

# PERCEPTION OF GAIT PATTERN IN THIRD TRIMESTER OF PREGNANCY

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## **DECLARATION**

I declare that the work presented here is my own. All sources 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 Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI).

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## ACRONYMS

BHPI = Bangladesh Health Professions Institute

BMI = Body Mass Index

BMRC = Bangladesh Medical and Research council

CG = Centre of gravity

COG= Centre of Gravity

COP = Centre of Pressure

IRB = Institutional Review Board

MDT = Multi-disciplinary Team

PPP = Pregnancy-related Pelvic Girdle Pain

QCA = Quality Control Analysis

WHO = World Health Organization

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## ABSTRACT

**Purpose:** The purpose of the study was to find out the perceptions of gait pattern in the third trimester of pregnancy. **Objectives:** To perceive & identify the walking difficulty among the pregnant women. To perceive & identify the hip, leg & foot pain in pregnant women. To explore the perception of the pregnant women about their gait in third trimester. **Methodology:** The study was conducted by using of Qualitative method. Nine participants were selected and this qualitative study conducted in the outdoor unit of mother and child welfare centre, Naogaon, selected by purposive convenience sampling. All data collected through face-to face interview by using a semi-structured research question and given freedom to explain their feelings in their own words. They also received opportunity to talk and described their feelings and real facts or incidents. The entire interviews were recorded by Mp4 recorder and transcribed the interview in Bangla. Finally, Bangla data were translated into English and then the researcher coding and themes were made from the participants answer. **Result:** From the result of the study it is found that women during their third trimester of pregnancy faces some problem in gait and stability including pain on their foot, knee and ankle during walking even heavy foot with swelling. They also experiences sweating, thirsty, fatigue, burning sensation on anterior thigh, numbness on leg after walking and also lack of willingness to walk. There is no significant change in lower limb has found.

**Key words:** Perception, pregnancy, third trimester, gait, pain.

### 1.1 Background

Pregnancy is a physiological condition experienced by almost every woman differentiated by variation of adaptation. Hormonal, anatomical, cardiovascular and pulmonary changes occur and peripheral edema and weight gain is most common. These can perhaps influence musculoskeletal imbalance and postural changes (Ritchie, 2003).

Ever-increasing physical activity levels among pregnant women may be remarkably important for prevention and reduction of the complications related with pregnancy-related situation. Increasing level of physical activity among pregnant women may be significantly important in preventing and reducing the complications associated with pregnancy-related conditions (Connolly, 2010).

It is well acknowledged that pregnancy is characterized by weight gain on average approximately a range of 11–16 kg which mostly locates on the tummy due to the fetus growth. Walking is the most vital daily activity for the human body. However, there are many biomechanical changes in gait all through the pregnancy. Maximum COP velocity in the total foot and forefoot extensively decreased during the second trimester. Moreover, after heel strike, the COP of pregnant women moved laterally. Throughout pregnancy, women could adapt their gait pattern to prolong stability (Zhang et al., 2015).

There is no alteration in plantar pressure pregnant women during orthostatic posture. But for the period of gait, the plantar loads were redistributed from the rearfoot (decrease) to the midfoot and forefoot (increase) throughout pregnancy. These adaptations help maintain the dynamic stability of the pregnant woman during walking (Ribeiro et al., 2011).

There is little doubt that gait is affected by pregnancy. Till now, comparison between pregnant and non-pregnant gait is hard to identify. For instance, a forward displacement of the center of mass during pregnancy is often unspecified but no

replacement or backward displacement was found. The imprecision of gait during normal pregnancy may hamper understanding of gait in pregnancy-related pelvic girdle pain (PPP), a condition which leads to complaints that deserve medical attention in 25% of pregnant women find it difficult walking fast, and are unable to cover up large distances. A healthy gait pattern depends on a display of biomechanical features, maintained by the central nervous system for economy and stability. Injuries and other pathologies can alter these features and result in significant gait deficits, often with disadvantageous consequences for energy expenditure and balance (Kuo & Donelan, 2010).

During pregnancy, the musculoskeletal system undergoes a series of ligament, joint, and postural modifications that can be consequence as painful discomfort in the spine, hips, knees and feet. There are many anatomical changes during pregnancy that could potentially lead to significant alterations in gait. Gait deviations may origin a variety of musculoskeletal overuse conditions associated with pregnancy, such as low-back pain, hip pain, and calf pain with waddling gait. The majority of these changes are mainly due to high hormone levels, such as progesterone, estrogen, and relaxin (Ribeiro et al., 2011).

Pregnancy is a peculiar health condition. It is a physiological method that involves chronological modifications of the organs and physical systems of women which has vital importance for the establishment and succession of the pregnancy puerperal cycle (Ribeiro et al., 2013).

## **1.2 Rationale**

In perspective of Bangladesh there is no relevant research has been conducted in this field yet. Even there is no evidence of perception of gait pattern of pregnant women and perception of any change and their treatment and rehabilitation. Generally, the changes in the body during pregnancy include anterior pelvic tilt, increased lumbar lordosis head posteriorization, knee hyperextensions and lowering of the medial longitudinal plantar arch, as well as increased volume, length and width of the feet. These complex postural adaptations usually reduce the capacity of pregnant women in maintaining adequate posture without discomfort. 20% weight gains during pregnancy may increase the forces over the main lower limb joints and this usually interferes with the quality of life of pregnant women (Ritchie et al., 2006).

This study will help to liberate problem with gait during third trimester of pregnancy thus it could help improve their quality of life also aware them about prevent fall or any other related complications. We could know the ultimate problem during walking of pregnant women in our country especially during third trimester. We could also come to know about negative impacts of these problems in quality of life. So, because of this study, the solution of this problem will be easier. Research makes the profession strongest. So there is no alternative option to do research as a professional to develop the profession. It will help professionals to provide better quality service to these patients in future. Researcher will gain in depth knowledge about this sector for further study. It could bring a revolution in the case of physiotherapy in pregnancy.

### **1.3 Research Question**

What are the perceptions of gait pattern in third trimester of pregnancy?

#### **1.4 Aim of the study**

To identify the perception of the women about gait pattern in third trimester of pregnancy.

#### **1.5 Objectives of the Study**

- i. To perceive and identify the walking difficulty among the pregnant women.
- ii. To perceive and identify the hip, leg and foot pain and other difficulties in pregnant women.
- iii. To explore the perception of the pregnant women about their gait in third trimester.

