

**COMMON PREGNANCY RELATED MUSCULOSKELETAL
COMPLAINTS ARISING AMONG THE WOMEN DURING
PRENATAL PERIOD AT SELECTED HOSPITALS IN
BANGLADESH**

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Bachelor of Science in Physiotherapy (B.Sc. PT)

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

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BANGLADESH**

Submitted by **Nusrat Sultana Trina**, for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc. PT).

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DEDICATION

Dedicated to
My Parents
Who accelerate me from behind.

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Declaration

I declare that the work presented here is my own. All source used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of the study, I would be bound to take written consent from my supervisor.

Signature:

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List of abbreviation

AS:	Ankle Swelling
BMRC:	Bangladesh Medical and Research Council
BHPI:	Bangladesh Health Professions Institute
CRP:	Centre for the rehabilitation of paralyzed
CSEP:	Canadian Society of Exercise Physiology
LBP:	Low Back Pain
LMC:	Leg Muscle Cramping
LMP:	Last Menstrual Period
PGP:	Pelvic Girdle Pain
SG:	Striae Gravidarum
SOGC:	Society of Obstetrics and Gynecologists
SPSS:	Statistical Package for Social Science
UI:	Urinary Incontinence
VAS:	Visual Analogue Scale
VV:	Varicose Vein
WHO:	World health Organization

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Abstract

Purpose: The purpose of the study was to identify the common pregnancy related musculoskeletal complaints arising among the women during prenatal period at selected hospitals in Bangladesh. *Objectives:* To find out the common pregnancy related musculoskeletal complaints in different body region of both primigravida & multigravida, to find out the vulnerable age group of having musculoskeletal problems during pregnancy and to explore the gestational age when pregnancy related musculoskeletal complaints arises more frequently. *Methodology:* Method of the study was a quantitative research model in the form of a prospective type survey and cross sectional study design was carried out in this study. Data was collected from conveniently chosen 90 pregnant women from three selected hospitals, by using questionnaire with informed consent of the participants. Data were numerically coded and captured in Excel, using an SPSS 16.0 version software program. The researcher used descriptive statistics in this research. *Results:* Most of the participants 60% (54) were in second trimester, 32% (29) were in third trimester and 8% (7) were in first trimester of their pregnancy. Almost 38% of the participants were primigravida and rest 62% of the participants were multigravida in this study. The study result shows that a large number of participants 63.3% (57) complained of low back pain and 36.7% (33) did not, 45.6% (41) participants complained of pelvic girdle pain and 54.4% (49) participants had no pain, 44.4% (40) participants complained of ankle swelling and 55.6% (50) participants had no ankle swelling, vessels of legs swelling (varicose vein) in 26.7% (24) cases and not in 73.3% (66) cases, leg muscle cramping reported by 37.8% (34) participants and 62.2% (56) participants did not, stretch marks in abdominal muscle occurred in 40% (36) cases and in 60% (54) of cases no complaint of it, urinary incontinence in 14.4% (13) cases and not in 85.6% (77) cases during their pregnancy. *Conclusion:* In this study none of the participants received physiotherapy treatment for musculoskeletal complaints during prenatal period, so need raise awareness program for gynecological physiotherapy treatment and recommended for further study on postnatal musculoskeletal complaints.

Key words: Pregnancy, musculoskeletal complaints, gestational age, gravida.

1.1 Background

During the time of pregnancy many hormonal and anatomical changes that affect the musculoskeletal system in the female body, which may cause various musculoskeletal complaints, predispose to injury, or alter the course of preexisting conditions (Ireland & Ott, 2000).

Biomechanical factors also play a larger role with hormonal influences to produce symptoms in mild to late pregnancy (Vullo et al, 1996). Usually weight gain experienced during pregnancy results in postural changes that produce pain and musculoskeletal complaints in pregnant women. Exaggerated lordosis of the lower back, forward flexion of the neck, and downward movement of the shoulders typically occur to compensate for the enlarged uterus and change in center of gravity. A significant increase in the anterior tilt of the pelvis occurs, with increased use of hip extensor, abductor, and ankle plantar flexor muscles (Brook et al, 2003).

It is estimated that most of all women experiences some degree of musculoskeletal problem during pregnancy and at least 25% have temporarily disabling symptoms (Borg-Stein et al, 2005). 70% of all women suffer low back pain during pregnancy Lower extremity pain is also common in pregnant women (Sabino & Grauer, 2008). Ireland & Ott (2000) cited that, common musculoskeletal complaints during pregnancy include low back pain, sacroiliac joint pain, carpal tunnel syndrome, de Quervain's stenosing tenosynovitis, pelvic pain, stress incontinence etc.

Physiotherapy can play a vital role in obstetrics. The principles of physiotherapy in obstetrics were first developed by Miss Minnie Randall OBE, who was a great physiotherapist in the early 20th century (Polden & Mantle, 1994).

Most of the musculoskeletal problems that arise during pregnancy can be prevented and treated with physiotherapy treatment. The 2003 joint statement of the society of Obstetrics and Gynecologists (SOGC) and the Canadian society of Exercise Physiology (CSEP) recommended various therapeutic exercises associated with

resistance exercises in addition to aerobic exercises for pregnant women (Apple cart, 2011). Obstetrics physiotherapists can help the women throughout the pregnancy to adjust with the physical changes and puerperium, so that stresses can be minimized (Polden & Mantle, 1994).

The population is becoming aware to understanding the benefits of exercise and a healthy lifestyle. It is important for the physician to understand the effects of exercise on the mother and her unborn child, thus many women wants to continue their exercise regimens throughout their pregnancies (Ireland & Ott, 2000). Pregnant women with uncomplicated pregnancies should be encouraged to continue and engage in physical activities because pregnancy is not a state of confinement. As pregnancy is associated with profound anatomical and physiological changes so, proper and individualized exercise may help to prevent and combat many of the musculoskeletal complications associated with pregnancy (Apple cart, 2011).

In Western countries, women are increasingly demanding for the better quality of pregnancy and delivery and obstetric physiotherapy is quite well established (Polden & Mantle, 1994). However in Bangladesh, obstetric physiotherapy is a very new concept and is not well established.

1.2 Rationale

In Bangladesh the promotion of proper maternity care is still remains a great challenge. Women experience some anatomical and physiological changes during pregnancy which causes some musculoskeletal problems during prenatal period and sometimes also in postnatal period. Obstetrics physiotherapists can help a woman during pregnancy to adjust and cope with the physical problems and also support a woman and her birth partner throughout the prenatal, labor and postnatal period. In developed countries, obstetrical physiotherapy is an essential part of maternal health care. But in Bangladesh it is not well known yet. The study aimed to address common musculoskeletal complaints arising among the women during prenatal period in Bangladesh. After completing this study the patients was benefited because they were aware about their maternal problems and physiotherapy services for prevention and treatment of those problems.

Maternal health care is an emerging area in perspective of Bangladesh and physiotherapists can work by gather information about the prevalence of common pregnancy related musculoskeletal complaints of women. This study is helpful for physiotherapists to aware them about the musculoskeletal complaints arising in women during their prenatal period and by giving them a clear reflection of the prevalence of those complaints, the most affected age group and gestational period when most of the problems occur. So it is also helpful for physiotherapists for working in maternal health care by delivering treatment service with multiprofessional team. This study is also helpful for different organizations working in this area by including physiotherapy service in their program for delivering a comprehensive treatment service. Research makes the profession strongest and this study can show the need to establish the skills of physiotherapists particularly in the gynecology and obstetrics area and a base for expanding the scope of practice and also create a future prospect of physiotherapy profession in this country. However, for fulfillment the 4th year of B.Sc in Physiotherapy I had to carried out a research of my interest which accomplished the professional body of interest.

1.3 Research Question

- What are the common pregnancy related musculoskeletal complaints arising among the women during prenatal period at selected hospitals in Bangladesh?

1.4 Aims

- To identify common pregnancy related musculoskeletal complaints arising among women during prenatal period at selected hospitals in Bangladesh.

1.5 Objectives

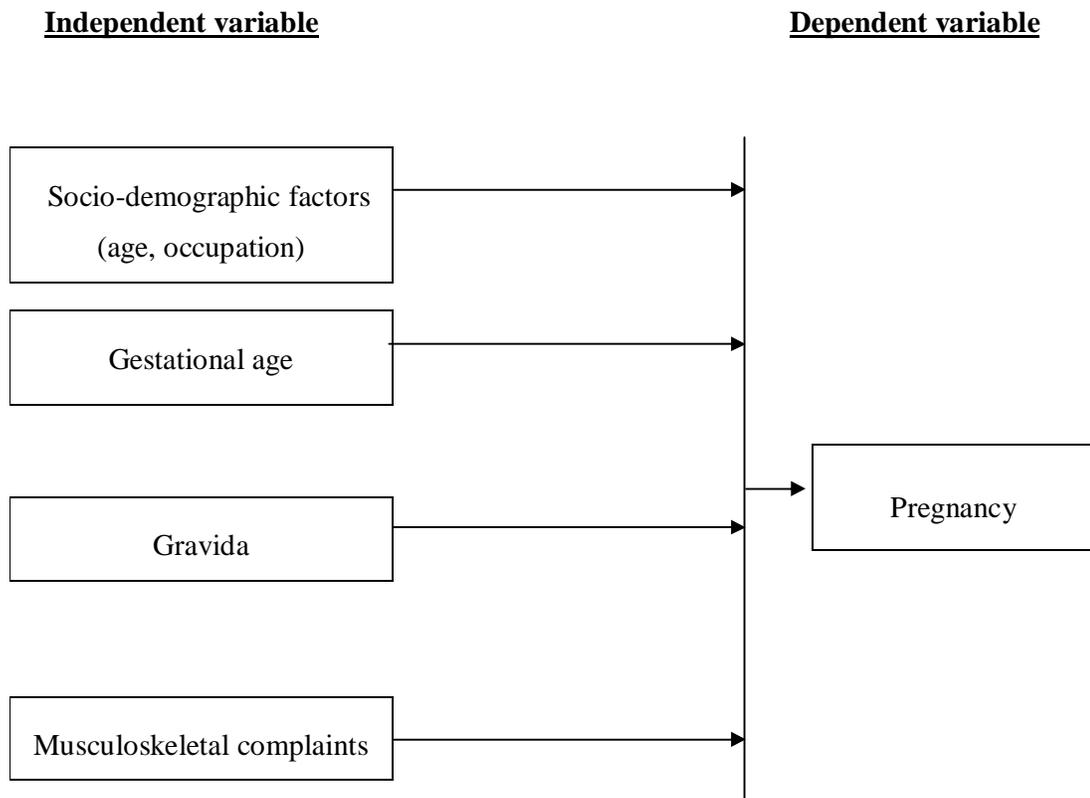
1.5.1 General Objectives

- To explore common pregnancy related musculoskeletal complains arising among women during pregnancy period at selected hospitals in Bangladesh.

