

LBP and PGP at Gestation and Puerperium Periods of Pregnant Women in Mosul

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ABSTRACT

Background: Pregnancy-related low back pain is a common complaint among pregnant women at gestation and puerperium. Low back pain and pelvic pain girdle pain is a common problem in pregnancy and postpartum and usually, it is self-limited and not disabling but it interferes with the activity of housework and daily activity.

Objective: the study aimsto identify the relationship between the incidence of low back pain and the time of occurrence and its related to the type of labor and the cause and relation to vitamin Deficiency. Low back pain could present as either a pelvic girdle pain between the posterior iliac crest and the gluteal fold or as a lumber pain over and around the lumbar spines the source of the pain should be diagnosed and differentiated early.

Result and discussion: We found Vit D checking at pregnancy important to reduce the pain. We found C/S is more preferable to any pregnant who has a previous back problem better than N.V.D. PGP is more like to happen at pregnancy while LBP is more after labor. Low back pain and pelvic pain girdle pain is a common problem in pregnancy and postpartum and usually it is self-limited and not disabling but it interferes with the activity of housework and daily activity.

Conclusion: Obesity and overweight is a common risk factor and the patient should reduce the overweight to prevent pregnancy and post-pregnant LBP and PGP. PGP is more like to happen at pregnancy while LBP is more after labor. heavy work is a risk factor to the pregnant so the lady should reduce this work and recommendedusinglumber corset or lumber belt as it reduces the LBP,. We also recommend exercise before and after labor to increase pelvic girdle muscle power to reduce pain.

Keywords: Low back pain (LBP), Pelvic girdle pain (PGP).

INTRODUCTION

Low back pain (LBP) is a common complaint among women during pregnancy, having a great impact on their quality of life^[1], low back pain during pregnancy, puerperium has been known and recognized for many centuries and was described by Hippocrates, Vesalius, Pineau, Hunter, Velpen and many others.

In 1962 Walde was the first who recognized the differences between Pelvic Girdle Pain (PGP) and Lumbar pain (LP). Later on, Ostgaard *et al.*^[1] set the criteria for the differentiation between these two entities. It has been estimated that about 50% - 52% of pregnant women will suffer from some kind of low back pain at some point during their pregnancies or the postpartum period^[14]. Pregnancy-related (LBP), seems to be a result of quite a few factors, such as mechanical, hormonal, and others.^[2]

PGP and LP are two different patterns of low back pain during pregnancy, although, a small group of women suffered from combined pain, PGP is common during pregnancy and the postpartum period and approximately four times as prevalent as lumbar disc prolapse. It is described as deep, stabbing, unilateral or bilateral, recurrent or continuous pain, presenting between the posterior iliac crest and the gluteal fold, possibly radiating to the posterolateral thigh, to the knee and calf, but not to the foot.^[3]

PGP is more intense during pregnancy than during the postpartum period and may convert the natural discomfort of pregnancy into a pathophysiologic condition, which minimizes physical activity, and causes withdrawal from social interactions.

Pain provocation tests are the best tests available for differentiating PGP from other conditions. The posterior pain provocation test (PPPT) is positive, in the case of PGP.

Lumber pain LP during pregnancy is very similar to lumbar pain experienced by women who are not pregnant and it appears as pain over and around the lumbar spine, above the sacrum, making the differentiation between PGP and LP easy.^[4]

LP may or may not radiate to the foot, in contrast with PGP, Tenderness over paravertebral muscles is a common finding. LP aggravates at the postpartum period and usually exacerbates by certain activities and postures (e.g. prolong sitting or standing) but it seems to be less disabling than (PGP), the posterior pain provocation test is negative.

LP and PGP should be diagnosed and differentiated early since the treatment is different for each condition.^[5]

A detailed history and clinical examination are essential. Although movement, palpation findings have limited value in the differential diagnosis, it is one of the most commonly used diagnostic tools.

