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TO STUDY EFFECTIVENESS OF DIFFERENT ANALGESIC DRUGS FOR LABOUR ANALGESIA IN OBSTETRICS AND GYNAECOLOGY DEPARTMENT OF TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction:

Labour pain is considered one of the most intense types of pain, necessitating effective pain management techniques to ensure maternal comfort and safety. Various analgesic drugs are available, but their efficacy can vary, particularly during labour. This study aims to assess the effectiveness of different analgesic drugs used for labour analgesia in a tertiary care hospital. The main objectives of this study were to evaluate the demographic profile of the study subjects, compare the effectiveness of different analgesic drugs for labour analgesia.

Materials & Methods: A prospective observational study was conducted involving 148 pregnant women admitted with labour pain in the obstetrics and gynaecology department at GSVM medical college, Kanpur. The study participants received analgesic drugs, diclofenac with epidosin, tramadol with epidosin, and anafortan. pain relief was measured using the visual analogue scale (vas). Results: All drugs significantly reduced pain, with VAS scores dropping from 10 to 6 after administration. The duration of the first stage of labour was decreased. Pregnant women receiving tramadol along with epidosin, in primigravida,72.22% of were in age 19-24 years and 27.7% in 25-29 years. In multigravida, 33.3 % in age 19-24 years and 66.6% in 25-29 years. Pregnant women receiving, anafortan, in primigravida, 67.44% were in age 19-24 years and 32.55% in 25-29 years. In multigravida, 20% were in age 19-24 years, 65.71% in 25-29 years and 14.28% in 30-34 years. Conclusion: These analgesics were effective in labour pain management, showing equal effectiveness.

Key word: Analgesic drugs, Labour, Analgesia, Labour pain, Pregnant women, VAS score

INTRODUCTION-

Labour is a critical moment for every woman, and any complications during this time can greatly raise the risk of morbidity and death as well as the level of satisfaction among mothers in general [1-2]. Labour is the process through which a foetus and placenta are delivered from the uterus through the vagina. Three components are necessary for a successful labour: the features of the foetus, the

pelvic anatomy, and the mother's efforts and uterine contractions. The terms "passenger, power, and passage" are the traditional terms for this trio [3]. After the 24th week of pregnancy, the results of fertilization are discharged from the uterus during labour. Usually, labour starts in the 37th or 42nd week of pregnancy [4-5]. For a number of reasons related to the mother or the fetus, labour can either start naturally or be medically induced. Cervical ripening with prostaglandins, membrane stripping, amniotomy, and intravenous oxytocin are among the techniques used to induce labour [6].

Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage." Nearly all women experience labour pain, which is extremely severe in nature, during childbirth [7]. There are two forms of labour pain: visceral and somatic. Cervical dilatation, uterine contractions, and later perineal stretching are the causes of labour pain. Maternal expectations for childbirth, age, and educational preparation can all have an impact on the complex cortical reactions to pain and anxiety throughout labour [8].

Labour Pain originates from different sites. In the first stage of labour, pain results from uterine contractions and dilatation of the cervix and is transmitted via the spinal nerves of T10–L1. In the second stage, stretching of the pelvic ligaments causes pain via the pudendal nerve originating from the S2–S4 nerve roots [9]. Every mother has the right to adequate pain relief, even though childbirth is a natural process. Therefore, the main principle of modern obstetrics is to alleviate suffering from labour pain for those who wish to receive analgesia and have no medical contraindications [10]. Poorly controlled labour pain can lead to negative or traumatic delivery experiences [11]. Women who are provided with labour analgesia report greater satisfaction with their overall birth experience, and it provides good quality maternity care [12-15].

As a global concern, women have the right to receive the standard of health care, including physical and psychological care [16]. Diclofenac is a phenylacetic acid derivative and non-steroidal anti-inflammatory drug (NSAID). NSAIDs inhibit cyclooxygenase (COX)-1 and-2 which are the enzyme responsible for producing prostaglandins (PGs). PGs contribute to inflammation and pain signalling.[17] Tramadol is a synthetic analogue of codeine that binds μ-opiate receptors and inhibits norepinephrine and serotonin uptake. Tramadol is an effective analgesic that has no effect on maternal and neonatal respiratory depression and is common to other opioids and does not delay gastric emptying. [18-20]

Epidosin (Valethamate) is used to hasten the dilatation of the cervix during labour and to control pain due to smooth muscle spasms. Epidosin (valethemate bromide) is known to short en the first stage of labour thus avoiding or minimising cervical dystocia leading to prolonged labour. It is a potent rapidly acting cholinolytic, spasmolytic and musculotropic agent. [21]. Anafortan (Camylofin Dihydrochloride) is a selective PDE-4 enzyme inhibitor which facilitates cervical effacement and dilatation, accelerates labour, regulates the autonomic system and thereby prevents disordered progress of labour [22].