Throughout pregnancy, frequent physical and hormonal changes, including weight gain, change in the center of gravity, increased joint laxity and alterations in skeletal alignment occur and may lead to an altered postural balance. The lower trunk has significantly greater rates of change in weight than all other body segments during the second and third trimesters of pregnancy. As the fetus develops the position of the mother's center of gravity moves superiorly and anteriorly. Accordingly, the developing fetal load places an increased demand on the lumbar spine and abdominal muscles. The changing shape of the lower trunk requires postural adjustments, such as an elevation of the head, hyperextension of the cervical spine and extension of the knee and ankle joints. Similarly, another analysis of standing posture has exposed a more posterior head position and an increase in lumbar lordosis and anterior pelvic tilt. These anatomic and physiologic changes may contribute to postural instability during pregnancy and may lead to a higher incidence of falls, as reported in a sample of employed pregnant women. Postural stability declines during pregnancy. The higher rate of weight gain in the second and third trimesters may explain the decrease in postural stability during this time period (Butler et al., 2006).

Pregnant women altered gait pattern to adapt the weight gain and the shift of centre of gravity. This could be reflected by the COP velocity and displacement over the total foot, forefoot, mid-foot and rear foot sections. This study found that COP moved frontward with slower velocity above the rear foot and mid-foot and with faster velocity over the forefoot as pregnancy progressed. Additionally, it was established that pregnant women during their second trimester had a apparently lateral shift of the COP displacement. The COP progression characteristics could lead to approach into the gait performance of pregnant women. The ultimate goal of this study is to assurance the safety of expectant mothers and fetus (Zhang et al., 2015).

Postural balance assessment during pregnancy by static and dynamic postural control may contribute to development and application of therapeutic methods to prevent postural instability and falls. There is significant increase of weight, age, height and BMI. Other studies also show the influence of the support base pattern (wide/narrow) and visual condition (eyes open/closed) on the COP displacement area. Pregnant

women had higher COP displacement area. It may be explained by increased ligamentous laxity in sacroiliac joint and pubic symphysis, in order to favor the passage of the fetus during labor. This laxity may also occur in feet joints, causing postural instability. The relaxin hormone has been identified, in some studies, as a major contributor to these changes. Its concentration is elevated during the first trimester and then decline early in the second trimester to a level that remains stable throughout the rest of the pregnancy and into labor. At later pregnancy, the levels of edema and the increase in the foot width were higher when compared to the first trimester, which may indicate an adaptation for maintaining balance. According to results regarding quality of life the physical field had the largest decreased percentage of answers, especially in the third trimester. Postural balance assessment during pregnancy by static and dynamic postural control adjustments may throw in to development and application of therapeutic methods in order to prevent postural instability and falls (Moccellin et al., 2012).

The decrease in postural stability in pregnant women is related to increase in COG, height and weight gain due to fetal development. These authors evaluated postural adaptations during pregnancy and found that during the first trimester, pregnant women still preserve their postural stability, but in the second and third trimesters, the COP displacement increases, affecting the postural equilibrium. Thus, they accomplished that postural stability declines during pregnancy and remain low until six to eight weeks postpartum. Increased muscle work of the plantar flexors during pregnancy as studies have suggested increased postural sway in women in third trimester. Physiological changes that occur throughout pregnancy can alter both balance and postural control in a pregnant woman. The lower trunk has significantly greater rates of change in weight than all other body segments during the second and third trimesters of pregnancy. The changing shape and inertia of the lower trunk requires postural adjustments such as elevation of the head, hyperextension of the lumbar spine and extension of knee and ankle joints. Studies have also indicated that there is an increased reliance on the visual cues to maintain balance during pregnancy which suggests that there could be a proprioceptive loss that leads to postural instability which in turn leads to increased rate of fall in pregnant women when compared to non-pregnant women (Butler et al., 2006).



It is widely accepted that pregnancy is characterized by a huge amount of physiologic, endocrine, and physical adjustments, which induce an increase in the load imposed on the pregnant women's spine. This fluid loss results in a decrease in the discs stature and consequently causes a reduction of the spinal column (also called spinal shrinkage). The shrinkage can be quantified by measuring variations in the whole body length, which, because of increased loading on other structures, may be a source of pain (Rodacki et al., 2006).

Due to a decline in the balancing ability, 27% fall rate was reported during pregnancy especially during third trimester. Even though physicians most probably advise women on to be anticipated instability during pregnancy due to changes in center of gravity and loosening of joints. One in four fall and one in ten fall two or more times over just a nine month gestation. These are astonishing numbers as this public health problem is completely preventable. Most falls were associated with slippery floors, wearing inappropriate shoes and using insufficient safety measures such as holding on to stair hand rails. The fact that most of these falls occurred during the last trimester supports this concern. Two recent longitudinal studies showed increases in postural sway during second and third trimesters, indicating additional instability (Dunning et al., 2010).

Fall can lead to maternal and fetal complications including 3-7% of fetal deaths. The leading causes of falls at work for pregnant women includes slippery floors, moving at a fast pace and carrying an object or a child. Even though the balance issues and the visual reliance have been recorded in the pregnant women, the loss of proprioception in them was not studied. Thus researcher was aimed at comparing the ankle joint proprioception sense between the pregnant and non-pregnant women. Pregnant women included in this study were in the age group between 18-35 years in their third trimester as there is more postural instability caused due to various physical and hormonal changes in this period. There is a significant increase in the proprioceptive error in pregnant women. This could be due to the altered proprioceptive effort obtained from the lax ligaments around the ankle joint. It has been found that relaxin hormone levels increases upto ten times more during pregnancy which predisposes for ligament and joint laxity that may in turn affect the ability of the receptors to sense the movement. The other factor that could alter the proprioceptive input could be due to

the mild edema around the ankle which is more common during the third trimester. It has also been documented that there is an increased postural instability during second and third trimesters during pregnancy with increased reliance on visual cues, which indicates reduction in proprioceptive input during this period. This also predisposes them to increased risk of falls. The reasons for the falls were reported to be increased frequency of urination in the night which forces them to go to toilet and had a fall in the toilet. Ankle proprioception is significantly affected in pregnant women during their third trimester compared to non- pregnant women (SMJ, 2011).

A significant increase in contact area was observed at the lateral rearfoot from the second to third trimester and at the midfoot from the first to third trimester. Contact time increased significantly at the midfoot and the medial and lateral forefoot from the first to third trimester. Maximum force decreased in 39% from the first to third trimester and in 47% from the second to third trimester in the medial rearfoot and increased in 16% from the first to second trimester in the medial forefoot. The plantar pressures during orthostatic posture remained unaltered throughout the gestational trimesters. However, during gait, there was an increase in contact time at the anterior parts of the foot (forefoot and midfoot), an increase in contact area at the midfoot, and a decrease in peak pressure and maximum force at the medial rearfoot throughout the gestational trimesters. During gait, there was a redistribution of the plantar loads from the rearfoot to the forefoot due to decreasing peak pressure and force at the rearfoot and increasing force, contact area, and contact time at the midfoot and forefoot throughout gestation. These adjustments in the plantar loads help maintain the dynamic stability of pregnant women during locomotion (Ribeiro et al., 2011).