Pregnancy-related low back pain affects women's lives dramatically. Low back pain is the most common cause of sick leave after delivery. Taking into consideration the individuality of every woman and pregnancy, early identification and treatment will lead to the best possible outcome. Conservative management is the gold standard including physiotherapy, stabilization belts, nerve stimulation, pharmacological treatment, acupuncture, massage, relaxation, and yoga.^[21]

In general, pregnancy-related LBP has a benign prognosis provided that early recognition and treatment have been made. This article aims to review the related studies reporting their clinical data for the diagnosis and management of pregnancy-related pain and to highlight specific treatment recommendations.^[16]

Postpartum low back pain and postpartum pelvic pain may be due to change in pelvic support a lot of extra weight. It also became flexible.^[18]

In Potential Causes of PPGP hormonal factors, Relaxin is a hormone that the body produces in increased amounts during pregnancy. This Hormone helps increase the flexibility of the ligaments that support the (SI) joints. This facilitates the widening of the birth canal that occurs during delivery.

A biomechanical cause work as the pregnancy progresses, some of the core muscles (pelvic floor, abdominals, transverse) are stretched due to the increasing size and weight of the fetus. Stretching of these muscles may lead to a decrease in the ability of these muscles to stabilize the pelvic joints.^[20]

As the fetus grows during pregnancy, the center of gravity shifts forward and remains forward in the postpartum period. This typically results in forwarding rotation of the pelvic bones, leading to increased load, decreased functional stability, and increased wear and tear of the (SI) joints.^[21]

In the traumatic cause, 52% of women with pregnancy have low back and pelvic pain and have pelvic floor dysfunction including a change in the firing of the muscles, this may be due to direct injury of the pelvic floor muscles or injury to the nerves that innervate the pelvic floor muscles during pregnancy and or delivery.^[21]

The hormones produced during pregnancy help the joints and ligaments become more mobile. A movable pelvis helps the baby navigate its way out of the birth canal, And may throw off the spinal alignment, leading to low back pain and postpartum pelvic pain.^[9]

The muscles of the abdomen and pelvic which work together to help the movement and stabilize the spine became weaker during pregnancy and all the women experience physical changes to the pelvis and low back during pregnancy, after delivery of the muscles and ligaments harden again.

After, birth women may experience pain in front of pelvic, in sacroiliac joint, in the buttock, in the thigh. The sacroiliac joint may be to blame for postpartum pelvic girdle pain. The sacroiliac joint (SI) is located between the spine and the hip joints the SI joints are responsible for absorbing & transferring the large amounts of force that are generated in the spine & lower extremities during physical activities.

The (SI) joints are partially particularly vulnerable to injury because of their location and their orientation, the (SI) joint provide the crucial balance between pelvic stability and pelvic mobility.

Postpartum pelvic girdle pain (PPGP) which include the (SI) joints will resolve in most women within 4 months after giving birth, while 20% of women who experience this^[13]

Pain during and immediately after pregnancy report continuing pain two and three years postpartum. ^[13]

PATIENTS AND METHOD

This prospective study was conducted between October 2019 till March 2020 at Rheumatology and Gynaecology department and at the private clinic of Rheumatology and private clinic of gynecology and obstetric in Mosul City we were able to identify a total of 100 cases of the female of low back pain and pelvic girdle pain at gestation and puerperium in randomized female, that satisfied our inclusion criteria, e.g symptom and/or signs in low back pain at pregnancy and postpartum with follow up till 3 months after labor.

We excluded (18) patients from our study either because not continue the study and exclude (11) other patients either due to a history of trauma or very obese female, smoker, medical illness.

A questionnaire was designated to include the following information: age, occupation, body mass index, parity, type of labor, pain at gestation, time post labor pain, other symptoms of neurological deficiency as numbness, paresthesia, use of back slap, patient social work, limitation and movements, calcium and vitamin D old deficiency.

Straight leg raising test (SLRT), femoral stretch test (FST), clinical examination of the back, palpation, examination of the sacroiliac joint, and all physical examination according to the routine of the hospital.

The (SLRT) was +ve if it is 70 or below, (FST) were +ve if any pain happens by extension of the hip with knee flexion. For all patients we do complete blood pictures, ESR serum calcium, level of vitamin D₃ as blood examination for all patient X-rays of lumbar spine and pelvis done, and some patients MRI and Dexa of bone mass done.