1.5.2 Specific Objectives

- To identify the common pregnancy related musculoskeletal complaints in different body region of pregnant women.
- To find out the vulnerable age group of having musculoskeletal problems during pregnancy.
- To explore the gestational age when pregnancy related musculoskeletal complaints arises more frequently
- To determine about the frequency of physiotherapy treatment received by pregnant women for musculoskeletal complains.

1.6 Conceptual Framework



1.7 Operational definition

Musculoskeletal complaint: Any discomfort, pain or reduced functionality with regard to the musculoskeletal system reported by the individual.

Pregnancy: Pregnancy is the process of having a developing embryo or fetus in the female body after a successful conception. The process ends with the delivery of the neonate. Total pregnancy period is divided into 3 trimesters.

First trimester: 1st 3 months of pregnancy (1 to 12 weeks).

Second trimester: 4 to 6 months (13 to 24 weeks).

Third trimester: 7 to 9 months (25 weeks up to delivery).

Prenatal period: Period of time from conception to delivery (the pregnancy period).

Gestational age: Period of time for intrauterine development.

Gravida: Number of pregnancies including the current one.

Primigravida: A woman who is pregnant for the first time.

Multigravida: A women who has been pregnant more than once.

According to Dorland illustrated medical dictionary (1994), pregnancy is the condition of having developing embryo or fetus in the body after successful conception. The average duration of pregnancy is about 280 days. Estimation of the date on which delivery may occur is calculated from the first day of the last menstrual period. Farzan (1992) illustrated that, pregnancy is the state of carrying a developing embryo or fetus into the female body and indicated by positive results of urine test and confirmed through a blood test, ultrasound, and detection of fetal heartbeat or an X-ray. Pregnancy lasts for about nine months, measured from the date of the women's last menstrual period (LMP) and conveniently divided into three trimesters, each roughly three months long.

Prenatal development refers to the process in which a baby develops from a single cell after conception into an embryo and later a fetus. The average length of time to complete prenatal development is 38 weeks from the date of conception. During this time, a single-celled zygote develops in a series of stages into a full-term baby. The germinal, embryonic and fetal stages are the three primary stages of prenatal development (Children's health, 2012).

Postnatal means 'after birth' derived from Latin word 'post' means after and 'natis' means birth. It is the period which starts immediately after the birth of a child and lasts for about six weeks. The postnatal period is also known as the postpartum period (Ask define, 2012).

Physiological changes during pregnancy facilitate the adaptation of the cardiovascular system to increased metabolic needs of the mother, so delivery of oxygenated blood to peripheral tissues and the fetus is enabled (Silversides & Colman, 2012). Amenorrhea is the first sign of pregnancy following the fertilization of the ovum. As the pregnancy progresses, muscle fiber lengthens and thickens with the growing of the uterus. Enlargement of uterus occurs within 12 weeks of pregnancy. Gestational ages can be determined with the levels of the uterus, which continues to rise until the later weeks of pregnancy. By 20 weeks uterine activity or contraction may be felt. The lower

uterine segments develop, soften and stretch, and then uterus becomes more elastic by increasing of collagenous supportive tissue. Pregnancy is governed and controlled by various hormonal changes with affect various body systems. Progesterone decreases smooth muscle tone, initiates sensitivity to carbon dioxide in the respiratory center and causes an increase in internal temperature, breast development and strong fat deposit for milk production (Brook et al, 2003). Estrogen increases the growth of uterus and breast ducts and increases the level of prolactin to prepare breast for lactation. Estrogen also prepares prime receptor sites for relaxation of joints and capsule and also increases water retention (Polden & Mantle, 1994).

The prenatal period involves profound physiological changes together with the physical adjustments caused by the rapid biological changes of all bodily organs and systems which have considerable implications for the comfort of the woman during pregnancy (Bullock et al, 1987).

During pregnancy a female body undergoes many anatomical changes. All four cardiac chambers increase in size from the first trimester to the end of third trimester. The dimensions decrease to baseline levels in the postpartum period. Left ventricular remodeling also manifests as increases in left ventricular wall thickness and mass. Structural changes also occur at the level of the valve annulus, increase in mitral, tricuspid and pulmonic annular diameters lead to increasing degrees of mitral, tricuspid and pulmonic regurgitation. Small pericardial effusions are frequently found, which usually resolve after delivery. Increases in atrial size may contribute to atrial arrhythmias during pregnancy (Thomson et al, 1991). An alteration in collagen metabolism and increased connective tissue pliability and extensibility, result from altered levels of relaxin, estrogen and progesterone during pregnancy. There ligamentous tissues are predisposed to laxity with resultant reduced joint stability. To allow the birth of the baby the symphysis pubis and sacroiliac joints are particularly affected. This ligamentous laxity may continue for 6 months postpartum (Brook et al, 2003).

The exact nature of any associated postural adaptation during pregnancy is still confusing. With weight gain, increased blood volume and ventral growth of the fetus, the center of the gravity no longer falls over the feet and the woman may need to lean

backward to gain equilibrium, this may cause an alteration in equilibrium of the spine and pelvis during pregnancy. Disorganization of the spinal curve due to adaptive posture causes an increase in the lumbosacral angle, an increase in lumbar lordosis and anterior tilt of the pelvis. There will be a compensatory posterior displacement of the shoulders and thoracic spine and increase of the cervical lordosis (Brook et al, 2003).

Most of the weight gained during pregnancy caused by the enlarging uterus, fetus, and breasts, and the increased blood volume, extracellular fluid, and water retention in the maternal body. On average, a woman gains approximately 11 kg extra body weight during pregnancy. During the late phase of pregnancy most of the women retain approximately 6.5 L of fluid which increases by 1 L at the end of the day resulting and causes pitting edema. This caused by an increase in venous pressure below the uterus as the gravid uterus puts pressure on the vena cava. As the gravid uterus moves the center of gravity forward, stress increases on the lumbar spine and abdominal musculature (Ireland & Ott, 2000).

At the end of the pregnancy, a woman have to make many adjustment to compensate for the increased weight due to enlarged pregnant uterus, baby, amniotic fluid, placenta and breasts, so two third or most women experiences musculoskeletal problem, most frequently low back pain (Farzan, 1992). Weight gain during pregnancy can cause to gain as much as a quarter of the body weight, adding stress to the back and other weight bearing structures (Montgomery & Sawyer, 2011). According to Sabino & Grauer (2008), it is normal to gain between 20 to 40 pounds during pregnancy.

A “four way stretch” elastic support for the abdominal contents are formed by recti abdominis, the internal and external abdominal obliques and transverse abdominis. The recti run both side of the linia alba and extent from the pubis to the xiphoid process and lower ribs attach to the midline. The abdominal muscles are stretched by the growing uterus at the end of pregnancy. As the connective tissues, forming the linia alba become lax it can cause the recti to be separated from the midline by several finger width. To support the pelvic viscera the pelvic floor muscles need to act as a whole. However, pelvic floor muscles can also work separately to control the

sphincter. Due to trauma to the pelvic floor muscle and nerve supply, muscles weakness is not uncommon following pregnancy and child birth. This can results problem with incontinence (Brook et al, 2003).

The prenatal period is a time of great change for a woman. As the fetus grows, the overall musculoskeletal system is challenged by altered posture, shortened muscles, potential muscle imbalances, and changes in spinal mobility. Postural changes include increased spinal curves, rounded shoulders, hyperextended knees, flattened feet, and widened base of support. Because of the postural changes associated with pregnancy, some muscles become tight to support the changing posture, while others are stretched and become weak. This results in muscle imbalance and a potential for decreased stabilization. Fluctuating hormone levels in both the prenatal and postpartum period may cause excessive joint laxity. If not corrected these changes may cause pain and dysfunction (Body changes during pregnancy, 2012).

Most women develop some degree of musculoskeletal pain in pregnancy. Some causes are unique to pregnancy, while others are conditions that occur in the general population but with greater frequency in pregnancy. In addition, pre-existing musculoskeletal problems, such as previous back pain or rheumatoid arthritis, may be modified by pregnancy. The hormones progesterone and relaxin both cause the increased joint laxity necessary for parturition. Serum levels of these hormones return to normal by the third postpartum day. Mechanical factors such as postural changes (lumbar hyperextension) probably also contribute to the musculoskeletal symptoms of pregnancy (Rheumatology, 2012).

Pregnancy is a time of joy and existing anticipation for a mother but it can tarnished by pain, discomfort and feeling of unwell. As the mother's center of gravity shifts forward because of baby's weight, she also arches her back to accommodate the extra weight and this causes stresses on the facet joints and spines and makes them sensitive to causing pain (Kausar et al, 2006).

Low back pain (LBP) is one of the more common musculoskeletal complaints of pregnant women. An estimated 50–90% of women will experience some type of back pain during their pregnancies (1– 8), making this experience so ubiquitous that

“treatment” will often consist of counseling women to be patient and wait for postpartum recovery (Perkins et al,1998). Increasing levels of pregnancy hormones soften ligaments in preparation for childbirth, when the birth canal will need to expand in order for the baby to pass through. As the baby develops and grows, it puts increasing strain on the ligaments that hold the uterus in place causing back pain (Rheumatology, 2012). Low back pain rates have been found to increase with advancing maternal age, back pain during a previous pregnancy, and an increasing number of previous births (Borg-Stein et al, 2005).