With this background, present study aims to analyse the effectiveness of different drugs used for labour analgesia in obstetrics and gynaecology department at tertiary care hospital, GSVM medical college Kanpur, Uttar Pradesh in collaboration with department of pharmacology with following objectives-

- To find the demographic profile of pregnant women.
- To assess the effectiveness of different analgesic drugs used for labour analgesia in pregnant women.

MATERIAL AND METHODS-

The An observational, prospective study was carried out for one and half years (February 2023 to May 2024) in department of pharmacology in collaboration of the Department of Obstetrics and Gynaecology, GSVM Medical College, Kanpur. All pregnant women at full-term gestation in of labour, who gave consent for labour analgesia were admitted to obstetrics and gynaecology

department, GSVM Medical College Kanpur and associated hospital Kanpur are included in this study. Sample size was calculated by using given below formula, According to Cochran's Formula, Sample size n=Z2 PQ/d2

After a review of the history and examination, effectiveness of labour analgesic drugs are assessed. out of 148 patients, 40 pregnant women, analgesic drugs that were used in obstetrics and gynaecology department were diclofenac along with epidosin, in 40 cases, tramadol along with epidosin in 30 cases and anafortan in 78 cases. All basic details of Pregnant women, were recorded using a structured data collection sheet prepared for the study having the following sections;

- Includes Demographic details like Pregnant women name, Age, education, occupation.
- Includes details of VAS (visual analogue scale) Score to assess the effectiveness of drugs. It includes
- Before drug administration in First stage of labour
- After drug administration in First stage of labour
- Second Stage of labour

A total 148 study pregnant women admitted with labour pain to obstetrics and gynaecology department, GSVM Medical College, Kanpur and the associated hospital were considered for this study after consideration of inclusion and exclusion criteria. Diclofenac along with epidosin were given to 40 pregnant women whereas tramadol along with epidosin were given to 30 pregnant women admitted at early phase of labour and anafortan was given to 78 pregnant women admitted at late phase of labour. The observations and results with basic details of pregnant women and prescribed analgesic drugs for labour pain are as follows-

SOCIO-DEMOGRAPHIC CHARACTERISTICS

Age Distribution-

Pregnant women receiving, diclofenac along with epidosin, in the primigravida 54.54 % were in the age of 19-24 years and 45.45% in 25-29 years. In multigravida,66.66% were in age 25-29 years, 27.8% in 19-24 years and 5.5 % in 35-39 years. Pregnant women receiving tramadol along with epidosin, in primigravida,72.22% of were in age 19-24 years and 27.7% in 25-29 years. In multigravida, 33.3 % in age 19-24 years and 66.6% in 25-29 years. Pregnant women receiving, anafortan, in primigravida,67.44% were in age 19-24 years and 32.55% in 25-29 years. In multigravida,20% were in age 19-24 years, 65.71% in 25-29 years and 14.28% in 30-34 years.

Table 1: Distribution of Age of Pregnant women

	Frequency (n= 148)											
Age interval (years)	**Diclofenac along with epidosin (n=40)**				**Tramadol along with epidosin (n=30)**				**Anafortan (78)**			
	Primigravida (n=22)		Multigravida (n=18)		Primigravida (n=18)		Multigravida (n=12)		Primigravida (43)		Multigravida (35)	
19-24	12	54.54 %	5	27.80 %	13	72.22 %	4	33.3 %	29	67.44 %	7	20%
25-29	10	45.45 %	12	66.66 %	5	27.7 %	8	66.6 %	14	32.55 %	23	65.71 %
30-34	0	0	0	0	0	0	0	0	0	0	5	14.28 %
35-39	0	0	1	5.5%	0	0	0	0	0	0	0	0