We measure the body mass index (BMI) for every patient the (BMI) is a measure of body fat based on the higher and weight that applies to the adult female, and for every patient we measured the weight in (kilogram) with height in centimeters to measure it we divided the weight in (kg) on the height by squared (meters). ^[15]

- 1- The (BMI) according to 4 types:
 - 1) Under weight < 18.5 BMI
 - 2) Normal weight 18 - < 25 BMI
 - 3) Over weight 25 - < 30 BMI
 - 4) Obesity > 30 BMI
- 2- The obesity subdivided to 3 class according to BMI
 - A- Class I obesity 30 - < 35
 - B- Class II obesity 35- < 40
 - C- Class III obesity > 40

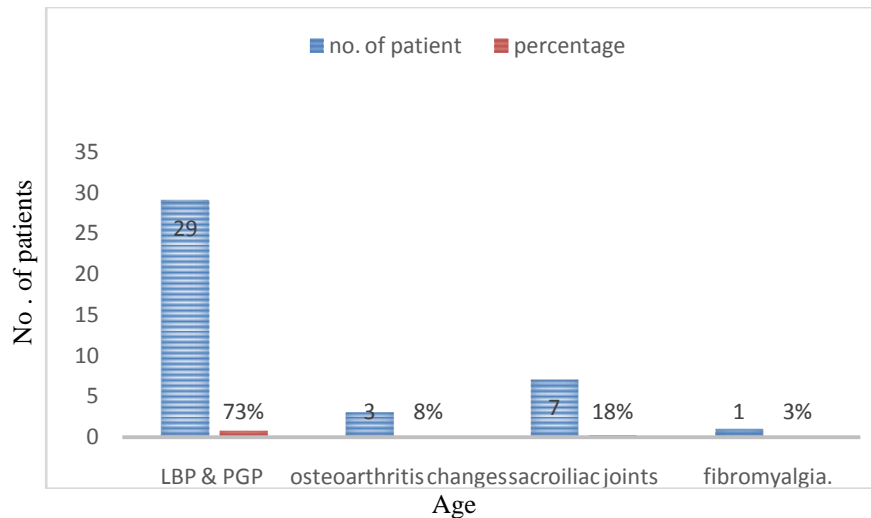
All the obese females were excluded from over study.

In this study, 100 female patients have fulfilled the criteria for inclusion.

We excluded 18 patients who don't continue the study and 11 patients were excluded due to obesity BMI over 30 or history for trauma.

We divided the patients to a group according to the age of patients.

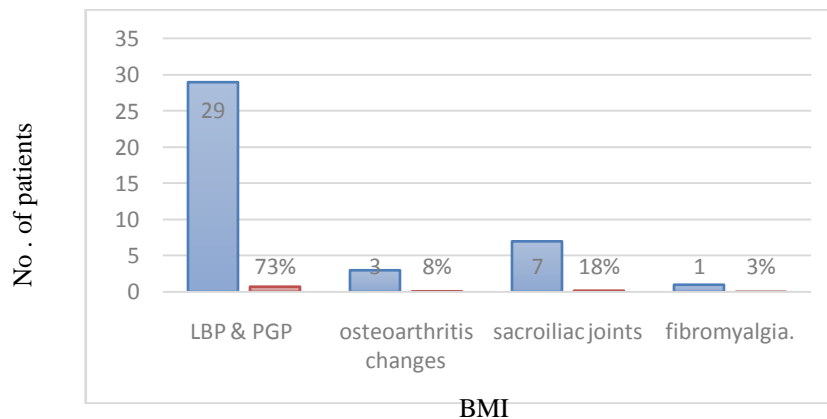
- 7 patients less than 25 yrs 7%
- 48 patients from 25- 34 yrs 48%
- 30 patients from 35- 39 yrs 30%
- 15 patients from 40- 45 yrs 15 %