Gait during pregnancy is significantly unchanged. Some small deviations in pelvic tilt and hip flexion, extension, and adduction were observed during pregnancy. Although an overall significant increase in anterior tilt of the pelvis during pregnancy was found. Typically, increased lumbar lordosis is associated with increased anterior pelvic tilt. Lumbar lordosis was increased for the woman who had increased anterior pelvic tilt. Increases overuse of hip abductor, hip extensor, and ankle plantar flexor muscle groups during pregnancy may be a contributing factor to low-back, pelvic, and hip pain as well as painful muscle cramps in the calf or other parts of the lower extremity. Women who are inactive or have low muscle power or both may be

particularly susceptible to these overuse conditions during pregnancy. In addition to being related to hormonal and metabolic factors, calf cramps during pregnancy may be related to the increased functional demand placed on the ankle plantar flexors. Despite major anatomical changes associated with pregnancy, the kinematics of gait during pregnancy was found to be remarkably unchanged. However, significant increases in hip extensor, hip abductor and ankle plantar flexor were found (Sullivan et al., 2015).

Increase in contact area at the midfoot during gait caused by ligament structure modifications, edema accumulation and increased foot volume and size. This can lead to lowering the longitudinal plantar arch, increasing the contact area over the midfoot. However, the present study cannot confirm this hypothesis because we did not measure anthropometric characteristics of feet during pregnancy. The reduction in the loads at the rearfoot and the increase in force at the forefoot and contact area at the midfoot may also be explained by the pregnant woman's attempt to maintain equilibrium, especially during the third trimester, despite the weight gain. This weight change contributes greatly to increase the dislocation of the center of gravity and a greater dynamic postural instability. Thus, the changes in the loads and plantar support distribution that pregnant women undergo to initiate gait is understandable that a greater risk of falling is prevalent in 25% of this population. Pregnant women may adapt their gait to maximize stability in the stance phase of gait and to control mediolateral motion of the foot(McCrory et al., 2010).

Some changes in the body of the pregnant woman are caused by normal actions of certain hormones, such as progesterone, estrogen and relaxin. Relaxin, the main inductor of ligament relaxation, leads to increased mobility of the pelvic complex and the peripheral joints, which usually results in instabilities of the lower and upper segment dysfunctions. Generally, the changes in the body during pregnancy include anterior pelvic tilt, increased lumbar lordosis, head posteriorization, knee hyperextension and lowering of the medial longitudinal plantar arch, as well as increased volume, length and width of the feet. These complex postural adaptations usually reduce the capacity of pregnant women in maintaining adequate posture without discomfort but create compensatory adaptations lead to pain of the lumbar spine, hips and lower limbs.20% weight gains during pregnancy may increase the

forces over the main lower limb joints and this usually interferes with the quality of life of pregnant women. Perceptions of pregnant women regarding complaints of pain and discomfort, energy and fatigue levels, sleep and rest, and mobility and work capacities. Weight gains of approximately 12 kg mainly during the last trimester of pregnancy lead to increase overloads and imbalances of the musculoskeletal system. These, lead to disturbances of the CG. To maintain stability in the standing position with all of these postural imbalances, women need to adopt strategies, such as foot repositioning, to increase their support base, leading to changes in plantar pressures. The literature described changes in angular kinematic and spatiotemporal parameters of pregnant women's gait. They demonstrate shorter steps, a wider base of support and the feet more laterally rotated. A better understanding of these gait modifications would result in more appropriate preventive approaches regarding painful complaints of these women (Ribeiro et al., 2013).

Static and dynamic biomechanical changes of the lower limbs and gait during pregnancy for the development of the fetus and the alterations of the lower kinetic chain to cope with greater loads and motor challenges in their daily living. This review was reasonable due to the need to develop preventive strategies to relieve musculoskeletal discomfort and pain in the lower limbs, mainly during gait. Although gait is a repetitive cyclic task performed by pregnant women, typical patterns of static and dynamic biomechanical changes in the lower limbs during gait over the various stages of pregnancy, have not been previously reported (Wu et al., 2006).

The American College of Obstetricians and Gynecologists recommended walking as a total body workout that is easy on the joints and muscles during pregnancy as well as being an excellent workout postpartum. The most current Physical Activity Guidelines for Americans give similar but more detailed recommendations for pregnant women including at least 150 minutes of moderate intensity aerobic activity (such as brisk walking) per week. Approximately 61% of women participated in some physical activity during pregnancy, greater than the 48%. Walking to be the most popular physical activity choice during pregnancy. Only 14% of pregnant women met the recommendations through moderate-intensity activity and when including vigorous intensity activity, only 23% met recommendations. Analysis of sedentary behaviors reveals that, from 2003 to 2006, over 15% of pregnant women reported watching at

least 5 hours of television per day. Physical activity decreased from the second trimester to the third. The physical activity reduction in the third trimester may be a result of physiological changes, such as increased body weight, respiratory, and blood volume (Connolly, 2010).

Peripheral joint laxity increases during pregnancy. However, these changes do not correlate well with maternal estradiol, progesterone or relaxin levels. More than 50% of women complain of some degree of low back pain during pregnancy, and many describe pubic, pelvic, hip, knee, and various other joint discomforts. An incidence rate of 20.1% for PPP among pregnant women with BP in their study. These theories include the combined increased body weight of the pregnant women and the fetus, hormonal influences causing laxity of joints, postural changes because of increasing growth of the fetus and changes in total body water retention. Gait kinematics were remarkably unchanged during pregnancy. No evidence of waddling gait during pregnancy was found. This finding indicates that during pregnancy there may be an increased demand on hip abductor, hip extensor, and ankle plantar flexor muscles during walking. Dramatic decreases in abdominal muscle strength occur due to the excessive lengthening of the muscles to accommodate the fetus. In addition, hormonal changes affect joint laxity. A tenfold increase in the relaxin level occurs during pregnancy and this increase has been connected to increases in the range of motion of the pelvis and the peripheral joints. It is widely presumed that pregnant women exhibit marked gait deviations such as waddling that may contribute to some of the musculoskeletal conditions associated with pregnancy (Marnach et al., 2013).