Occupation Distribution

Among primigravida women, 43.90% are housewives, while in the multigravida ,the percentage of housewives is higher at 63.63%. Women employed in government jobs comprise 12.19% of the

primigravida and 13.18% of the multigravida. Shopkeepers represent a smaller portion, with 8.53% in the primigravida and 9.09% in the multigravida. Those engaged in private jobs account for 15.85% of primigravida women and 15.15% of multigravida women. The category of labourers or daily wage workers shows a difference, with only 4.88% of primigravida women in this occupation compared to 12.12% in the multigravida. Overall, housewives dominate both, particularly among multigravida. Women, while employment in the government and private sector is consistent across both categories. Labourers and daily wage workers are more prevalent among multigravida women.

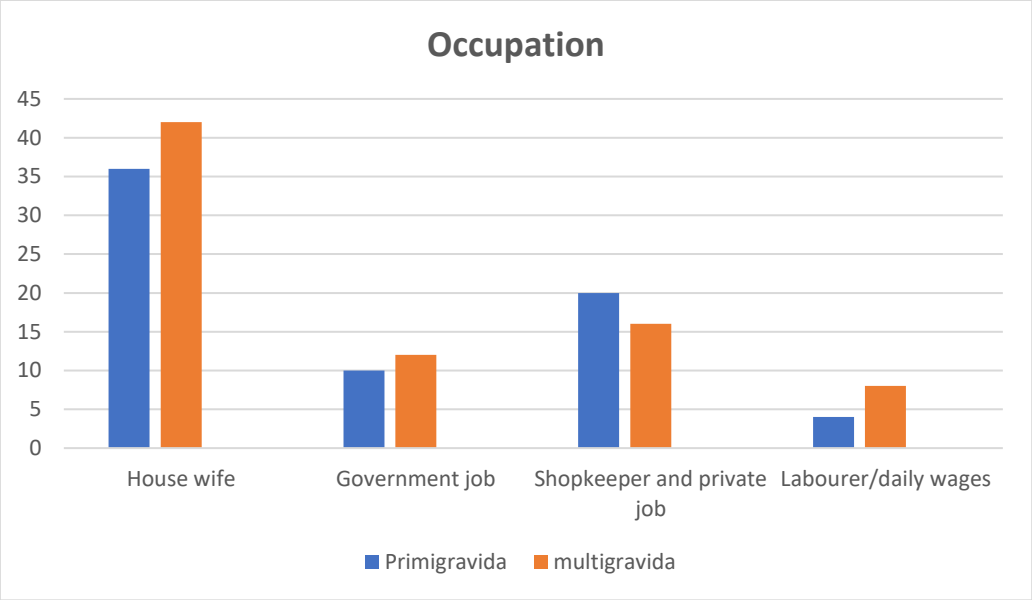

Figure -1: Bar diagram showing distribution of occupation

Residence distribution-

Among primigravida women, the majority (54.12%) live in rural areas, accounting for 46 out of 82 women. The remaining 36 women (57.14%) reside in urban areas. For multigravida women, 39 out of 66 (45.88%) live in rural areas, while 27 women (42.86%) live in urban areas. Overall, a larger proportion of primigravida women are from rural areas compared to multigravida women, while urban areas show a more even distribution between the two , with a slightly higher percentage of primigravida women.