Low back pain in prenatal period generally characterized as axial or para-segmental discomfort in the lower lumbar region due to a combination of mechanical, hormonal, circulatory and psychosocial factors. Discomfort in this region may causes changes in the posterior pelvic region, particularly in the sacroiliac joints which causes direct stretch in the intrapelvic structures and manifests as pain and discomfort in the lumbar region with radiation in the buttock and posterior aspects of thighs (Sabino & Grauer, 2008). MacEvelly & Buggy (1996) cited that, younger age is a risk factor for gestational back pain due to higher sensitivity to hormonal changes induced by relaxin and estrogens and also due to pronounced collagen laxity. Low back pain is more common among the multigravida rather than primigravida due to general pregnancy related changes such as laxity of supporting soft tissues and pain with repetitive overloading of pre-weakened structures. It is also more common in third trimester of the pregnancy as the baby descends pressure into the pelvis thus causes pain (Kausar et al, 1987),

Pregnancy related low back pain can be resolved by proper care and therapeutic interventions include moist heat, soft tissue mobilization for paraspinal muscles, manual stretching of hip flexors, abdominal bracing and squatting exercise with wall support are really effective (Kausar et al, 2006). Maintaining or increasing flexibility and fitness with gradual introduction of back exercises such as pelvic tilting and rocking are often benefited. Back support during sitting, changing posture frequently, avoiding prolonged sitting or standing posture and general exercises such as walking should be encouraged (Perkins et al, 1998).

The sacroiliac joints or the pubic symphysis pain is also common in pregnancy, especially in women with high levels of relaxin. This pain may occur in early pregnancy. Changes in pubic symphysis width probably occur in most pregnant women, with a gap of up to 1 cm being considered normal. Rupture of the pubic symphysis can occur especially in association with precipitate labour, cephalopelvic disproportion, pre-existing pelvic abnormality or excessive thigh abduction that can occur during delivery under epidural anaesthesia. The reported incidence of this condition is lessening as the number of forceps deliveries decreases. Pubic diastasis can be associated with severe suprapubic pain and takes from several months to several years to resolve (Rheumatology, 2012). Changes in the width of the pubis symphysis usually occur during pregnancy and maximum widening is 10 mm which is considered as non-pathologic (Ireland & Ott, 2000).

There is a spectrum of disorders affecting the pubic symphyseal region during prenatal and also in postnatal period. Pubic symphysis regional pain occurs as a result of increased motion related to the ligamentous laxity referred to above. In a recent European study, it is estimated that the prevalence of this condition is 1 in 36 women (Borg-Stein et al, 2005). This musculoskeletal problem commonly seen in second and third trimester of the pregnancy in addition with changes in posture (Apple cart, 2011). Pelvic tilting and core muscle strengthening exercises increase hip mobility and pelvic tilting thus helps to reduce pelvic girdle pain in pregnancy (Apple cart, 2011)

Ankle swelling or edema is a common and normal physiological symptom of pregnancy resulting from weight of pregnant uterus which impedes venous return, prostaglandin induced vascular relaxation and reduced plasma colloid pressure in addition with sodium retention promotes by estrogen and increase mucopolysaccharide ground substances present in the skin and subcutaneous tissue which causes more fluid retention in the body tissues. It usually occurs in primigravidas in the last half of the pregnancy, more than 20 weeks of gestation (Mollart, 2012).

Ankle swelling does not affect the course of pregnancy but is essential for cure, thus it may describe as pain with local osteopenia of the ankle. Treatment includes

analgesics, protection against stress, non-weight bearing and physiotherapy for prevention of complications (Karakoc et al, 2007).

Leg cramping is another common musculoskeletal complaint occurs during second half of the pregnancy in between 15 to 30% of the pregnant women, most often affecting the calf muscle (Ireland & Ott, 2000). This condition can be described as a painful spasm especially in the lower extremities occurs during pregnancy (Sohrabvand et al, 2006).

Leg cramping is involuntary, localized and painful calf muscle contractions typically occurs at night and usually lasts for seconds to minutes (Young, 2008). Leg cramping in pregnancy may occur due to poor circulation or overzealous exertion with fatigue calf muscle, nerve compression and buildup of lactic acid in the muscle tissues, also related to an imbalance of phosphorus, calcium or magnesium in the maternal body (Farzan, 1992).

About 50-55% of women in the world are affected by lower limb varicose vein disease during pregnancy. The reversibility of this condition is a typical phenomenon and it usually decreased or vanished after delivery (Junior, 2010).

Clef (2011) cited that, vulvar varicose vein may occur in 10% of pregnant women most commonly in multigravida. There are communicating branches of vulvar vein which anastomoses between the internal and external iliac venous system and with the circulation of the medial aspect of the thigh via the perineal veins. The cause of varicose vein is not an increasing of circulatory volume but by increasing of estrogen and progesterone level during pregnancy as vulvar veins are the direct target of these hormones. In most of the cases, it disappears within a month after delivery. Lower limb compression therapy is very effective in treatment of varicose vein.

Striae gravidarum (SG) or stretch marks on the abdominal muscles is a very common complaint of pregnant women which causes cosmetic concern in many patients. Generally striae gravidarum tends to develop most commonly in the third trimester and fade post-partum to leave permanent silvery scars which commonly found on the abdomen or breasts (Durmazlar & Eskioglu, 2009).

Striae gravidarum appears as pink purple, atrophic lines or bands on the abdomen, buttocks, breasts, thighs or arms which is more common in younger women, women with larger babies and women with higher body mass indice. There are multifactorial cause for the stretch marks including physical factors and hormonal factors such as effects of adrenocortical steroids, estrogen and relaxin on the skin's elastic fibres. Usually these marks do not disappear completely and there is fade to pale or flesh coloured lines and shrink in postpartum period. The treatment actually non-specific and limited evidence based exists (Tunzi & Gray, 2007).

Many women experiences urinary incontinence during pregnancy as distressing and disabling symptom. The prevalence of urinary incontinence depends on terminologies and definitions. It may occur due to anatomical and physiological changes affecting the lower urinary tract and also due to hormonal changes during pregnancy. The increasing level of estrogen and progesterone make the bladder more squamous, the detrusor muscles undergoes hypertrophy and hypotonia with an increasing bladder capacity. The bladder also undergoes anatomical changes such as upward and anterior displacement of bladder, making it to become abdominal, its base also enlarged and the trigone become more convex then concave. In radiological investigations, distortion of the bladder by the fundus of the uterus also occurs (Adaji et al, 2011).

Due to some adaptive modifications during pregnancy, female body undergoes increase the number of micturition and worsens urinary urgency and any preexisting stress urinary incontinence. The prevalence of urinary incontinence ranges from 23% to 67% during gestation and 6% to 29% after delivery (Gamerio et al, 2011). The increased potential for urinary incontinence in antepartum women needs early identification (Sampselle et al, 2004). It is a common condition among women and etiology is multifactorial, but pregnancy and delivery smay the major risk factors, especially in young and middle-aged women (Wesnes et al, 2010).

Incontinence reported by pregnant women usually in the second and third trimester and the absence of incontinence in the first trimester suggests that the physiological and anatomical changes in pregnancy that predispose to incontinence occur later in the pregnancy (Adaji et al, 2011). Pelvic floor muscle strengthening exercise or kegel exercise helps to strengthen the muscles especially levator ani that supports the

bladder, uterus and bowels. Intensive training of the pelvic floor muscles facilitate during pregnancy rather than obstruct labour (Apple cart, 2011).

Evidence of scientific studies points to the essential role of physiotherapy and physical activities in health promotion, improve quality of life, prevention and control of various problems in pregnant women. Until a few decades ago, pregnant women were advised to reduce their activities and also interrupt their occupational work especially in the final stage of the pregnancy. But now a day, positive effects of regular exercise and physical activity during gestation are encouraged for the better quality of prenatal and postnatal life of pregnant women and this is explained by fact that physical activities causes a thermal response and circulatory redistribution, shifting the blood concentration from the uterus and placenta to other extremities thus helps to prevent low back pain, reduce cardiovascular stress, prevents thrombosis and varicose vein and many other physical problems (Schlusser et al, 2008).

3.1 Study Design

The study was conducted by using cross sectional study design to meet the study objectives. Because the cross sectional study is the simplest variety of descriptive or observational epidemiological study that can be conducted on representative samples of a population. This design involved identifying group of people and then collecting the information that required when they use the particular service. Cross sectional studies gather information about the prevalence of health related states and conditions and measure the frequency of conditions and demonstrate associations.

The researcher was choose the quantitative survey method to carry out the research aim and objectives because the quantitative methods are appropriate if the issue is known about, relatively simple and unambiguous. The purpose of quantitative research is theory testing to establish facts, show causal explanations and relationships between variables, allow prediction. Quantitative research designs are predetermined and structured and do not change during the study. Quantitative research studies answered specific research questions by producing statistical evidence to prove a point.

Survey research is one of the most common forms of research that involves the researchers asking a large group of people questions about a particular topic or issue and these are related to the interest of the participants. There are two research methods in survey. These are prospective survey design and retrospective survey design. It was a prospective study. The reason behind doing the survey in prospective design was identifying the group of people which the investigator wants to study and then collecting information. Prospective research design is appropriate for obtain a great deal of useful detailed information performing an in depth data analysis. Prospective studies are that which describe phenomenon, search for cause and effect relationships, or examine change is the present or as the event unfolds over time.

3.2 Study Area

The study was conducted on musculoskeletal conditions (gynecology and obstetrics).

3.3 Study Site

The sites of study were three selected hospitals in Bangladesh –

- Al-Biruni Hospital, Banashree, Dhaka.
- Islami Bank Hospital, Outer circular road, Dhaka.
- Pan-pacific Hospital, Dhaka.

As this was a survey on common pregnancy related musculoskeletal complaints arising among the women during prenatal period, researcher was interested to collect data from the pregnant women who came for clinical checkup as outpatient at gynecology department in different hospitals throughout their pregnancy, so study site were three selected hospitals of Dhaka city for the study, because permission taking & data collection was easier for the researcher from those hospitals as through pilot study.

3.4 Study Population

A population refers to the members of a clearly defined set or class of people, objects or events that are the focus of the investigation. The criteria of study populations were determined from a literature review and the goals for the study. Selection criteria were established gradually, as the assumptions and theoretical base of the study unfold. All the pregnant women of Bangladesh were considered as the study population.

3.5 Sample selection

Sample was selected from pregnant women who came for clinical check-up at outdoor service of gynecology departments in selected hospitals.