**3.1 Study design**

Qualitative methodology was selected for this study, because it is helpful to find out the perceptions of people in particular settings and to understand their perspective. Qualitative research is exploratory in nature by which the researcher can gain insights into another person's view's, opinion, feeling and beliefs within their own natural setting. The study was conducted by Qualitative Content Analysis (QCA) approach of qualitative method. QCA facilitates contextual meaning in text through the development of emergent themes derived from textual data. It also facilitates the production of core constructs from textual data through a systematic method of reduction and analysis. The researcher conducted the study by QCA as it enables the researchers to gain an understanding of individual's practical experience and by this the answer will come out in actual words from the real context. For this reason, the researcher thought that qualitative content analysis would be an appropriate study design for this study.

**3.2 Study setting**

The study was conducted in pregnant women attended at mother and child welfare Centre which is situated in Naogaon, about 250 km away from the capital city of Dhaka. Mother and child welfare center is a Government Organization that treats pregnant women regarding their socio-economic means and aims to improve the quality of life in Bangladesh. It is specialized in the management of person with gynecological problem and children vaccination and raise awareness. There is a delivery inpatient unit and it is a residential program and consists of 50 beds with 5 wards and outpatient unit. The treatment takes place immediately. Management is based on a multi-disciplinary treatment (MDT) approach. The purpose of the program is improve the quality of life of pregnant women, mother and child, improve patients health, self-confidence and to help pass their life meaningfully. This setting was selected for data collection because pregnant women are conducted effectively in this setting, which is easily accessible for the researcher.

### **3.3 Participants Selection Procedure**

The inclusion criteria for participation in this study were the pregnant women of third trimester. The researcher selected the participant by purposive sampling because researcher had specific requirements and chose those who met the selection criteria. Purposive sampling is that a researcher does not simply study whoever is available, but uses their judgment to select a sample that they believe based on prior information, will provide the data they need. At first permission was granted from the in-charge and a discussion about the study was held with the responsible health care giver. The investigator observed the program for two days to select the study participants. The investigator made a list of pregnant women for the data collection period that fulfilled the inclusion criteria. At that time, nine women with third trimester pregnancy participated during the period of data collection. The investigator invited them to become a participant in the study. Finally those nine participants were selected for the study.

### **3.4 Inclusion criteria**

All the pregnant women should be within the third trimester of pregnancy. Who are agreed to participate and easily accessible. To be nonsmoking and non-alcoholic, to have not undergone any surgeries on the spine, pelvis, hip or knee. In addition, women should present low risk, with no incidents during the gestational period. Participants who were able to communicate and had no hearing problems. Clear communication will require for providing answer during the interview session. It is important for collect accurate data (SMJ, 2011).

### **3.5 Exclusion criteria**

Pregnant women of first and second trimester were excluded from the study. Who are unable to communicate were excluded from the study. Women with any ankle deformities or contractures, history of arthritis, recurrent ankle sprain, contractures, severe pedal edema that restricts the range of motion at ankle and diabetic neuropathies were excluded from the study. Subject with musculoskeletal problem are excluded from the study except related to pregnancy (Moccellin et al., 2012).

### **3.6 Data collection procedure**

Researcher conducted face to face interview with a semi structured question for data collection. With semi structured question, participants get more freedom to explain their opinions. Face to face interviews helped the researcher to determine participants' understanding of the questions by observing their facial expressions. Before starting the formal interview, researcher ensured a quiet place by contacting with the regarding authority and built understanding with the participants and made them comfortable for interview. The researcher explained the research question and aim of the study. Then the researcher used information sheet and consent form to take the permission of the participants. After that the researcher asked questions to find out the importance, and problems that pregnant women faced. Some prompting questions were asked based on their answer to expose the information in detail. All question and information sheet was developed into Bangla. Interview was conducted in Bangla and recorded by Mp4 recorder. The interview conducted during daytime and the duration was approximately 30 minutes for each participant. Venue of interview was out patient unit of mother and child welfare centre which is situated in Naogaon, but the place of interview depended on situation and permission of regarding authority.

### **3.7 Data collection tools and material**

Mp4 recorder was used to record the interview of the participants. Pen, paper and clip board was used to write down observation notes. An information sheet and consent form was used for taking permission from the participants (for details please see appendix for Bangla copy and appendix for English translated copy). A semi-structured question was used to conduct the interview.

### **3.8 Data analysis**

The purpose of the data analysis was to find out the actual meaning of the information that is collected. By using a data analysis process it was easy to arrange and present information in order to search for ideas.

The qualitative content analysis was used to analyze data on perception of gait pattern in third trimester of pregnancy. The aim of data analysis was to find out actual meaning of information, which was collected according to the participant's opinion. In this study, data was analyzed by using content analysis. Content analysis is a



methodology for determining the content of written, recorded, or published communications via a systemic, objective, & procedure. Thus, it is a set of procedure for collecting and organizing information in a standard format that follows analysts to draw inference about the characteristics & meaning of recorded material the analysis of data began from transcribe of interviews. At first, the researchers organized the interviews and transcribed the entire interview in Bangla from the Mp4 recorder. The researcher also read it several times to find out what the participants want to say. Following that, the researcher verified the data and find out the actual themes of the study. When the researcher noticed some similarities between the data, the researcher organized the data according to some major categories and under those categories, some codes established. The codes came out from the research question and each code separated from each other. The aim of the data analysis was to find meaning from the information collected. Data analysis is the process of systematically arranging & presenting information in order to search for ideas. In the study all the participants were asked the same questions through semi-structured recording interview. After transcribing the entire interview the data was organized according to interview questions. All transcripts were read several times to gain the themes and find out what the participants wanted to say.

### **3.9 Ethical Consideration**

The proposal was submitted to the Institutional Review Board (IRB) of Bangladesh Health Profession Institute (BHPI) and after defense the research proposal approval was obtained from the IRB. A written/verbal consent was taken from participate before collecting of data. The World Health Organization (WHO) and Bangladesh Medical Research Council (BMRC) guidelines were always followed to conduct the study. During the course of the study, the samples who were interested in the study had given consent forms and the purpose of the research and the consent form were explained to them verbally. The study did not interfere with their jobs. They were informed that their participation was fully voluntary and they had the right to withdraw or discontinue from the research at any time. They were also informed that confidentiality was maintained regarding their information. It should be assured the participant that his or her name or address would not be used. The participant will also be informed or given notice that the research result would not be harmful for them.