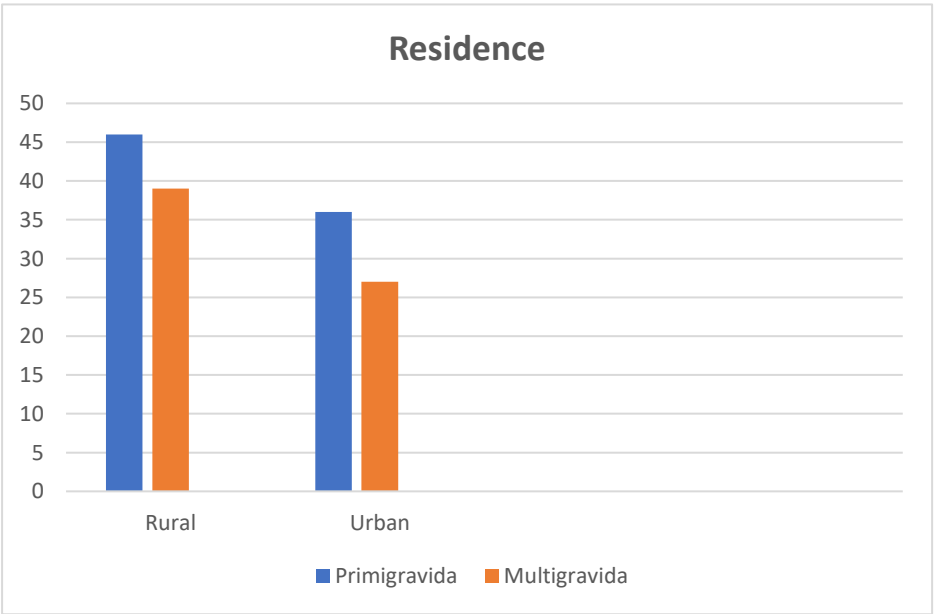

Figure-2 : Bar diagram showing the residence distribution

Distribution of VAS Score-

Before drug administration in first stage of labour, both primigravida and multigravida had a mean VAS score of 10. After drug administration in first stage, mean VAS score was 6 in both in primigravida and multigravida women. After drug administration in second stage, mean VAS Score in primigravida and multigravida, VAS Score was 7 after drug administration.

Table 2: Distribution of drugs by VAS score

Drugs	Before Drug Administration in first stage of labour		After drug administration in first stage of labour		After drug administration in second stage of labour	
	Primigravida	Multigravida	Primigravida	Multi gravida	Primigravida	Multigravida
Diclofenac along with epidosin	10	10	6	6	7.0	7.0
Tramadol along with epidosin	10	10	6	6	7.0	7.0
Anafortan	10	10	6	6	7.0	7.0

Mean Duration of stages-

First stage of labour- mean duration of first stage of labour was, 495.15 min in primigravidae administered diclofenac along with epidosin and ,471.20 min in primigravidae administered tramadol along with epidosin, while 515.93% in primigravidae administered with anafortan. Mean duration of first stage of labour, 363.20 in multigravida, administered diclofenac along with epidosin, 343.90 min in multigravida administered (tramadol along with epidosin) and 453.45 min in multigravida administered anafortan.

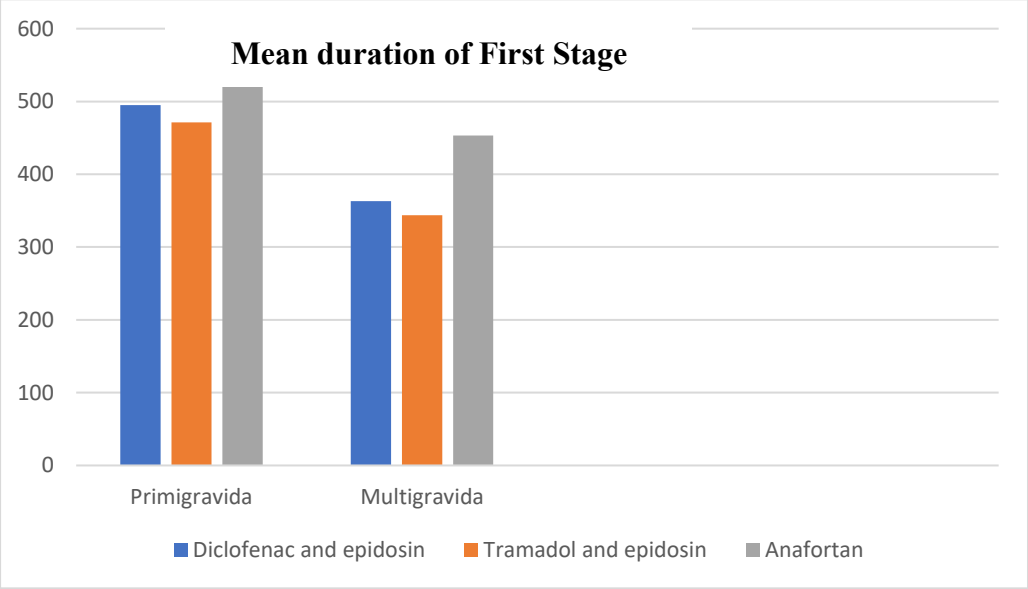

Figure 3: Bar diagram Showing Mean duration of first stage of labour

Second stage of labour- Mean duration of second stage of labour was, 86.50 min in primigravidae administered diclofenac along with epidosin and ,82.11 min in primigravidae administered tramadol along with epidosin, while 87.36 in primigravidae administered with anafortan. Mean duration of

second stage of labour, 27.38 in multigravida, administered diclofenac along with epidosin, 25.41 min in multigravida administered (tramadol along with epidosin) and 28.45 min in multigravidae administered anafortan.