3.6 Sample Size

It is very difficult to establishing the best size of sample since this decision depends very largely on the investigator which is being undertaken. Statistical studies are always better when they are carefully planned. In the study, sample must be adequate in size, relative to the goals of the study. Study sample must be “big enough” that an

effect of such magnitude as to be of scientific significance will also be statistically significant.

The actual sample size of this study was calculated as 288, using the calculation of following formula:

$$n = \left\{ \frac{Z(1 - \frac{\alpha}{2})}{d} \right\}^2 \times pq$$

Here,

$$Z(1 - \frac{\alpha}{2}) = 1.96$$

$$p = 0.25 \text{ (Here, P=Prevalence and P=25\%)}$$

$$q = 1 - p$$

$$= 1 - 0.25$$

$$= 0.75$$

$$d = 0.05$$

$$n = \left\{ \frac{(1.96)}{(0.05)} \right\}^2 \times 0.25 \times 0.75$$

$$= 288$$

But as the study was performed as a part of academic research project and there were some time limitations. So 90 pregnant women were selected as the sample of this study.

3.7 Sampling Procedure

Finding the appropriate number and type of people to take part in the study is called sampling. Samples were selected conveniently from selected hospitals of Bangladesh. Sampling is an important concept in research. Basically it is about how to choose the people who will study or who will participate in research. Samples that were studied most easily, cheaply or quickly, selected for the study by using convenience sampling procedure. Because convenience sampling is usually used for exploring complex issues: for examples, in economic evaluation, in complex evaluations of health states etc.

3.8 Inclusion Criteria

- Participants were pregnant women – Because the investigator wanted to explore the common musculoskeletal complaints arising among the women during prenatal period in this study.
- Multigravida or primigravida both were selected to identify the frequency of pregnancy related musculoskeletal complaints in both gravida.
- Pregnant women with any age – because investigator wanted to find out the pregnancy related musculoskeletal complaints of different age groups and to identify the most affected age group.
- Pregnant women with any trimester (1st, 2nd or 3rd) were selected – Investigator wanted to find out musculoskeletal complaints arising in prenatal period on each trimester and explores the most vulnerable gestational age for those complaints.
- Subjects who were participated willingly and had interest, otherwise they did not give exact information and that was not helpful for the study.

3.9 Exclusion Criteria

- Those who did not fulfill the inclusion criteria were excluded.
- Subjects who were medically unstable. Because medically unstable patient can confused with the question that can mislead the result of the study.
- Persistent or previous pathological and traumatic history of musculoskeletal system of the body – because investigator wanted to find out the musculoskeletal complaints which arise only during pregnancy due to maternal hormonal changes, if there was previous history of musculoskeletal complaints then it could mislead the study results.

3.10 Data Collection Instruments and Tools

To collect data, the consent form, questionnaire form, visual analogue scale, pen, papers, files, calculator and laptop used as data collection tools.

3.10.1 Questionnaire

Data was collected using a questionnaire form. Questionnaire is a method of collecting information whereby subjects answer a set of questions usually predefined

by the researcher. In this questionnaire form structured questions were included for collecting data from the participants. So the investigator reviewed some relevant previous studies questionnaires that help to design the questionnaire in order to identify important part of questions that needed to include. Open ended and close ended, mixed type of questions were selected to make the questionnaire. Questionnaire must be kept in short that the respondent would finish it but long enough to obtain the desired information and the question should be sequenced in a logical order that they follow one another. In this questionnaire researcher tried to keep the questions very easy, so that participants can understand to answered. Investigator collected data from questionnaire form and setup sequentially. The questions in the questionnaire are in two parts, one is about socio demographic information and another is directly related to pregnancy related musculoskeletal complaints among the pregnant women.

3.10.2 Visual Analogue Scale (VAS)

For measuring pain intensity in several function positions, VAS is one of the most frequently used scales in health care research. A visual analogue scale is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum values and cannot easily be directly measured.

3.10.3 Informed consent

Before conducting research with the respondents, it is necessary to gain consent form from the subject or participant. A participant has rights to know about their participatory effectiveness. In this study, participants were given an information sheet explaining the aims and purpose of the study and the methods of data collection they may be required to participate in. All were personally spoken to and given an opportunity to ask questions prior to signing a consent form. They were also informed that they were free to withdraw from the study at any time and in the event of this, any provide information would be destroyed at their request. It should be assured the participant that her name or address would not be used. The information of the subjects might be published in any normal presentation or seminar but they would not be identified. Subjects were also informed that all of the information given by her should be maintained confidentiality, the study might not have direct effect on her but

the members of physiotherapy profession and other clinical related profession may be benefited from the study in future.

3.11 Method of Data Collection

Surveys usually use questionnaires or interviews by which information was gathered. Structured questions are always closed questions and most frequently used in survey research design. The strength of structured questionnaire was the ability to collect unambiguous and easy to count answers, leading to quantitative data for analysis. Open ended questions are those which allow respondents free range when supplying their answers. Open ended questions are most useful in dealing with complicated information when slight differences of opinion are important to know. And closed ended questions allow the respondents only a limited choice of how to answer the questions. In close ended questions, it gives respondents an easy way out and would rather force them into a positive or negative answer. The face to face interview was provided opportunity to observe the facial expression and this was helped the researchers to determine whether the participant understands the questions or not.

The investigator went to selected hospitals to take permission if they are interested in this study or not. Firstly, the researcher introduced her and described the objectives and purpose of the research project as well. Then the researcher submitted written application to the authority of the Al-Biruni hospital, Banashree, Dhaka, Islamia Hospital, Outer circular road, Dhaka & Pan-pacific Hospital, Dhaka and took permission from the authority of selected hospitals and met with the individual subject to find out if they were interested in participating in the study. For data collection, the investigator used Bengali type of questionnaire so that pregnant women understood the questionnaire in the easiest way. Data was collected by the researcher from the pregnant women who came for check-up in selected hospitals.

3.12 Data management and analysis

The data analysis was performed in the program ‘Statistical Package for Social Science’ (SPSS) version 16. The presentation was performed in SPSS and in Microsoft office word 2010. Every questionnaire was rechecked for missing information or unclear information. At first put the name of variables in the variable

view of SPSS and the types, values, decimal, label alignment and measurement level of data. The next step was to input data view of SPSS. After input all data researcher checked the inputted data to ensure that all data had been accurately transcribed from the questionnaire sheet to SPSS data view. Then the raw data was ready for analysis in SPSS. Microsoft word excel was also used to present data using column and pie chart.

3.13 Ethical Consideration

It should be ensured that it would maintain the ethical consideration at all aspects of the study. It is the crucial part of the all form of research. The study was approved by ethical committee of the research project before conducting the research project. Ethical issues were followed by World Health Organization (WHO) and Bangladesh Medical and Research Council (BMRC). At first to conduct this study, the research project was submitted to the Physiotherapy Department, Bangladesh Health Professions Institute, CRP, Savar and obtained approval. A written application was submitted to the authority of the Al-Biruni hospital, Banashree, Dhaka, 2nd urban primary healthcare project, Savar, Dhaka & Marry Stops clinic, Dhanmondi, Dhaka for involvement of clients and other facilities to complete this study. When the investigator had received an approval letter from the ethical committee and obtained permission from authorities of the selected hospitals, then the data collection was started. Written consent was taken from the participants to ensure voluntary participation in the study and participants had the autonomy to leave the study at any time. Participants were informed about the aim, objectives and the procedures involved the study. Interviews were administered in the free time of the pregnant women, when they had no activities with the scheduled doctors of selected hospitals.

3.14 Limitations

There might be a number of limitations in this study. First of all, the result of the study cannot be generalized to the whole population of pregnant women in Bangladesh as the samples were collected only from three selected hospitals in Dhaka city. This study has attempted to provide a few data, which are very little to represent the wider population of pregnant women in Bangladesh.

The aim of the study was to find out the common pregnancy related musculoskeletal complaints arising among women during prenatal period at selected hospitals in Bangladesh. 90 participants were taken for the study and data were coded and captured in Microsoft Excel, using an SPSS 16.0 version software program. The investigator collected the descriptive data and calculated as percentages and presented by using tables, bar and pie charts.

4.1 Socio-demographic characteristics

Socio-demographic characteristics of the respondents include their age range, religion, educational qualification and occupation.

4.1.1 Age range

The mean age of the participants in the study was 28. The majority of the respondents n=80 (88.9%) were in 19 to 37 years of age, n=6 (6.7%) were in ≤ 18 years of age and n=4 (4.4%) were in ≥ 38 years of age in this study (Table- 1).

Age range	Number (percent)
≤ 18 years	6 (6.7)
19 - 37 years	80 (88.9)
≥ 38 years	4 (4.4)
Total	90 (100.0)

Table 1: Age range of the participants

4.1.2 Religion

The majority of the respondents n=65 (72.2%) were Muslim, n=20 (22.2%) were Hindu, n=3 (3.3%) were Christian and n=2 (2.2%) were Buddhist in this study (Table: 2).

Religion	Number (percent)
Muslim	65 (72.2)
Hindu	20 (22.2)
Christian	3 (3.3)
Buddhist	2 (2.2)
Total	90 (100.0)

Table 2: Religion of the participants

4.1.3 Educational qualification

Majority of the respondents n=24 (26.7%) were completed higher secondary school certificate (H.S.c), followed by n=23 (25.6%) were completed their secondary school certificate (S.S.c), n=18 (20.0%) were under secondary school certificate, n=15 (16.7%) were completed their graduation and above, n=8 were completed primary school certificate and n=2 (2.2%) were under primary school certificate level in this study (Table: 3).

Educational level	Number (percent)
< Primary school certificate	2 (2.2)
Primary school certificate completed	8 (8.9)
< Secondary school certificate	18 (20.0)
Secondary school certificate completed	23 (25.6)
Higher secondary school certificate completed	24 (26.7)
≥ Graduation	15 (16.7)
Total	90 (100.0)

Table 3: Educational qualifications of the participants

4.1.4 Occupation

Most of the respondents were housewife n=71 (78.9%) followed by service-holder n=19 (21.1%) in this study (Table: 4).