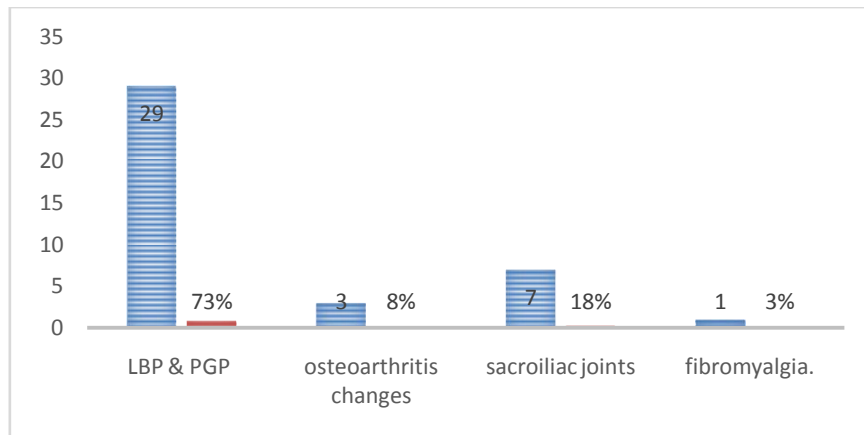
- The age range from 19- 44 years

The mean age was (33.66) year. Those patients above 45 years of age were excluded from this study. For every patient, we measure BMI with height and weight.

- 6 patients with BMI above 30 were excluded from the study.
- No patients BMI less than >18.5 0%
- 39 patients whose BMI were from 18.5 – 25 39% which is a normal weight.
- 61 patients whose BMI were from 25 - < 30 61% which indicated overweight.

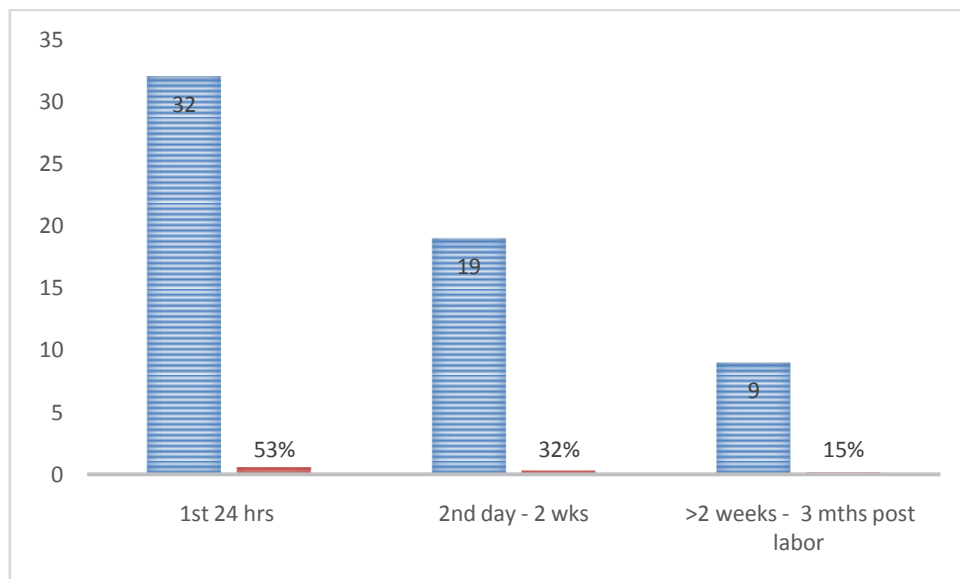


- According to the time of lower back pain and pelvic girdle pain, we divided the patients into 4 groups
 1. The pain which begins from labor and the pain after labor starting from birth till one day during 1st 24 hours.
 2. The pain started from 2 days to 2 weeks.
 3. The pain which begins from 2 weeks of labor and above till 3 months
 4. The patients where the low back pain started at gestation and continue after labor.
- 60 patients have no history of LBP or PGP before labor.
- We have 40 patients with LBP or PGP begin before labor at gestation time and subdivided to:
 - o 29 patients with a history of low back and pelvic girdle pain.
 - o 3 patients have a history of LBP and mild osteoarthritis changes by X-ray
 - o 7 patients have pain at sacroiliac joints.
 - o 1 patient has LBP with fibromyalgia.