### **3.10 Rigor of study**

Researcher always tried not to be influenced the whole research process by his own values and biases. All of the steps in the research process were supervised by an experienced supervisor. During the interview the researcher always asked open-ended questions, no leading questions were asked and researcher did not interrupt the participants during answering the questions. Data was recorded carefully and researcher accepted the answers of the participants whether negative or positive without giving them any impression. The researcher prepared the transcript from the audio recording. Researcher checked the translated data several times, so that no information was missed and avoided. Notes were handled with confidentiality. In the result section, the researcher did not influence the outcome by showing any personal interpretation.

<b>CHAPTER : IV                      RESULTS</b>
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The qualitative study results were analyzed by content analysis. By using this analysis process, the researcher organized collected data according to categories, coding and themes. The participants in this study offered some important insight on the perspectives about their gait pattern. Participants respond according to their perception. Socio-demographic information at a glance:

**Table-1: Socio-demographic information of the participant**

Socio-demographic Information	Number of participant	percentage
<b>18-28</b>	9	100%
<b>Occupation</b>		
Housewife	8	88.89
Student	1	11.11
<b>Week of pregnancy</b>		
7 month	2	22.22
8 month	4	44.44
9 month	2	22.22
10 month	1	11.11
<b>Number of pregnancy</b>		
First conception	3	33.33
Second conception	5	55.56
Third conception	1	11.11

The participant's age was within 18 to 28 years. Most of the participants were housewife except one participants. (Table-1) In the result section, it has been possible

to understand the participant's opinions by content analysis, where some categories have been found. Under the different categories, participants different opinions are expressed by different codes. Ten major categories were found these are:

problem on foot during walking, feelings after walking, feelings after walking, pain and discomfort in lower limb, pain and discomfort on back, problem during activity, vigorous physical exercise, effect of weight on gait, walking as work, physical barrier during walking.

### Summary of theme that emerged from data analysis

#### Theme-1: Problem on foot during walking

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
Stepping problem	✓								
Pain	✓	✓		✓	✓	✓			✓
Irritation		✓			✓				
Heavy feet			✓	✓			✓		
Unable to walk							✓		
No problem								✓	

**Table-2: Problem on foot during walking**

Most of the participants said that they feel pain on their foot during walking. Some of them thought that, this pain has come from their back. Most of them said, this pain has started from second trimester of their pregnancy. Many of them also experience heavy foot. Some said, they were experiencing swelling and mentioned that, it's the cause of their heavy foot. One of them said, she could not walk. One of them has no problem on foot.

Some feel fatigue whenever they walk and want interval. Some of the participants share their experience about their irritation during walking and one of them said it occur after walking for long time along with pain.

## Theme-2: Feelings after walking

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
Fatigue	✓	✓	✓	✓	✓	✓		✓	✓
thirsty		✓							
sweating		✓							
Numbness									✓
Normal							✓		

**Table-3: Feelings after walking**

Most of the participants stated that, “yes, I feel fatigue.” They feel tired after some time of walking except one participant who feels normal. They are experiencing this science they got pregnant. One of them feels thirsty. One of them experiences sweating. One of them feels numbness on her leg after walking and also experiences backache. Most of the participants said, they feel unwillingness to walk.

## Theme-3: Change in lower limb after conceive

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
swelling	✓	✓	✓		✓				
Heaviness			✓						
Loss of strength									✓
No change				✓		✓	✓	✓	

**Table-4: Change in lower limb after conceive**

A good number of participants said, “No, there is no significant change. It is as same as before”. A significant number of participants said, they were experiencing swelling on their leg and foot and some of them were experiencing it from the third trimester. One of them experiences less strength in her lower limb. Some of them said that they feel irritation on foot during stepping. Some of them feel heaviness of foot. One of them said, her swelling reduces when she walk, and increases without walking.

**Theme-4: Pain and discomfort in lower limb**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
Pain at knee	✓					✓	✓		
Pain at ankle	✓					✓	✓		
Burning sensation		✓							
No problem			✓	✓	✓			✓	✓

**Table-5: Pain and discomfort in lower limb**

A significant number of participants state that, they feel no problem on their lower limb. One of them said, she some time feel pain but not always. After long time of rest, standing become difficult for her. Then aftersome time of walking, it becomes normal. One feels burning sensation of her anterior thigh after some time of sitting and diminishes after standing. Some of the participant emphasize on knee and ankle pain during walking.

**Theme-5: Pain and discomfort on back**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
pain	✓		✓	✓	✓			✓	✓
Tightness		✓					✓		
Tingling sensation		✓							
Frequent urination									✓
No discomfort						✓			

**Table-6: Pain and discomfort on back**

Most of the participants emphasize on pain at back without one participant who has no discomfort. One of them feel pain during sitting and walking for some time and releases with rest (P3). Some participants feel so much tightness on back but not pain

and sometimes feel tingling sensation (P1, P2 and P7). One of them said she had pain before but after conception she don't have pain but she don't know the real cause of her pain reduction (P8). One of them said she could not stand without support whenever pain starts (P4). One of them said she experiences frequent urination and irritation along with pain at back.

**Theme-6: Problem during activity**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
Problem during Sit to stand	✓	✓						✓	
Pain during forward bending	✓	✓						✓	✓
Stairing problem		✓			✓	✓			
Feeling heavy			✓	✓		✓			
Pain during washing cloth					✓				
Fatigue								✓	
No problem							✓		

**Table-7: Problem during activity**

A good number of patient said, they feel heavy whenever they start for any activity. Some of the participants said, they experience stairing problem, they emphasize it as fatigue. A significant number of participants feel pain especially in lower abdomen during forward bending to pick up something of any other activity. Some said, they feel sharp pain during standing from chair or lower stool. One of the participant said

when she walk for long time, she feels as the fetus come down on her lower abdomen (P4).some said they don't do any work or activity. One of them said, she feel fatigue. Some said, they feel pain during washing cloth. One of them said, she feel pain during cooking.

**Theme-7: Vigorous physical exercise**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
No problem	✓		✓						
Sweeping problem		✓					✓	✓	
Postural hypotension		✓							
Problem during pumping tube well				✓			✓	✓	
Pain at abdomen					✓			✓	
Problem in washing cloth								✓	
Feeling pressure on abdomen									✓
Fatigue						✓			

**Table-8: Vigorous physical exercise**

Most of the participants said, they almost don't do any vigorous activity and if they do, then they modify the activity within their comfort zone. A significant number show problem during tube well pumping and during sweeping. Some of them said they experience pain at abdomen during heavy work. One of them feels pressure on abdomen (P9).One of them said, she feels postural hypotension (P2). One said, she feels fatigue if she do even a small amount of this activity (P7). One of them feel pain during washing cloth.