Occupation	Number (percent)
Housewife	71 (78.9)
Service-holder	19 (21.1)
Total	90 (100.0)

Table 4: Occupation of the participants

4.2 Gestational age

Pregnant women of all trimester were selected for this study. Majority of the participants 60% (54) were in second trimester of their pregnancy, 32% (29) were in third trimester of their pregnancy and 8% (7) were in first trimester of their pregnancy (Figure: 1).

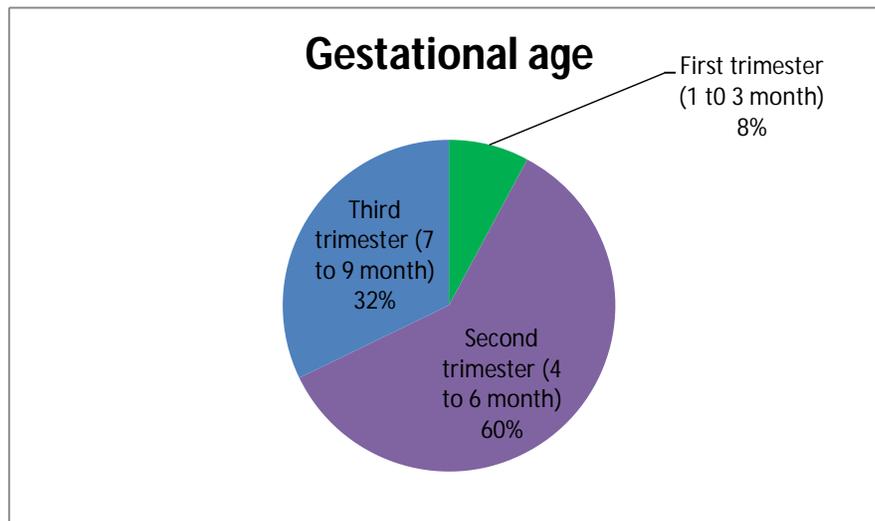


Figure 1: A pie chart showing percentage of gestational age of the participants

4.3 Primigravida and multigravida

Sequential order of this child of the participants were first child in 37.8% (34) cases, second child in 52.2% (47) cases and more than two children in 10% (9) cases. That means almost 38% participants were primigravida and rest of the 62.2% participants were multigravida in this study (Figure: 2).

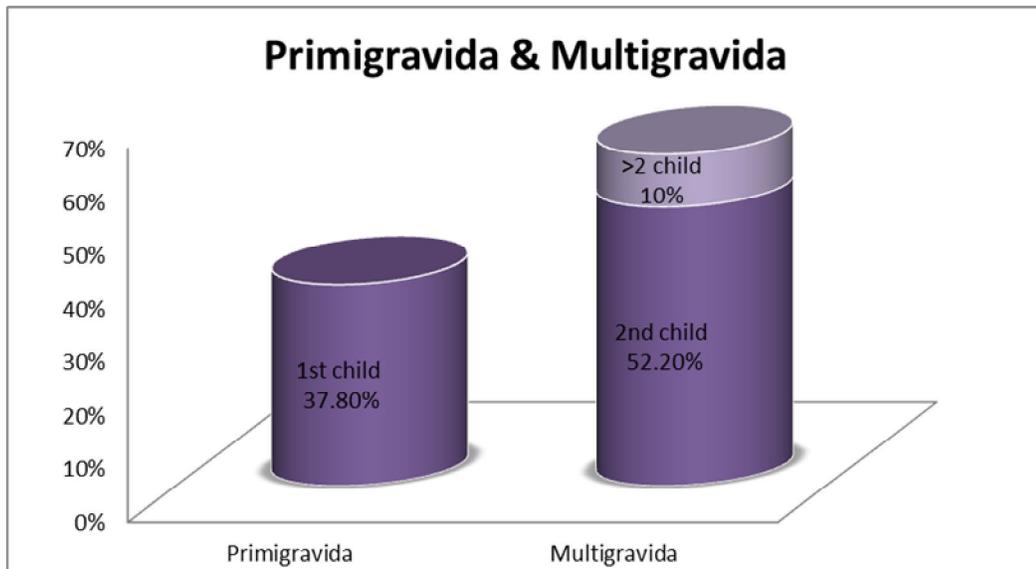


Figure 2: Percentage primigravida & multigravida in the study.

4.4 Common musculoskeletal complains arising among the women during prenatal period

The study result shows that low back pain is the most common complaint of pregnant women almost in 63% cases and rest 38% of the participants had no low back pain (LBP), followed by pelvic girdle pain (PGP) in 46% cases and rest 54% of the participants did not complained of it, ankle swelling (AS) was reported by 44% of the participants and 56% of the participants had not ankle swelling, stretch marks in abdomen or striae gravidarum (SG) complained by 40% of the participants and rest 60% of the participants did not complained of it, leg muscle cramping (LMC) complained by 38% of the participants and rest 62% did not complained of it, approximately 27% of the participants complained of varicose vein (VV) and rest 73% of the participants did not complained of it and urinary incontinence (UI) which found as less common complaints of pregnancy almost in 14% cases and rest 86% of the participants had no urinary incontinence (Figure:3).

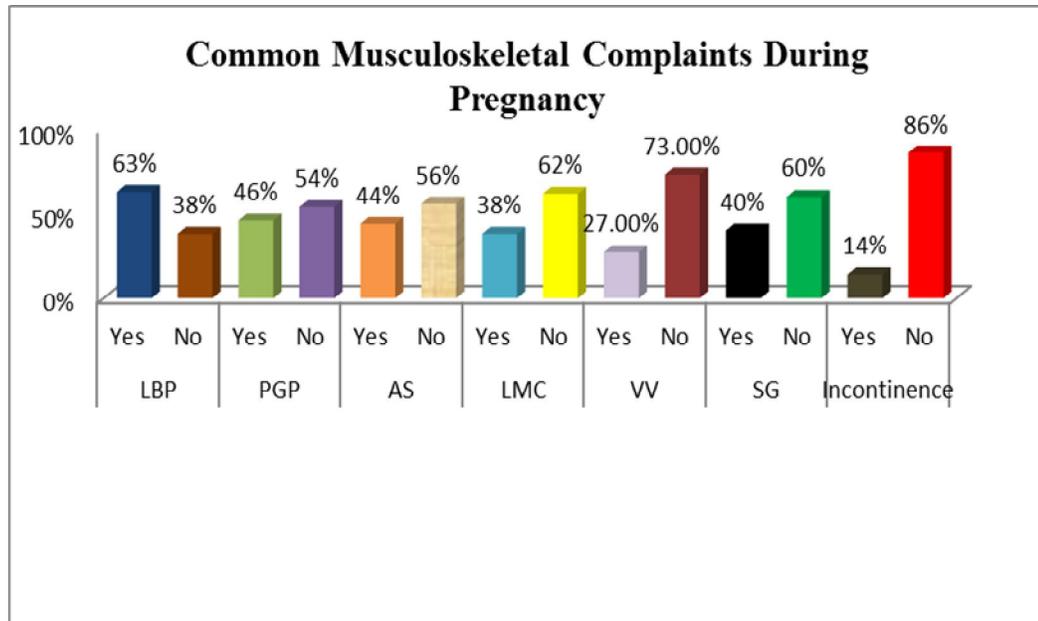


Figure 3: Common musculoskeletal complaints arising among the women during prenatal period

4.5 Low back pain during pregnancy

The study result shows that a large number of participants 63.3% (57) complained of low back pain during their pregnancy and 36.7% (33) participants had no low back pain. The study result shows in most of the cases approximately 31.10% low back pain arised in second trimester, in 26.70% cases low back pain arisen in first trimester and in 5.60% cases low back pain arisen in third trimester of the pregnancy (Figure: 4).

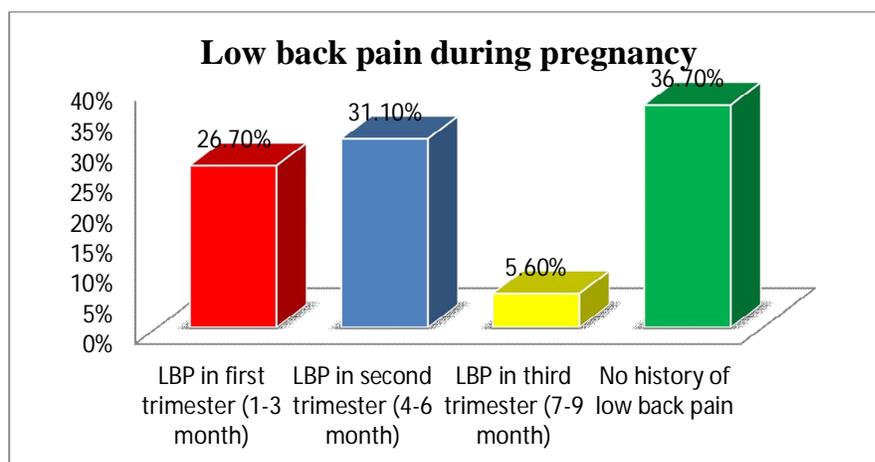


Figure 4: Low back pain in different gestational age of the participants.

4.6 Pelvic girdle pain

In this study, results shows that 45.6% (41) participants complained of pelvic girdle pain during their pregnancy and 54.4% (49) participants had no pelvic girdle pain. In 15.6% cases pelvic girdle pain arised in first trimester, in 20% cases pelvic girdle pain arisen in second trimester and in 10% cases pelvic girdle pain arised in third trimester of the pregnancy in this study (Figure: 5).

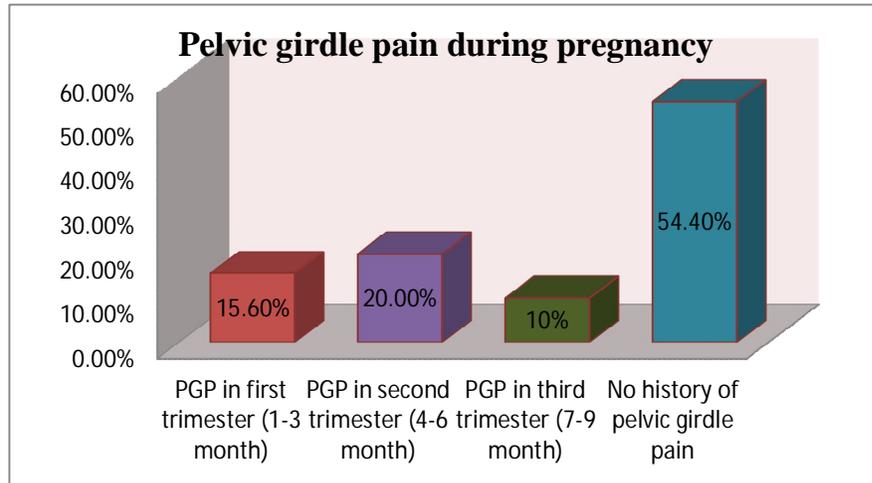


Figure 5: Pelvic girdle pain in different gestational age of the participants.

