SD=10 kg). Average BMI was 42.3 kg/m$^2$ (SD=3.3 kg/m$^2$).

Incidence of postoperative urinary tract infection in our study was 18 %. It is similar to study by Schiotz et al in Norwegian population undergoing short term catheterization in operated patients, in which post-operative urinary tract infection occurred in 18.3% patients when catheterization was done with all aseptic precautions regardless of antiseptic gel usage.[18] The high incidence of

post-operative urinary tract infection in our study is attributed to restricted mobility and delayed ambulation,

Wound gape was seen in 13 patients. In a study conducted by Patel et al in NHL Medical College and Hospital, Ahmedabad, India, 6.51% women suffered from wound infection after caesarean section.[19] However, the rate was more in obese women. Our study had 6% incidence of wound infection in all. Lower respiratory tract infection was seen in 7.4% patients, which is otherwise very minimal in post cesarean patients. Teo et al reported incidence of post-caesarean septicemia as 2.7 per 1000 surgeries. Of these, pneumonia comprised 4.5%.[20]

No patient had reported post-partum depression in our series. Almost all women were able to care for the baby and establish breastfeeding successfully. Rogers et al noted that despite discomfort, women with physical disabilities are strongly motivated to breastfeed. However, it must be considered that some lesions such as rheumatoid arthritis may be exacerbated by breastfeeding. It is believed that it is mediated by Prolactin release, but studies are not available to potentiate this theory.

### *Facility and services*

The staff and other healthcare personnel have adequate knowledge about specific requirements of physically disabled women. Enhancement in communication skills is desirable at this stage for providing better care to these women. The hospital is fairly well equipped to cater to needs of physically disabled women owing to availability of multidisciplinary care, functional elevators in hospital premises, accessibility of wards and OPDs to wheelchairs and hospital personnel being sensitive towards needs of these women.

However, there is need for making restrooms accessible to wheelchairs and to have beds and examination tables with adjustable height and suitable for morbidly obese patients.

Audio facilities for visually challenged patients are needed. Information material in braille is required. Failure in updating the services is most likely due to lack of involvement of the people with disabilities in decision making, planning and lack of evidence.[21]

### *Limitations*

- Small population.
- Due to lack of database on pregnant women having a physical disability, statistical tests could not be applied. Hence, the significance of results obtained is not known.
- The study was conducted in a tertiary healthcare centre, where the study population was referred for opinion by other specialists. Thus, there is likelihood of medical surveillance bias.
- The study was designed to assess the readiness of our institute to cater to physically disabled mothers. The results obtained are not representative hospitals in general. To overcome this, the study should be conducted at several hospitals.

## CONCLUSION

In Conclusion, The rate of caesarean section in general population is high in tertiary hospitals at 32%. The rate of caesarean section at 46% in disabled pregnant population is higher as expected. There is nmarginal increase in adverse neonatal outcome.

There is high incidence of post-operative urinary tract infection, which could be attributed to lack of adequate ambulation. Despite having physical disabilities, women are able to handle and breastfeed their babies successfully. Good family support and co-operative staff may be contributory to the same.

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