**Theme-8: Effect of weight on gait**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
Laziness	✓								
Fatigue	✓								
Whole body ache	✓								
Unwillingness	✓								
Feeling of heaviness		✓				✓	✓		✓
No effect			✓	✓	✓			✓	

**Table-9: Effect of weight on gait**

A significant number of participants said, they feel heavy due to their increased body weight. One of them said she feels fatigue. One said, she has whole body ache. One said, she is unwilling to do work. One said, she feels lazy. A significant number of women said, they don't feel any heaviness or fatigue or any other effect even they don't feel that their weight has increased.

**Theme-9: Walking as work**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
yes	✓	✓	✓	✓	✓	✓	✓	✓	
No									✓

**Table-10: Walking as work**

Almost all the participants said, they walk as a part of work. They emphasize on their dynamicity during their household chores. Only one of the participants said, she doesn't walk as work.

**Theme-10: Physical barrier during walking**

Coding	P1	P2	P3	P4	P5	P6	P7	P8	P9
Laziness	✓								
Body ache	✓								
Unwillingness	✓								
Large abdomen		✓							
Heavy abdomen									✓
Pain at abdomen									✓
No problem			✓	✓	✓	✓	✓	✓	

**Table-11: Physical barrier during walking**

Most of the participants said that they don't face any physical barrier during walking. One of them mentioned her large abdomen as barrier. One mentioned she has lack of willingness and laziness along with body ache. One feels heavy abdomen along with pain as her barrier.

## CHAPTER: VDISCUSSION

### 5.1 Discussion

The analysis & discussion is about to identify published papers & determining therelevance with the acquired data. In this chapter the results of the study are discussed in relation to the research questions and objectives of the study. The discussion focus on the perception of the gait of pregnant women during their third trimester of pregnancy.

#### **Foot problem during walking**

Most of the participants said that they feel pain on their foot during walking. Some of them thought that, this pain has come from their back. Most of them said, this pain has started from second trimester of their pregnancy. Many of them also experience heavy foot. Some said, they were experiencing swelling and mentioned that, it's the cause of their heavy foot. One of them said, she could not walk. One of them has no problem on foot. Some feel fatigue whenever they walk and want interval. Some of the participants share their experience about their irritation during walking and one of them said it occur after walking for long time along with pain.

Sullivan et al., (2015), said that excessive hip abductor, hip extensor, and ankle plantar flexor muscle groups during pregnancy may be a contributing factor to low-back, pelvic and hip pain as well as painful muscle cramps in the calf or other parts of the lower extremity.

#### **Change in lower limb after conceive**

A good number of participants said, "No, there is no significant change. It is as same as before." A significant number of participants said, they were experiencing swelling on their leg and foot and some of them were experiencing it from the third trimester. One of them experiences less strength in her lower limb. Some of them said that they feel irritation on foot during stepping. Some of them feel heaviness of foot. One of them said, her swelling reduces when she walk, and increases without walking.

Butler et al., (2006) mention that, throughout pregnancy, frequent physical and hormonal changes, including weight gain, change in the center of gravity, increased

joint laxity and alterations in skeletal alignment occur and may lead to an altered postural balance. The lower trunk has significantly greater rates of change in weight than all other body segments during the second and third trimesters of pregnancy. Extension of the knee and ankle joints frequently occurs.

Zhang et al., (2015) said that, the physiological changes occurring during pregnancy may lead to faulty foot positioning and thus increase load on the lateral side of the foot and the hind foot, which may be responsible for the musculoskeletal complaints of lower limb pain in pregnant women.

McCrorry et al., (2010) said that, increase in contact area at the midfoot during gait caused by ligament structure modifications, edema accumulation and increased foot volume and size.

### **Pain and discomfort in lower limb**

A significant number of participants state that, they feel no problem on their lower limb. Someone said, she some time feel pain but not always. After long time of rest, standing becomes difficult for her. Then after some time of walking, it becomes normal. One feels burning sensation of her anterior thigh after some time of sitting and diminishes after standing. Some of the participant emphasize on knee and ankle pain during walking.

Increased overuse of hip abductor, hip extensor, and ankle plantar flexor muscle groups during pregnancy may be a contributing factor to low-back, pelvic, and hip pain as well as painful muscle cramps in the calf or other parts of the lower limb. Women who are inactive or have low muscle strength, or both, may be particularly susceptible to these overuse conditions during pregnancy (Sullivan et al., 2015).

### **Pain and discomfort on back**

Most of the participants emphasize on pain at back without one participant who has no discomfort. One of them feels pain during sitting and walking for some time and releases with rest (P3). Some participants feel so much tightness on back but not pain and sometimes feel tingling sensation (P1, P2 and P7). One of them said she had pain before but after conception she don't have pain but she don't know the real cause of her pain reduction (P8). One of them said she could not stand without support

whenever pain starts (P4). One of them said she experiences frequent urination and irritation along with pain at back.

Butler et al., 2006 said that, increase in lumbar lordosis and anterior pelvic tilt during third trimester of pregnant women. Marnach et al., (2013) said that, more than 50% of women complain of some degree of low back pain during pregnancy.

### **Problem during activity**

A good number of patient said, they feel heavy whenever they start for any activity. Some of the participants said, they experience stairing problem, they emphasize it as fatigue. A significant number of participants feel pain especially in lower abdomen during forward bending to pick up something of any other activity. Some said, they feel sharp pain during standing from chair or lower stool. One of the participant said when she walk for long time, she feels as the fetus come down on her lower abdomen (P4). Some said they don't do any work or activity. One of them said, she feel fatigue. Some said, they feel pain during washing cloth. One of them said, she feel pain during cooking.

Connolly, (2010) said that, physical activity decreased from the second trimester to the third trimester. The physical activity reduction in the third trimester may be a result of physiological changes, such as increased body weight, respiratory and blood volume.

Weir et al., (2010) said that, at least 30 minutes of moderate intensity activity a day throughout pregnancy for most women.

### **Effect of weight on gait**

A significant number of participants said, they feel heavy due to their increased body weight. One of them said she feels fatigue. One said, she has whole body ache. One said, she is unwilling to do work. One said, she feels lazy. A significant number of women said, they don't feel any heaviness or fatigue or any other effect even they don't feel that their weight has increased.

Butler et al., (2006) said that, the higher rate of weight gain in the second and third trimesters may explain the decrease in postural stability during this time period.

Moccellin et al., (2012) said that significant increase of weight, age, height and BMI causing postural instability. It may be explained by increased ligamentous laxity in sacroiliac joint and pubic symphysis.