4.7 Ankle swelling during pregnancy

The study result shows that 44.4% (40) participants complained of ankle swelling and 55.6% (50) participants had no ankle swelling. In 14.4% cases ankle swelling occurred in first trimester, in 24.4% cases it occurred in second trimester and in 5.6% cases occurred in third trimester of the pregnancy in this study (Figure: 6).

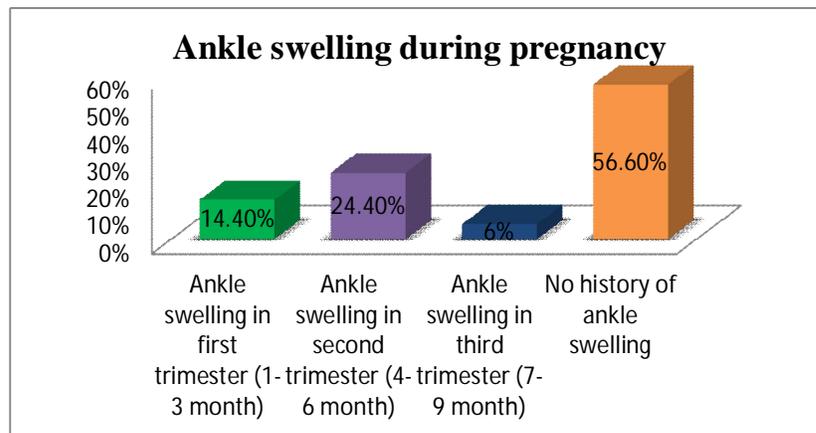


Figure 6: Ankle swelling in different gestational age of the participants.

4.8 Leg muscle cramping during pregnancy

37.8% (34) respondents reported leg muscle cramping and 62.2% (56) had no history of leg muscle cramping during their pregnancy in selected hospitals of this study. The study result shows that leg muscle cramping mostly occurs in first trimester approximately 17.8% cases, 13.3% cases in second trimester and 6.7% cases in third trimester (Figure: 7).

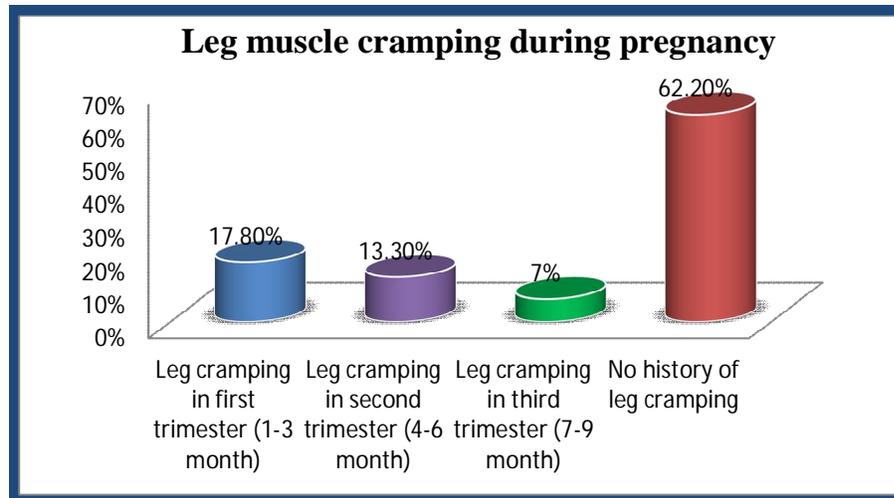


Figure 7: Leg muscle cramping in different gestational age of the participants.

4.9 Vessels of legs swelling (varicose vein) during pregnancy

26.7% (24) respondents reported vessels of legs swelling (varicose vein) and 73.3% (66) had no complain of vessels of leg swelling during their pregnancy period in this study. The study result shows that 13.3% respondents reported this problem from first trimester, 8.9% respondents reported this problem from second trimester and only 4.4% reported this problem from third trimester of their pregnancy (Figure: 8).

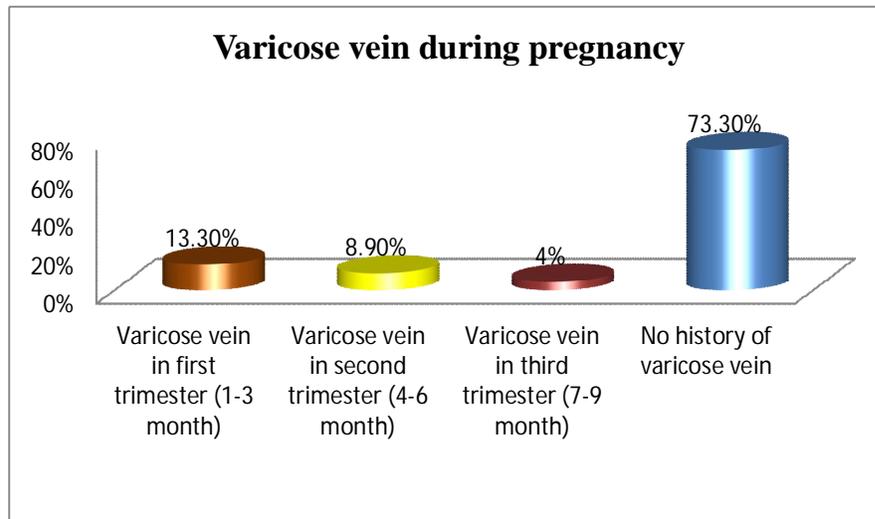


Figure 8: Varicose vein in different gestational age of the participants.

4.10 Striae gravidarum (stretch marks in abdomen)

The study result shows that striae gravidarum muscle occurred in 40% (36) cases and there is no complain of this problem in 60% (54) of cases. Study result also shows that striae gravidarum occurred during first trimester in 6.7% cases, during second trimester in 21.1% cases and during third trimester of pregnancy in 12.2% cases (Figure: 9).

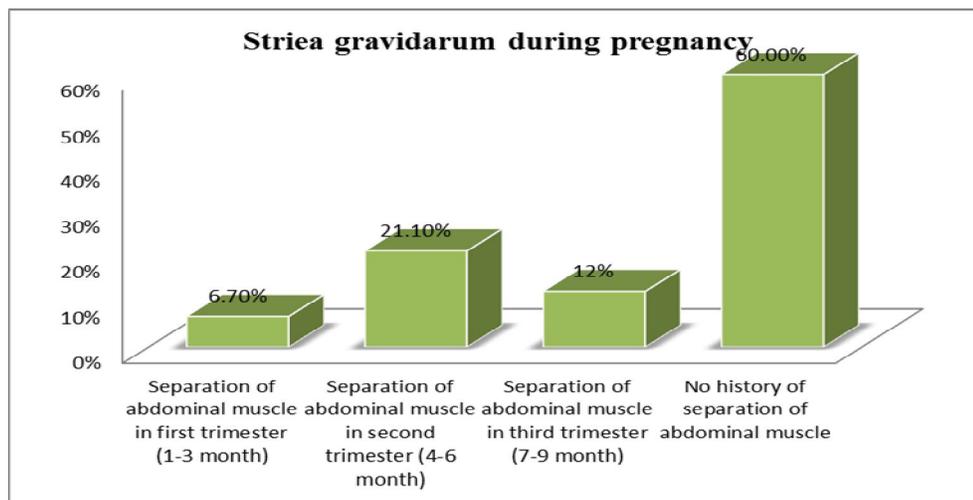


Figure 9: Striae gravidarum in different gestational age of the participants.

4.11 Urinary incontinence during pregnancy

In this study, 14.4% (13) respondents reported of urinary incontinence during their pregnancy and 85.6% (77) respondents had no complain of this problem. Study result

shows that, 3.3% respondents felt this problem from first trimester, 7.8% respondents from second trimester and rest 3.3% respondents from third trimester of their pregnancy (Figure: 10).

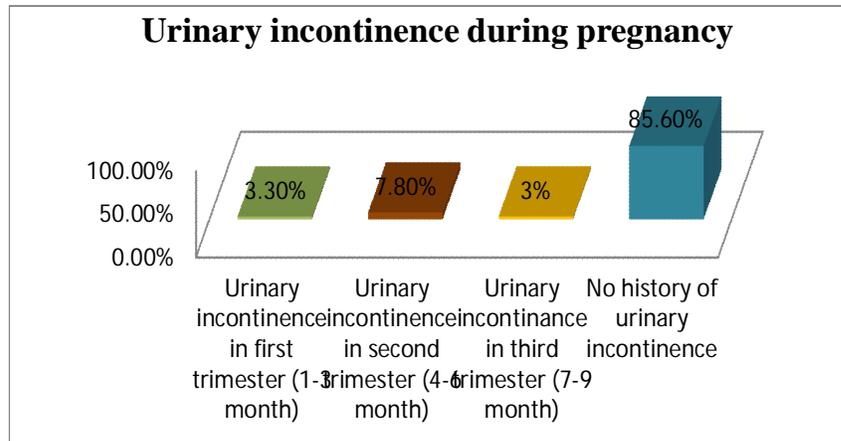


Figure 10: Urinary incontinence in different gestational age of the participants.

4.12 Other physical problems during pregnancy

Approximately 6% participants reported general weakness, 5% reported headache, 5% reported feeling of malaise, 3% reported high blood pressure, 3% reported sleeplessness, 2% reported nausea & vertigo and neck pain, anemia, knee joint pain & diabetes mellitus reported in equal percentage as 1% and 72% had no complaint of other physical problems during pregnancy (Figure: 11).