From 60 patients whom the LBP and PGP were the pain started after labor, they can be divided into 3 subgroups.

- 32 patients the pain happens from birth and happens during the 1st 24 hours of labor 32%.
- 19 patients of our study the pain were started from the 2nd day of labor till 2 weeks 19%
- 9 patients of our study the pain started from the 2 weeks and above till 3 months post-labor. 9%



In our study we have:

- 58 patients who have vitamin D₃ deficiency at the time of examination 58%, with 42 patients 42% who have normal Vitamin D₃ normal vitamin D₃.
- 36 patients have S. Calcium deficiency 36% while 64 patients have normal S. Calcium 64%.
- 41 patients have combined S.Ca and Vit D₃ deficiency.
- 5 patients have only S.Ca deficiency without Vit D₃.

	No. of patients	Percentage
Deficiency of Vit D	58	58%
Normal Vit D	42	42%
S. calcium deficiency normal S. Ca.	36 64	36 % 64%
S. calcium and Vit D only S. Ca without Vit D	41 5 54	41% 5% 59 %

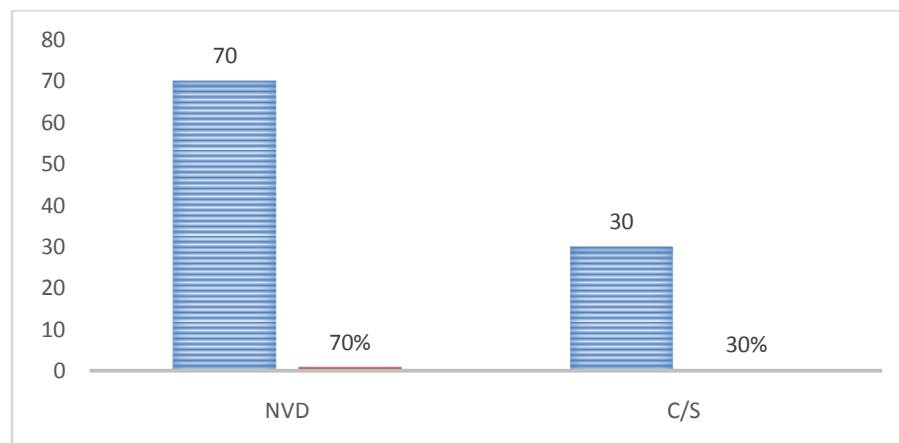
In our study, we excluded patients with acute trauma to the back and those with spinal stenosis and spinal cord compression and according to the site of the pain at the back & its location we classified our patients into:

- 24 patients were the pain are in the sacroiliac joint site only unilateral 24%.
- 22 patients were the site and pain at central lower labor and sacroiliac joint (combined site) 22%.
- 30 patients were the pain at both (bilateral) sacroiliac joints 30%.
- 10 patients the pain was at the lower lumbar central 10%.
- 10 patients the pain was in the gluteal region only 10%.
- 2 patients the pain was at upper and lower lumbar. 2%
- 2 patients the pain was at SI, gluteal, coccygeal region 2%.

	No. of patients	Percentage
Bilateral S.I	30	30%
Unilateral S.I	24	24%
Mixed lower lumbar and SI	22	22 %
Central lower mid lumbar	10	10 %
Gluteal region	10	10 %
Upper and lower lumbar (mixed)	2	2%
Coccygeal and SI and gluteal	2	2%