Ribeiro et al., (2013) said that, weight gains of approximately 12 kg are associated with increased abdominal and breast volumes, mainly during the last trimester of pregnancy, contributing to increased overloads and imbalances of the musculoskeletal system.

### **Walking as work**

Almost all the participants said, they walk as a part of work. They emphasize on their dynamicity during their household chores. Only one of the participants said, she doesn't walk as work.

The American College of Obstetricians and Gynecologists recommended walking as a total body workout that is easy on the joints and muscles during pregnancy (Connolly, 2010).

### **Physical barrier during walking**

Most of the participants said that they don't face any physical barrier during walking. One of them mentioned her large abdomen as barrier. One mentioned she has lack of willingness and laziness along with body ache. One feels heavy abdomen along with pain as her barrier.

SM et al., (2011) said that, it has been found that relaxin hormone levels increase up to ten times more during pregnancy which predisposes for ligament and joint laxity that may in turn affect the ability of the receptors to sense the movement. The other factor that could alter the proprioceptive input could be due to the mild oedema around the ankle which is more common during the third trimester. It has also been documented that there is an increased postural instability during second and third trimesters during pregnancy with increased reliance on visual cues, which indicates reduction in proprioceptive input during this period.

Ribeiro et al., (2013) said that, some changes in the body of the pregnant woman are caused by normal actions of certain hormones, such as progesterone, estrogen and relaxin. Relaxin, the main inducer of ligament relaxation, leads to increased mobility of the pelvic complex and the peripheral joints, which usually results in instabilities of the lower and upper segments that predispose individuals to lower limb dysfunctions.

Butler et al., (2006) said that, a fall rate of 27% was reported during pregnancy especially during third trimester due to a decline in the balancing ability, which persists even after six to eight weeks after delivery. More posterior head position and an increase in lumbar lordosis and anterior pelvic tilt. These anatomic and physiologic changes may contribute to postural instability during pregnancy and may lead to a higher incidence of falls, as reported in a sample of employed pregnant women (Dunning et al., 2010).

But there was no history of fall among the pregnant women who has participated this study.

### **Suggestion regarding gait pattern**

Most of the participants have same opinion regarding their gait about the last trimester. As they all live in a sub rural area they want that awareness and prevention of those problems should be provided in all rural areas. So that many of the pregnant can get proper treatment.

### **5.2 Limitation**

The study topic is new in the context of physiotherapy in Bangladesh. Therefore it was difficult to find sufficient books or journal on this area in the context of Bangladesh. So, it was not possible to compare the findings with other findings in the context of Bangladesh. There is very limited time. This study did not cover the whole span of pregnancy. Sample size may have been too small to detect subtle effects.

**Conclusion**

The study has been conducted to find out perceptions of pregnant women in third trimester of pregnancy. From the result of the study, it was found that, most of the participants said, they walk as a part of work and they feel pain on their foot, knee and ankle during walking. This pain has started from second trimester of their pregnancy and higher at the third trimester. Almost all of them emphasize on pain at back. Many of them also experience heavy foot with swelling and there is very small amount of participants gave negative responses. Some of the participants share their experience about their irritation during walking occur after walking for long time along with pain. There were also some experiences including sweating, thirsty, fatigue, burning sensation on anterior thigh, numbness on their leg after walking and also lack of willingness to walk. There is no significant change in lower limb. They almost don't do any vigorous activity. Body weight increased, but there was almost no negative impact like heaviness or fatigue on their activity or gait. Almost all of them don't face any physical barrier during walking. Therefore, the findings of the study will help the physiotherapist to find out an effective intervention and gait and postural reeducation to the pregnant women of third trimester including gait problem.

**Recommendation**

After completing the research, the researcher found some recommendation. In case of result and discussion, researcher found both positive and limited negative experiences from the pregnant women. A physiotherapist can apply the study results in their professional life; it will help them to provide positive motivation towards their negative experiences. Further research can be conducted with large number of participants regarding pregnancy related problems.



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**APENDIX**





**Permission Letter**

August 31, 2016

Head of the Physiotherapy Department

Bangladesh Health Professions Institute,

CRP, Savar, Dhaka-1343

Subject: Regarding permission to collect data to conduct a research project.

Sir,

I respectfully state that I am Shafika Islam Khan, a student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). In 4<sup>th</sup> year course curriculum I have to do a research project. I have chosen a research title that is "Perception of gait pattern in 3<sup>rd</sup> trimester of pregnancy" under my honorable supervisor Mst. Fatema Akter, Senior lecturer, Physiotherapy Department, Bangladesh Health Professions Institute (BHPI). Now, I have to collect data from OGSB Maternity Hospital, Mother and child welfare centre, Naogaon for which I want your kind approval. I assure that anything of my study will not be harmful for the participants.

I therefore, pray and hope that you would be kind enough to grant my application and give me permission for data collection and oblige thereby.

Yours faithfully

Shafika Islam Khan

Shafika Islam Khan

4th year B.Sc. in Physiotherapy

Roll no: 09, Session: 2011-2012

BHPI, CRP-Chapain

Savar, Dhaka-1343

Soi BHPI  
I have a letter  
to forward  
31/08/16  
Forward to  
Head of dept-PT  
31.08.16





বাংলাদেশ হেলথ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)  
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তারিখ : ৩১.০৮.২০১৬

প্রতি  
মেডিকেল অফিসার (ক্লিনিক)  
মাদার এন্ড চাইল্ড ওয়েলফেয়ার  
নওগাঁ।

বিষয় : রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,  
আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন ফিজিওথেরাপি কোর্স পরিচালনা করে আসছে।

উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামূলক।

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন ফিজিওথেরাপি কোর্সের ছাত্রী সফিকা ইসলাম খান তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আগামী ০১.০৯.২০১৬ থেকে ২০.০৯.২০১৬ তারিখ পর্যন্ত আপনার প্রতিষ্ঠানে সফর করতে আগ্রহী।

তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য প্রদান সহ সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

মোঃ গুফরানুল হক  
অধ্যক্ষ-ভারপ্রাপ্ত  
বিএইচপিআই।



ডাঃ মোঃ গুফরানুল হক  
অধ্যক্ষ-ভারপ্রাপ্ত (ক্লিনিক)  
মা ও শিশু কল্যাণ কেন্দ্র, নওগাঁ।

Consent Form

Assalamualaikum,

I am Shafika Islam Khan, 4th Professional, B.Sc. in Physiotherapy student at Bangladesh Health Professions Institute (BHPI) under the Faculty of Medicine, University of Dhaka. To obtain my Bachelor degree, I have to conduct a research project and it is a part of my study. My research title is **“PERCEPTION OF GAIT PATTERN CHANGE IN THIRD TRIMESTER OF PREGNANCY.”** To fulfill my research project, I need some information from you to collect data. So, you can be a respected participant of this research and the conversation time will be 20-30 minutes. I would like to inform you that this is a purely academic study and will not be used for any other purposes. I assure that all data will be kept confidential. Your participation will be voluntary. You may have the right to withdraw consent and discontinue participation at any time from this study. You also have the right to reject a particular question that you don't like.