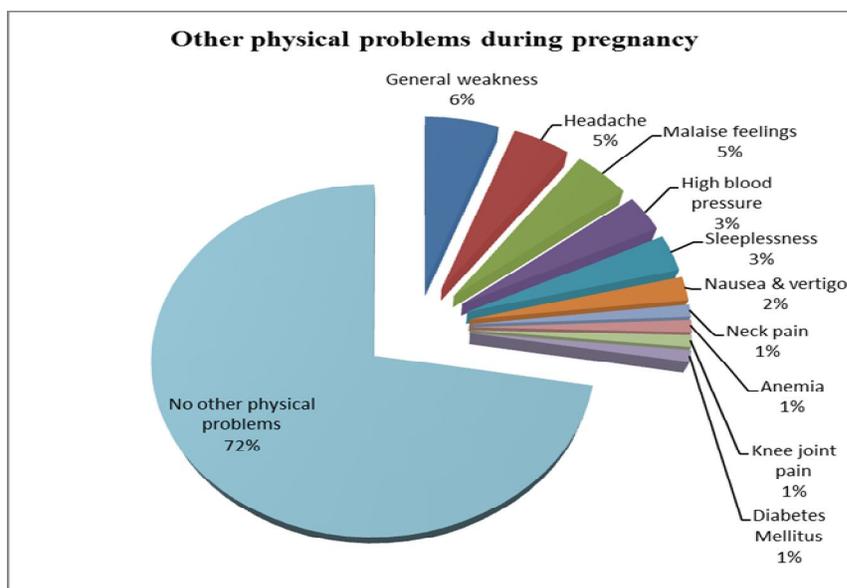


Figure 11: Other physical problems during pregnancy

4.13 Present problems experienced before pregnancy

In this study, researcher tried to find out those problems of women which arise only during prenatal period. So researcher finds out those problems which were experienced before pregnancy by the participants. In this study, 14.4% (13) participants reported that they have experienced some of the physical problems before pregnancy and a large number of participants 85.6% (77) reported that they experienced the physical problems only during their pregnancy period. 11.1% reported low back pain, 2.2% reported urinary incontinence, and 1.1 % reported neck pain experienced before pregnancy (Table: 12).

Pre-existing problems	Number (percent)
Low back pain	10(11.1)
Urinary incontinence	2 (2.2)
Neck pain	1(1.1)
No pre-existing problems	77 (85.6)
Total	90 (100.0)

Table 5: Present problems experienced before pregnancy

4.14 Participants who received physiotherapy treatment for the pregnancy related musculoskeletal complaints

The investigator also did survey on the participants to know who received physiotherapy treatment for the pregnancy related musculoskeletal complains, as physiotherapy is the very effective treatment procedure to recover the complains. But in Bangladesh, Gynecological physiotherapy is very new treatment procedure and not well known to the people of this country. And in this study, the investigator found that there was no one of the participants who received physiotherapy treatment for the musculoskeletal complaints during prenatal period. They were not aware about the role of physiotherapy in gynecological area. So physiotherapists need to advertise about their service on Gynecological physiotherapy and its effectiveness to the whole country people.

The aim of the study was to identify common pregnancy related musculoskeletal complaints arising among the women during prenatal period in selected hospitals in Bangladesh. There were 90 samples in this study. The majority of the respondents almost 89% were between 19 to 37 years of age. Most of the participants 60% (54) were in second trimester of their pregnancy, 32% (29) were in third trimester of their pregnancy and 8% (7) were in first trimester of their pregnancy. Almost 38% of the participants were primigravida and rest 62% of the participants were multigravida in this study.

The study result shows that a large number of participants 63.3% (57) complained of low back pain during their pregnancy and 36.7% (33) participants had no low back pain. As a study of Swedish women, almost 69% of the participants reported suffered from low back pain during their pregnancy (Koirala et al, 2011). According to Hills (2010), 50-90% women suffered from low back pain in the prenatal period. In a study, 59% of Iranian women suffered from low back pain during their pregnancy (Labrecque et al, 2000). The results of these studies support my study result of low back pain among the pregnant women in Bangladesh.

In this study, result shows that 45.6% (41) participants complained of pelvic girdle pain during their pregnancy and 54.4% (49) participants had no pelvic girdle pain. In an European study (Borg-Stein et al, 2005), the prevalence of pelvic girdle pain during pregnancy is 1 in 36 women that means only 3% women are suffering from pelvic girdle pain during their pregnancy but in Bangladesh the result is so much larger from the European study. But in another study of Indian women (Talseth et al, 2000), prevalence of pelvic girdle pain in pregnant women is 40-50%, which is nearly similar with this study on Bangladeshi women.

Ankle swelling is another common complain of women during prenatal period. The study result shows that 44.4% (40) participants complained of ankle swelling during their pregnancy and 55.6% (50) participants had no history of ankle swelling. In a study, Perkins et al (2004) showed that prevalence of ankle swelling during pregnancy

is approximately 30%. In a study on Iranian women (Mollart, 2012) found that almost 20 % of women reported ankle swelling during their pregnancy.

37.8% (34) respondents reported leg muscle cramping and 62.2% (56) not reported leg muscle cramping during their pregnancy in selected hospitals of Bangladesh in this study. King et al (2003) found a high prevalence of leg muscle cramping, approximately 55% of the women complained of it in Tehran. In another study on American women, leg cramping occurs during pregnancy in 46% of the participants.

26.7% (24) respondents reported vessels of legs swelling (varicose vein) and 73.3% (66) had no complain of vessels of leg swelling during their pregnancy period in this study. According to Talseth et al (2000), prevalence of vessels of leg swelling or varicose vein is a common condition of pregnant women in neighboring country India, he found almost 35% of the pregnant women complained of varicose vein.

The study result shows that separation or marks in abdominal muscle occurred in 40% (36) cases and there is no complain of this problem in 60% (54) of cases. In a study on pregnant women of Turkey, the prevalence of separation or marks in abdominal muscle known as diastasis recti found 43% (Tunzi & Gray, 2007) which is nearly similar with Bangladesh.

Pregnancy and delivery seem to be risk factors for urinary incontinence, especially among young and middle-aged women (Labrecque et al, 2000). In this study, 14.4% (13) respondents reported of urinary incontinence during their pregnancy and 85.6% (77) respondents had no complain of this problem in their pregnancy. Generally 20-50% of women are suffering from some degree of incontinence in prenatal period or at. In a study on Germany women, almost 20% of the pregnant women suffered from urinary incontinence in prenatal period (Sampselle et al 2004).

Approximately 28% participants complained of various types of physical problems and 72% participants had no other physical problems. 6% participants reported general weakness, 5% reported headache, 5 % reported feeling of malaise, 3% reported high blood pressure, 3% reported sleeplessness, 2% reported nausea & vertigo, 1% reported neck pain, 1% reported anemia, 1% reported knee joint pain and

1% reported diabetes mellitus in this study. Sabino and Grauer(2008) stated that there are so many problems arising in pregnancy period including hypertension, sleeplessness, diabetes mellitus, tenosynovitis, general weakness and fatigue. During pregnancy the female body has so many hormonal and anatomical changes that affect the musculoskeletal system. These changes may cause various musculoskeletal complaints, predispose to injury or other physical and physiological problems (Irelands & Otts, 2011).

The researcher found in this study that among the pregnant women, none of them received physiotherapy treatment for musculoskeletal complaints during prenatal period. They were not aware about the role of physiotherapy in gynecological area. Gosselink (2006) had shown in his research that exercise training during pregnancy are effective in pregnant women to reduce the chance of musculoskeletal disorder. In Bangladesh, obstetric physiotherapy is a very new concept and is not well established, so it needs to organize awareness program of gynecological physiotherapy and its effectiveness in Bangladesh.

Aim of the study was to find out the common pregnancy related musculoskeletal complaints among the women during prenatal period at selected hospitals in Bangladesh. For the fulfillment of this study the investigator used a quantitative research model in the form of a prospective type survey. Conveniently 90 participants who came in hospitals during their pregnancy for checkup were chosen. The investigator used a questionnaire. Each Participant was given a questionnaire to identify common pregnancy related musculoskeletal complaints among the women during prenatal period at selected hospital in Bangladesh. And from the documents of the patients the researcher forms a data base for the total sample included in the study. From the data base, it was found that low back pain is the most common complaint of pregnant women almost in 63% cases and rest 38% of the participants had no low back pain, followed by pelvic girdle pain in 46% cases and rest 54% of the participants did not complained of it, ankle swelling was reported by 44% of the participants and 56% of the participants had not ankle swelling, separation or any mark in abdominal muscle complained by 40% of the participants and rest 60% of the participants did not complained of it, leg muscle cramping complained by 38% of the participants and rest 62% did not complained of it, approximately 27% of the participants complained of varicose vein and rest 73% of the participants did not complained of it and urinary incontinence which found as less common complaints of pregnancy almost in 14% cases and rest 86% of the participants had no urinary incontinence.

The researcher identified some further step that might be taken into consideration for the better accomplishment of further research. For the ensuring of the generalizability of the research it is recommended to investigate large sample. In this study researcher only took the pregnant women who came for checkup at selected hospitals in Dhaka. So for further study researcher strongly recommended to include other hospitals from all over Bangladesh. In this study, musculoskeletal complaints of prenatal period were focused only so need to further research to explore the frequency of musculoskeletal complaints in postnatal period. It is recommended for further study to generalized physiotherapy

treatment among the pregnant women to prevention and treatment of musculoskeletal complaints in women both in prenatal and postnatal period.