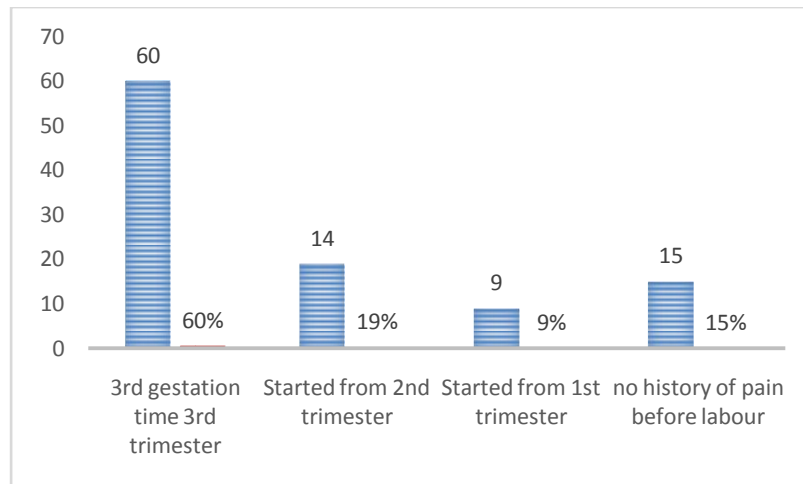
In our study, we have 2 types of labor either normal vaginal delivery (NVD) or cesarean section.

- 70 patients out of 100 were normal vaginal delivery NVD 70%.
- 30 patients were C/S 30%
- 5 patients out of 100 were the 1st labor 5%. Primigravida while 95 patients were multigravida 95%.
- 63 patients in our study who are NVD were multigravida while 23 patients of C/S delivery were multigravida, while patients were mixed NVD and C.S.
- 5 patients who have 1st labor were NVD



About the low back pain and pelvic girdle pain before labor, in our study:

- 60 patients the LBP and PGP were started in the 3rd gestation time 3rd trimester.
- While 14 patients the pain started from 2nd trimester and
- 9 patients the pain started from 1st trimester while 15 patients have no history of pain before labor.



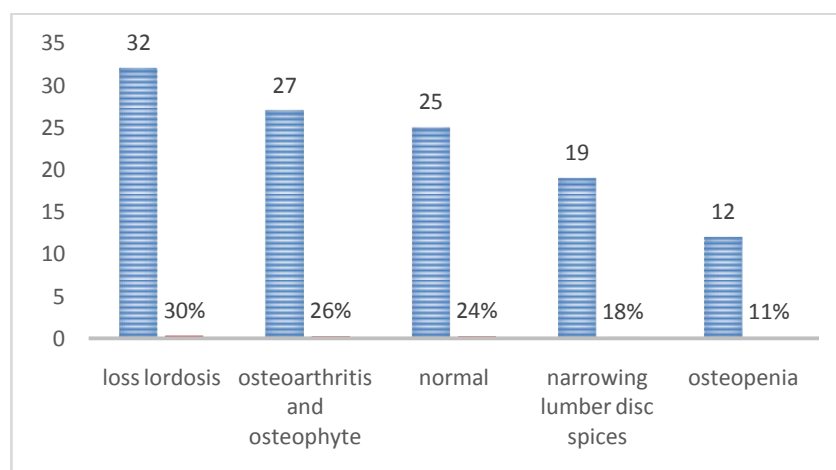
In our study, the pain of LBP and PGP was moderate to severe in 65 patients 65 % while 28 patients experience mild pain while 7 patients 7% experience disabling pain.

In our study, 85 patients get heavy work in addition to normal house activities 85%, while 14 patients 14% have only activity and daily living and 1 patient only has no work at all.

We do X-ray two film anterior and lateral views to all our patients and the sacroiliac joints. In our study 32 patients were lost of normal lumbar lordosis in X-ray later view, 27 patients we find osteoarthritis and osteophyte at lumber spines, 25 patients have normal X-ray films.

(14) patients have narrowing lumber disc spices as following: (10 patients of them the narrowing were at (lumber, 5 sacral I vertebrae) (L5 S1), while 3 patients the narrowing were at (L4 L5), one patient the narrowing was at (L2 L3)

Only 2 patients we notify osteopenia at X-ray and in our study 12 patients MRI were done for him and 8 patients out of 12 have loss disc hydration (dehydration) and 3 patients have narrowing disc space, 1 patient has never root compression.