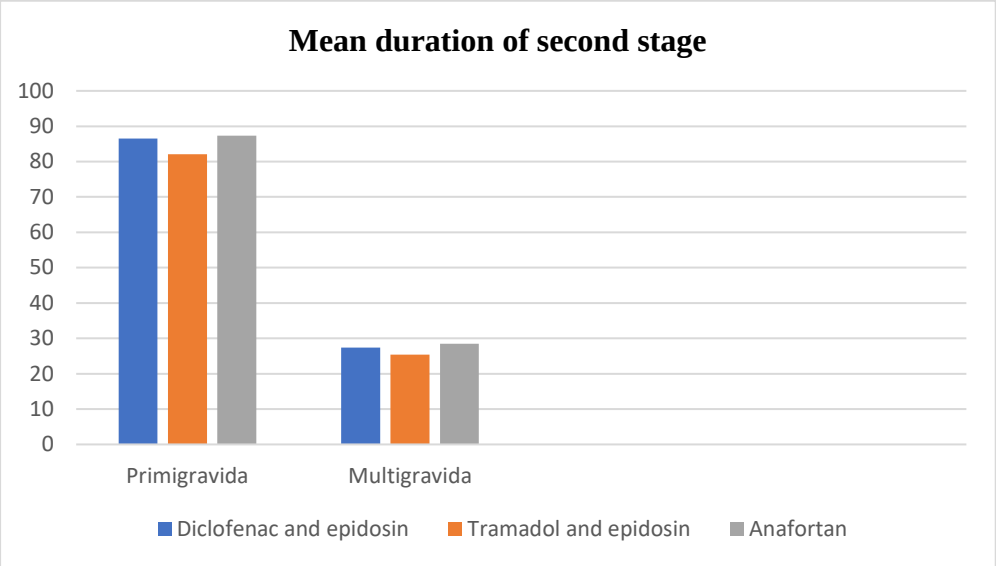

Figure 4: Bar diagram of Mean duration of second stage of labour

Third stage of labour- Mean duration of third stage of labour, among primigravida was 6.16 min in diclofenac along with epidosin ,6.7 min in tramadol along with epidosin and 6.76 min in anafortan. Mean duration of third stage of labour, among multigravida was 6.07 min in diclofenac along with epidosin ,6.8 min in Tramadol along with epidosin and 6.08 min in anafortan.

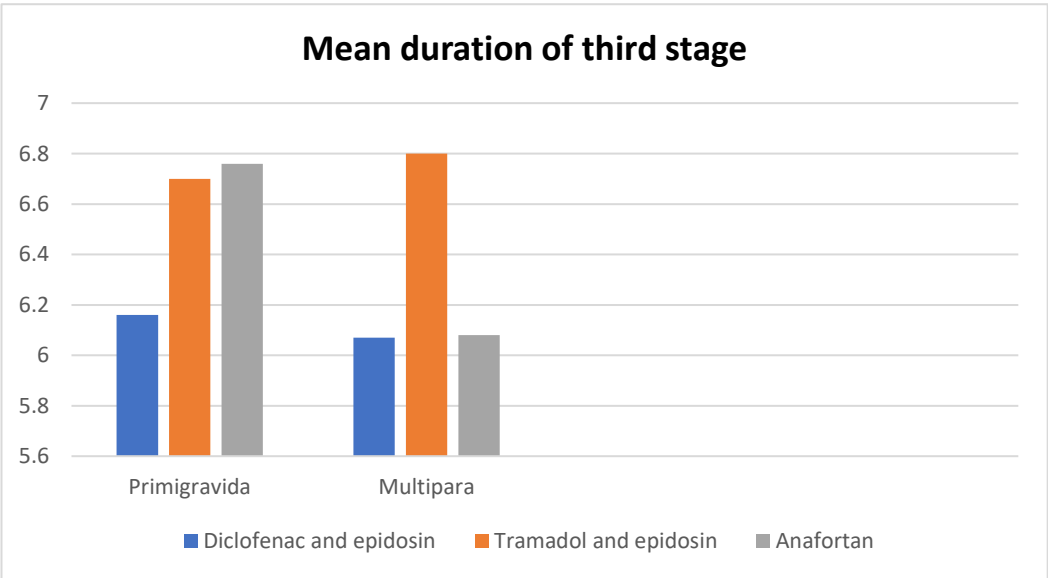

Figure 5: Bar diagram of Mean duration of third stage of labour

DISCUSSION:

Labour is marked by a gradual rise in the frequency and length of uterine contractions, as well as effacement and dilation of the cervix as the foetus descends via the birth canal. Extended labour can lead to difficulties in the second stage of labour and the puerperium by increasing perinatal morbidity and mortality and the physiological load on the mother. Therefore, it is thought that inducing labour at an earlier stage can help lower rates of maternal morbidity and newborn problems.

Particularly for primigravidae, the first stage of labour is the longest and most painful. The cervix has 6–25% smooth muscle, which provides a contractile response to the growing foetal head. This offers the physiological justification for the use of relaxants for smooth muscles. Smooth muscle relaxants can effectively shorten the duration of labour while reducing pain when given at the right time and during the dilatation phase.

In present study , VAS score after drug administration in first stage was 6 which is similar to study conducted by D Mehra etal (2021) [23] where VAS score was 6 after anafortan administration in first stage, and also study conducted by Al-Assadi A Foetal (2009) [24] where after diclofenac administration , in first stage VAS score was 8 in primigravidae and 7 in multigravida which is similar to our study. In present study after drug administration in second stage in in primigravida and multigravida, VAS Score was 7 and 6 respectively which in contrast to study conducted by Sudha P et al, [25] where mean VAS score after the drug administration was 4.85 .

In present study, mean duration of first stage of labour was, 495.15 min in primigravida , and 363.20 in multigravida when diclofenac along with epidosin was given, which was similar to Study conducted by Al-Assadi A Foetal (2009)[24] where after diclofenac admintration duration of first stage of labour in primigravida is 400 min and in multigravida 318 min.

In present study, mean duration of first stage of labour was ,471.20 min in primigravidae and 343.90 min in multigravida when tramadol along with epidosin was given which was similar to studies conducted by Thakur R, Patidar R, [26] where the mean duration of first stage of labour in the tramadol was 352 min. Also, another study conducted by Nagaria T, Acharya J, [27] where the mean duration of first stage of labour 390 min in the Tramadol which is similar to our study.

In present study when anafortan administered mean duration of first stage of labour was 515.93 min in primigravida and 453.45 min in multigravida which was similar to study conducted by D Mehra et (2021) [23] where mean duration of first stage of labour was in anafortan (513.17 minutes)

In present study, mean duration of second stage, was, 86.50 min in, in primigravida and 27.38min in multigravida when (Diclofenac along with epidosin) was given which in contrast to study conducted by Al-Assadi A Foetal (2009) [24] where mean duration of second stage of labour in primigravida was 51 min and in multigravida was56 min .

In present study, mean duration of second stage was 82.11min in primigravidae and 25.41 min in multigravida when tramadol along with epidosin administered which in contrast to study conducted by Thakur R, Patidar R [26]where mean duration of second stage of labour in the tramadol was 17 min and also study conducted by D Mehra etal (2021) [23] where mean duration of second stage of labour was 32.5 minutes in anafortan which in contrast to our study.

In present study, mean duration of third stage of labour, was 6.7 min in primigravida , 6.8 min in multigravida , when tramadol along with epidosin administered which was similar to study conducted by Sudha P et al. [23] where the mean duration of third stage of labour to be 6 min. And also study conducted by Nagaria T, Acharya J [27] where the mean duration of third stage of labour was 5.5 min which is similar to our study.

CONCLUSION-

Labour may be the most painful experience for women. The experience is different for each woman and the different methods chosen to relieve pain depend upon the techniques available locally and the personal choice of the individual. Obstetrical analgesia is a crucial component of contemporary obstetrics since it benefits the mother and has a good impact on the progression of labour and the condition of the new born child. Total of 148 pregnant women at term visited tertiary care hospital, GSVM Medical College were included in present study These analgesics were effective in labour pain management, showing equal effectiveness.

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