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Appendix-I: Informed Consent (Bengali)

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(AskMÖnbKvix†K c†o †kvbv†Z n†e)

Avm&mvjvgy ঞ্জবKyg / bg̃<vi, GB M†elYvwU evsjv†`k †nj_& cÖ†dkbvj Bbw÷DU (we GBP wc AvB) এন Awafz³| hvi wk†ivbvg nj- Ò

”| M†elK

, we.GBP.wc.AvB Gi 4_© el© we.Gm.wm Bb wdwRI†_ivwc †Kv†m©i GKRb Ges &GB M†elbv Zvi Aa`vq†bi Ask| (wb†b¥v³ Z_`vw` cvV Kivi ci Aa`vq†b AskMÖnbKvwiMb AskMÖnb Kivi Rb` Avgwš¿Z|)

GB Aa`vq†bi j¶` nj

হয় Zv Luy†R †ei Kiv hv ciewZ© mg†q ঐ

wPwKrmvi Rb` mnvqK n†e| GB

M†elbv / Aa`vq†bi Rb` Avcbv†K wKQz cÖkœ Kiv n†e. Avcwb Gi DËi Ki†eb Ges G†Z AvbygvwbK † & †_†K 20 wgwU mgq jvM†el Avwg Avcbv†K AeMZ KiwQ †h, GUv Avgvi Aa`q†bi Ask Ges Ab` †Kvb D†İ†k` GUv e`euZ n†e bv| ZvB GB M†elYvq AskMÖnY Avcbvi eZ©gvb Ges fwel`r wPwKrmvq †Kvb cÖfve †dj†e bv| Avcwb †h me Z_` cÖ`vb Ki†eb Zvi †MvcbxqZv eRvq _vK†e Ges Avcbvi cÖwZ†e`†bi NUbvcÖev†n GUv wbwðZ Kiv n†e †h, GB Z†_`i Drm AcÖKvwkZ _vK†e|

GB Aa`q†b Avcbvi AskMÖnY †`^”QvcÖ†Yvw`Z Ges Avcwb †h †Kvb mgq GB Aa`qb †_†K †Kvb †bwZevPK djvdj QvovB wb†R†K cÖZ`vnvi Ki†Z cvi†eb| GQvovI †Kvb wbw`©ó cÖkœ AcQ>` n†j DËi bv †`qvi Ges mv¶vrKv†ii mgq †Kvb DËi bv w`†Z PvIqvi AwaKvi Avcbvi Av†Q|

Avwg wK Avcbvi AbygwZ mv†c†¶¶ GB mv¶vrKvi iiy Ki†Z cvwi?

n`vu

bv

DĒi`vZvi ^v¶i :

M‡el‡Ki ^v¶i :

Appendix-II: Informed Consent (English)

Verbal Consent Statement

(Please read out to the participant)

Assalamualaikum/Namasker, my name is Nusrat Sultana Trina, I am conducting this study for a Bachelor project study titled “Common pregnancy related musculoskeletal complaints arising among the women during prenatal period at selected hospitals in Bangladesh” from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related questions about your pregnancy related musculoskeletal complaints. This will take approximately 15 - 20 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. Your participation in the research will have no impact on your present or future treatment. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview. For your information, Bangladesh Health Professions Institute (BHPI), CRP, Savar has permitted me to do the research.

Your co-operation in answering a few questions will be highly appreciated. If you kindly permitted then only shall I start. So may I have your consent to proceed with the interview?

YES

NO

Signature of the Respondents :

Signature of the Researcher :

Appendix-III: Bengali Questionnaire

রিসার্চ শিরোনাম : 'বাংলাদেশের কিছু নির্বাচিত চিকিৎসালয় হতে মহিলাদের
গর্ভকালীন সময়ে যে সকল শারীরিক সমস্যাসমূহের উৎপত্তি হয় তার হার নিরূপণ'

নং:

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সাক্ষাত গ্রহণের তারিখ:

--	--	--	--	--	--

সাক্ষাত গ্রহণকারীর নাম:

--

উত্তরদাতার নাম:

--

তথ্য গ্রহণের স্থান:

০	
১	
২	

মোবাইল নং:

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ঠিকানা:

পর্ব - ১ (সমাজ কাঠামো ভিত্তিক প্রশ্নসমূহ)

সিরিয়াল নং.	প্রশ্ন	কোডিং এর নমুনা
১.	আপনার বয়স কত?	<input type="checkbox"/> < ১৮ বছর= ০ <input type="checkbox"/> ১৮-২৮ বছর= ১ <input type="checkbox"/> ২৯-৩৮ বছর= ২ <input type="checkbox"/> > ৩৮ বছর= ৩
২.	আপনার শিক্ষাগত যোগ্যতা কতটুকু?	<input type="checkbox"/> কখনো স্কুলে যাওয়া হয়নি= ০ <input type="checkbox"/> < প্রাইমারী= ১ <input type="checkbox"/> প্রাইমারী সমাপ্ত= ২ <input type="checkbox"/> < এস.এস.সি= ৩ <input type="checkbox"/> এস.এস.সি = ৪ <input type="checkbox"/> এইচ.এস.সি=৫ <input type="checkbox"/> ≥ অনার্স/ডিগ্রী= ৬
৩.	আপনি কোন ধর্ম পালন করেন?	<input type="checkbox"/> ইসলাম= ০ <input type="checkbox"/> হিন্দু= ১ <input type="checkbox"/> খ্রীস্টান= ২ <input type="checkbox"/> বৌদ্ধ= ৩
৪.	আপনার পেশা কি?	<input type="checkbox"/> গৃহিণী= ০ <input type="checkbox"/> চাকুরিজীবী= ১ <input type="checkbox"/> অন্যান্য= ২

পর্ব-২ (নমুনা সংক্রান্ত প্রশ্নসমূহ)

সিরিয়াল নং	প্রশ্ন	কোডিং এর নমুনা
১.	এখন আপনার প্রেগন্যান্সির কততম মাস চলছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
২.	এটি আপনার কততম সন্তান?	<input type="checkbox"/> ১ম= 0 <input type="checkbox"/> ২য়= ১ <input type="checkbox"/> ২ এর অধিক= ২
৩.	আপনার কি কোমরে ব্যাথা হয়?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
৩.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
৪.	আপনার কি কোমড়ের নিচের অস্থিসমূহে কোন ব্যাথা অনুভব হয়?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
৪.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২

৫.	আপনার কি পায়ের গোড়ালী ফুলে যায়?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
৫.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
৬.	আপনার কি পায়ের মাংসপেশী শক্ত হয়ে যায়?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
৬.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
৭.	আপনার কি পায়ের রগসমূহ ফুলে ওঠে?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
৭.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
৮.	আপনার কি তলপেটের মাংসপেশিতে কোন ভাগ/ফাটা দাগের সৃষ্টি হয়েছে?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
৮.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
৯.	আপনার কি হাট্টি অথবা কাশির সাথে প্রসাব বের হয়ে আসে?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২

৯.১.	যদি উত্তর হ্যাঁ হয়, তবে প্রেগন্যান্সির কত তম মাসে হয়েছে?	<input type="checkbox"/> ১ম ট্রাইমেস্টার(১ম-৩য় মাস) = 0 <input type="checkbox"/> ২য় ট্রাইমেস্টার(৪র্থ-৬ষ্ঠ মাস) = ১ <input type="checkbox"/> ৩য় ট্রাইমেস্টার(৭ম-৯ম মাস) = ২
১০.	আপনি কি অন্য কোন শারীরিক সমস্যায় ভুগছেন?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
১০.১.	যদি উত্তর হ্যাঁ হয়, তবে তা বর্ণনা করুন।	
১১.	এ সমস্যাগুলোর মধ্যে কোনটি কি আপনার প্রেগন্যান্সির আগেও হয়েছে?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২
১১.১.	যদি উত্তর হ্যাঁ হয়, তবে তা বর্ণনা করুন।	
১২.	আপনি এ সকল সমস্যার জন্য কোন ফিজিওথেরাপী চিকিৎসা নিয়েছেন কি?	<input type="checkbox"/> হ্যাঁ= 0 <input type="checkbox"/> না= ১ <input type="checkbox"/> প্রযোজ্য নয়=২

Appendix-IV: English Questionnaire

Title: Common pregnancy related musculoskeletal complaints arising among the women during prenatal period at selected hospitals in Bangladesh

ID NO:

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DATE OF INTERVIEW:

--	--	--	--	--	--

NAME OF INTERVIEWER:

--

NAME OF RESPONDENT:

--

PLACE OF DATA COLLECTION:

0	
1	
2	

CONTACT NO:

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Address :

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PART- A (SOCIO-DEMOGRAPHIC QUESTIONS)

Serial No.	Question	Coding Category
1.	What is your current age? (In years) 	<input type="checkbox"/> < 18 years = 0 <input type="checkbox"/> 18-28 years = 1 <input type="checkbox"/> 29-38 years = 2 <input type="checkbox"/> > 38 years = 3
2.	What is your educational qualification?	<input type="checkbox"/> No formal schooling = 0 <input type="checkbox"/> less than primary = 1 <input type="checkbox"/> Primary completed = 2 <input type="checkbox"/> S.S.C completed = 3 <input type="checkbox"/> H.S.C completed = 4 <input type="checkbox"/> ≥ Graduation = 5
3.	What is your religion?	<input type="checkbox"/> Muslim = 0 <input type="checkbox"/> Hindu = 1 <input type="checkbox"/> Christian = 2 <input type="checkbox"/> Buddhist = 3
4.	What is your occupation?	<input type="checkbox"/> Housewife = 0 <input type="checkbox"/> Service holder = 1 <input type="checkbox"/> Others = 2

PART- B (SAMPLE RELATED QUESTIONS)

Serial No.	Question	Coding Category
1.	Which month of pregnancy it is?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
2.	What is the serial no. of your this child?	<input type="checkbox"/> 1 st = 0 <input type="checkbox"/> 2 nd = 1 <input type="checkbox"/> more than two = 2
3.	Do you have low back pain?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
3.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
4.	Do you have pain around waist and buttock (pelvic girdle pain)?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
4.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
5.	Does your ankle swell?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
5.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
6.	Does your leg muscles have spasm and become hard (muscle cramp)?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
6.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2

7.	Does the vessel of your legs swell (varicose vein)?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
7.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
8.	Do you have any stretch marks in your abdominal muscle (striae gravidarum)?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
8.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
9.	Does your urine leak out with coughing or sneezing (urinary incontinence)?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
9.1	If yes, then from which month of pregnancy?	<input type="checkbox"/> 1 st trimester (1 to 3) = 0 <input type="checkbox"/> 2 nd trimester (4 to 6) = 1 <input type="checkbox"/> 3 rd trimester (7 to 9) = 2
10.	Do you feel any other physical problem during your pregnancy period?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
10.1	If yes, then explain	
11.	Do you have experienced any of these physical problems before pregnancy?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2
11.1	If yes, then explain	
12.	Do you receive any physiotherapy treatment for these complaints?	<input type="checkbox"/> Yes = 0 <input type="checkbox"/> No = 1 <input type="checkbox"/> Not applicable = 2