Do you have any questions before start this session?

So, I can proceed with the interview.

Yes

No

Signature of the participant and Date.....

Signature of the researcher and Date.....

Signature of the witness and Date.....

Address.....

Mobile no.....

## সম্মতিপত্ৰ

আসসালামুআলাইকুম,

, থ পেশাগত, হেলথ প্ৰফেশন ইন্সটিটিউ  
( ), বিশ্ববিদ্যালয়ের মেডিসিন ছাত্ৰী। ব্যাচেলর  
ডিগ্ৰী প্ৰাপ্তির জন্য একটি পৰিকল্পনা

একটি প্ৰকল্প হ'ল “ **গৰ্ভকালীন**  
**সম্পৰ্কিত** ”। প্ৰকল্প তথ্য

সংগ্ৰহ প্ৰয়োজন। অন্য অংশগ্ৰহণ সম্মতি প্ৰয়োজন

তথ্যসংগ্ৰহের জন্য অংশগ্ৰহনকাৰীৰ থেকে -

যে, এটি একটি অন্য কোন

উদ্দেশ্যে ব্যৱহৃত। অথবা, তথ্য গোপন

অংশগ্ৰহনকাৰী যেকোন মুহূৰ্তে সম্মতি প্ৰত্যাহাৰ ক

প্ৰশ্নটি পছন্দ সেটিৰ উত্তৰ দেওয়াৰ।

শুৰ প্ৰশ্ন ?

, ইন্টাৰনেট য়েতে ,

হ্যাঁ

অংশগ্ৰহণ স্বাক্ষৰ : .....

স্বাক্ষৰ: .....

সাক্ষীৰ স্বাক্ষৰ: .....

Questionnaire – English

**Title: PERCEPTION OF GAIT PATTERN IN 3<sup>rd</sup> TRIMESTER OF  
PREGNANCY**

**Part 1- Patient's Identification**

Name: \_\_\_\_\_

Date of data collection: \_\_\_\_\_

Age: \_\_\_\_\_

Address: \_\_\_\_\_

Phone no: \_\_\_\_\_

Additional phoneno: \_\_\_\_\_

Occupation: \_\_\_\_\_

Week of pregnancy: \_\_\_\_\_

Number of pregnancy: \_\_\_\_\_

**Part 2 - Related information**

1. Do you feel any problem on your foot during walking? (if present then describe)
2. Do you feel fatigue after walking for a while? ( If present then describe)
3. Do you feel any change on your feet since you conceived till now? (If present then describe)
4. Do you face any problem to keep balance? (If yes then describe)
5. Have you experienced fall since you conceived till now?(if present then describe)
6. Say about the pain and discomfort at your lower limb(if present)?

7. Say about the Pain and discomfort at your back( if present)?
8. Do you feel any problem during activity (like bending down to pick up anything, stairing up and down, get up from chair etc)? Describe about your activities of daily living.
9. When you walk keeping your eyes close, what do u feel?
10. Describe about your vigorous physical activities (like heavy weight lifting, washing cloth, digging, sweeping etc) if you did so.
11. Do u feel any effect of your weight in your gait ?
12. Say about your exercise since you conceived till now if you did so.
13. Do you walk as a part of your work?
14. Do you have any physical complaints that are making your walking difficult?
15. Describe about your Gynecological history and any previous abnormality of your lower limb (if you have).

Thank you for your participation n giving your valuable time.

প্রমাবলী:বাংলা

গর্ভকালীন ১

সম্পর্কিত

## ব্যক্তিগত শনাক্তকরণ

উপাত্ত সংগ্রহের \_\_\_\_\_

ঠিকান \_\_\_\_\_

মোবাইল \_\_\_\_\_

বিকল্প মোবাইলনং \_\_\_\_\_

পেশা \_\_\_\_\_

গর্ভকালীন সপ্তাহ \_\_\_\_\_

গর্ভসংখ্যা \_\_\_\_\_

## অংশঃসংশ্লিষ্টতথ্য

. \_\_\_\_\_ সমস্যা \_\_\_\_\_ ? ( বর্ণনা করুন )

. \_\_\_\_\_ ক্লাস্টি অন্ \_\_\_\_\_ ? ( \_\_\_\_\_ বর্ণনা করুন )

. গর্ভধারণ \_\_\_\_\_ থেকে পর্যন্ত ত \_\_\_\_\_ কোন পরিবর্তন ? ( \_\_\_\_\_ বর্ণনা করুন )

. ভারসাম্য রক্ষায় \_\_\_\_\_ কোন সমস্যার সম্মুখীন \_\_\_\_\_ ? ( \_\_\_\_\_ বর্ণনা করুন )

. গর্ভবতী \_\_\_\_\_ থেকে পর্যন্ত ত \_\_\_\_\_ অভিজ্ঞত \_\_\_\_\_ ?

. \_\_\_\_\_ উর , \_\_\_\_\_ ব্যাথা \_\_\_\_\_ ব্যাপারে \_\_\_\_\_ ( \_\_\_\_\_ )।

- কোমরব্যথা এং ব্যাপারে ২ ( )।
- কাজকর্মের কোন সমস্যা (যেমন কোন উত্তলন জন্য ঝাঁকা, - , চেয়ার থেকে ইত্যাদি)?  
দৈনন্দিন কাজকর্মের বর্ণনা ।
- চোখ বন্ধ , কেমন ?
- কাজকর্মের ব্যাপারে(যেমন উত্তলন, , দেওয়া ইত্যাদি) বর্ণনা করুন ।
- প্রভাব ?
- গর্ভধারণ থেকে পর্যন্ত ত ব্যায়াম ব্যাপারে ২
- কাজকর্মের ?
- কোন কঠিন ফেলছে?
- স্ট্রোক সংক্রান্ত পূর্বকালীন উর অস্বাভাবিকতার ব্যাপারে বর্ণনা করুন ( )।
- অংশগ্রহন মূল্যবান ব্যয় জন্য ধন্যবাদ।