In our study after full neurological examination for nerves of lower limbs, which include sensation and knee and ankle jerk, power, tone. We find 93 of our patients have no neurological deficit 93% while only 7 patients had neurological defects as:

- Decrease sensation L3 L4 LS-S₁. 2 patients.
- Decrease sensation 3 power 4 patients 4.
- One patient has decrease reflex ankle and knee reflex
- In our study, we find 77 patients have not used any lumber corset or lumber belt at any time before or after labor while 23 patients were using some lumber belt or corset.

Low lumber pain and pelvic pain are very common in women at the gestation period and postpartum and may cause significant health problems.^[23]

Many causes behind it from hormonal, biochemical traumatic causes, increased weight, and obesity also blamed in many cases.^[14]

Although low back and pelvic pain can occur in women in all age groups in our study, we follow pregnant women from the beginning of pregnancy until 3 months after labor.^[15]

In our study it shows that the age of LBP & PGP in women is higher at the group of age from 25-34 years with the highest incidence 48%, this implies that this age group is highly vulnerable to mechanical stress and heavy work and housework in addition to hormonal changes and multigravida, while the younger age group less than 25 years are mostly primigravida and are at least incidence of LBP only 7% of the total group.

This result is in agreement with a previous study done by A-Sak-SAK a mot et al who found the effect of works of this group.^[16]

According to body mass index (BMI), in our study, we excluded the obese female BMI more than 30, no one of our patients have underweight BMI 18.5 and below which presented 0 %.

We found most our patients were overweight and BMI were from 25- < 30 and we find 61 patients in this group 61% which mean that the overweight is a risk factor in LBP and PGP at pregnancy and post-labor, same results to another study of A, Wiezer et al which find the BMI > 25 and above have a high-risk factor, also equal^[12] to the study of Lindsay et al who found that there is a high relation between weight gain and LBP.^[17]

Our study also accordance another study of Orvieto *et al.*^[6], who found the BMI is a risk factor and significantly higher in those experiencing pain compared to those who did not, this study also agree with those found by Morgan *et al.*^[21], who found a mean pre and end BMI of 24.57 and 30.10 respectively in those who had LBP compared to BMI of 23.30 and 28.56 in those who did not. Our study does not agree with the study of Men et al who found no significant differences between BMI before pregnancy in those with LBP and the general population.

- In our study we find that most of LBP and PGP after labor happen after normal vaginal labor N.V.L. which happen in 70 patients (70%) while only 30 patients the pain happens after C/S, mean that the normal vaginal delivery patients more susceptible to LBP and PGP, our result and study is equal to another study of Corso *et al.*^[5] who found that postpartum LBP in about 75% of women experiences LBP immediately the following birth with NVD.
- In our study most of the patients who have NVD where multigravida (95 patients 95%) while only 5 patients 5% were primigravida, which means that multigravida patients were more susceptible to LBP because of many factors like weakness of the pelvic girdle and pelvic muscles, hormonal, and biochemical factors, this study agreed with the study of P. Katonis et al who found the relation between LBP and hormonal biochemical^[2] and trauma factors, also our study agree with the study of Gutkeet *et al.*, who found that women experience LBP during the pregnancy^[19] have 85% Chance of experience LBP during a subsequent pregnancy.

In our study, 63 patients who are NVD were multigravida while 23 patient of C/S were multigravida and 4 patients were mixed between NVD and C/S, only 5 patients of LBP and PGP were primigravida (5%) which mean that the 1st labor patients have good muscles power of pelvic girdle.

In our study, we find that only 15 patients of LBP and PGP have no history of back pain before labor 15% while the majority of patients 85% (85%) with LBP started at gestation or before gestation and continue.^[23]

(65) of patients the LBP started at the 3rd stage of gestation time, this is equal to the study of A-Suk-SAKA mots *et al.* who found that 82.2% of the patients with postpartum LBP have reported^[20] previous back pain at some period of pregnancy.

Also agree with another study of Annie – Gatuk^[19]- et al who found that 70% of women with postpartum LBP have experienced some pain at pregnancy and the mean gestation age was 22 weeks.

In our study about the pain after labor which happens, we found that 32 patients out of 60 patients (53.8%) the pain in LBP and PGP have happened directly after delivery and within 1st 24 hours, this study agrees with another study of Ostgaard et al who found that 67% of women experience LBP directly after delivery^[14] while other 37% of women LBP happen later on.

In our study, 40 patients (40%) of the LBP and PGP started at the gestation period agree with other studies of Ingrid-M-Morgan *et al.* who said that 44% of patients have some back pain before pregnancy.^[21]

In our study, we found that the site of back pain at pregnancy was at the sacroiliac joint. (SI) were bilateral in 30 patients (30%) and 24 patients 24% there is a unilateral (SI) joint problem and total sacroiliac joint unilateral and bilateral were found that pelvic girdle pain and SI during pregnancy and postpartum approximately four times as prevalence of LBP. It

also correlates with another study of H C Ostergaard *et al.* who found that the pelvic girdle pain during pregnancy was higher^[14] than after delivery, whereas LBP was more after delivery.

It also agrees with the study of M. Wiezeret *al.*^[12] who find that PGP was higher at pregnancy more than LBP. In our study, the LBP and PGP are moderately and severe in degree in 65 patients (65%) and mild pain in 28 patients 28% and disability in 7 patients (7%) only, it agrees with the study of Anneiet *al.*^[19] who found that 61.8% of women who reported LBP claimed the pain is moderate to severe & 9 % claimed completely disability by pain

CONCLUSION

In our study, we found that 58 patients have Vit D₃ deficiency at the time of the examination 58% and 42 patients have normal Vit D (42 %) which indicate the relation between bit D₃ deficiency and LBP, which may be a risk factor & one of the causes of L.D.P. our study agree with another study of Erhan Gokceket *al.*^[19] who found that [of that deficiency of Vit. D₃ is often the cause of muscle ligament & bone pain & the severity of pain increased in patients with LB-p as the deficiency of Vit. D increased, so, for this reason, we recommended to evaluate the level of Vit. D in patients with L.B.P. deficiency of Vit D increased, so, for this reason, we recommended to evaluate the level of Vit D in patients with LDP] It also agrees with the study of Megan-L-Malligenet *al.*^[20] who found that Vit D deficiency increase LBP in pregnancy and we should increase Vit D and calcium demand at 3rd trimester of pregnancy.^[19]

Our study does not agree with the study of Andreas, Thornby^[23] et al who said that no association between the level of Vit D and chronic LBP in pregnancy.

In our study, calcium level deficiency alone is not significant where we found these only 36 patients have only calcium deficiency while when the deficiency of Vit D and calcium at some time in 41 patients which is equal to the study of Erhan Gokceket *al.*^[23]

In our study, 85 patients have heavy work associated with LBP and PGP (85%) which is an important risk factor which is equal to the study of Valencia, Higner^[10] who say that the lifting and carrying activities like lifting newborn baby lead to severe LBP.

Also equal to the study of M Wiezeret *al.*^[12] who claim that a heavy work lead in pregnancy increase postpartum pain Mens et al found that 80% of patients the LBP affect routine activity including housework.

In our study, 77 patients have not used any type of lumber corset or lumber belt at any time before and after labor (77%) while only 23 patients 23% were used it during the postpartum period.

We find that the use of a back device as a corset or lumber belt reduces the LBP and improves the pain within 4 weeks after delivery; these results were equal to the study of A-Sak-SAKA Mot *et al.*^[20] results who found the results.

In our study, X-ray finding mostly showed loss of normal lumbar lordosis in 32 patients, which means that the problem is mostly at sacroiliac joints, ligaments, and paraspinal ligament not show by normal X-ray and 25 patients show normal X-ray finding. 27 patients show mild osteophyte and osteoarthritis of the lumbar spine, 2 patients show osteophyte and osteoarthritis of the lumbar spine, 2 patients show osteopenia, mean that 86 patients (86%) have normal disc space and no narrowing of disespace and the cause of were in pelvic girdle ligaments and no lumber disc prolapse, this result is equal to Katoniset *al.*^[2] study who found PGP and sacroiliac pain is four times as lumber pain as a source of the pain.

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