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## Metal On Metal Total Hip Resurfacing Surgical Intervention Versus Noninterventional

Tobey D. Schall

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METAL-ON-METAL TOTAL HIP RESURFACING SURGICAL INTERVENTION  
VERSUS NONINTERVENTION

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An Independent Project  
Submitted to the Graduate Faculty  
of the  
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in partial fulfillment of the requirements

for the degree of

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This independent study, submitted by Tobey D. Schall in partial fulfillment of the requirements for the Degree of Master of Science from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

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Faculty Advisor

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## ABSTRACT

Developmental dysplasia of the hip (DDH) is a debilitating condition severely limiting functional ability and long term health outcomes. It is important to understand what may be the best way to help an individual with DDH in preventing further joint dysfunction. The purpose of this project is to increase the awareness of DDH by the nurse practitioner to help promote adequate screening and treatment of this condition. This project identified reasons why a young adult with DDH should have metal-on-metal total hip resurfacing surgical intervention versus nonintervention in achieving and maintaining functional ability.

The Health Belief Model (HBM) was the theoretical framework used in this study. This model was initiated to help examine why some people use preventive measures to keep themselves healthy, while others do not. By utilizing the HBM, we will be able to influence an individual's health care decision based on how he or she views their health condition.

A comprehensive literature review from a variety of sources was used to provide the author an appraisal of interventions to best promote functional ability in the use of the metal-on-metal total hip resurfacing surgical procedure versus not using any intervention to aid in the functional outcome of young adults with hip dysplasia. The facts obtained were presented as a poster session to individuals with interest at the University of North Dakota Graduate School 2010 Scholarly Forum. Current comprehensive information about hip dysplasia, interventions and outcomes were presented to allow the audience to recognize how early treatment can be beneficial to young patients with hip dysplasia.

Providing current information about hip dysplasia and the benefits of metal-on-metal hip arthroplasty, increased awareness of the treatment options for DDH will lead to improved health promotion. Nursing implications, including practice, research, education and policy, can be affected by this increased knowledge in managing DDH. In turn, the function of the nurse practitioner is strengthened.



## CHAPTER I

### Introduction

The exact definition of developmental dysplasia of the hip (DDH) is debatable. Hip instability is said to be the main indicator of this disorder and is hallmarked by the pathologic changes that take place in the hip (Pedersen, Simonsen, Alkjr & Søballe, 2004). Developmental dislocation of the hip may be used interchangeably with the term hip dysplasia in this study. In DDH, there is a spectrum of abnormal developments of the hip where the acetabulum and head of the femur are improperly aligned or do not grow normally. DDH can occur during fetal development, around the time of birth, or after delivery and includes dysplastic, subluxated, dislocatable and dislocated hip joints (Polina & Kennedy, 2008). Hip dysplasia can range from being (a) slightly dysplastic, (b) stable, (c) centrally aligned to having severe dysplasticity and dislocation (Dezateux & Rosendahl, 2007). Sometimes an individual may not display signs of hip dysplasia until he or she becomes an adult. Other times severe dysplasia will become apparent in infancy or during early childhood, becoming most noticeable when the child starts to walk (Gunderman, Strain, Cohen, Fordham, McAlister, Slovis, Smith, & Tosi, 2007).

It is important to try and diagnose hip dysplasia early in infancy, this way, nonsurgical interventions can be initiated. If it is diagnosed too late, generally anything after six months of age, long term consequences such as delayed walking, osteoarthritis, pain in the hip joint, or limping as a result of leg length differences can occur (McKechnie, Sinn & Osborn 2009; Polina & Kennedy, 2008). There are times when nonsurgical interventions are not successful and surgical intervention is necessary.



There are different screening tools to check an infant for hip dysplasia. A physical examination that is done on the hips and lower extremities during the newborn period to check for dysplasia is the most common method used for screening. Hip dysplasia is becoming a common diagnosis and is actually over-diagnosed with the use of ultrasonography in recent years (Dezateux & Rosendahl 2007; Shipman, Helfand, Nygren, & Bougatsos 2006; Shipman, Helfand, Moyer, & Yawn 2006). Many times hip instability diagnosed in infancy renders no need for intervention because usually within the first three months of life, the hip muscles strengthen enabling the instability to resolve on its own (Polina & Kennedy, 2008). One study protocol that is still being researched indicated on follow-up of infants previously diagnosed with hip instability, that 90.4% of them tested normal without intervention (McKechnie, Sinn & Osborn, 2009).

There are several risk factors associated with the development of hip dysplasia. The two factors that contribute to the highest risk are being a female born in the breech position and being a female from a family with a history of hip dysplasia (Polina & Kennedy, 2008). Other risk factors include: (a) a birth weight of over 4000 grams, (b) being the first child born, (c) oligohydramnios during pregnancy, (d) postural deformities in utero, and (e) having other congenital skeletal and joint irregularities (Gunderman et al., 2007; Polina & Kennedy 2008; Stein-Zamir, Volovik, Rishpon & Sabi 2008; USPSTF, 2006). Wrapping a baby up tightly in a blanket for comfort and even diapering an infant with his or her legs straight together, which is common in some communities, also have shown to be a contributive cause of hip dysplasia (Mahan & Kasser 2008; Stein-Zamir, Volovik, Rishpon & Sabi 2008).

## Statement of the Problem

Developmental dysplasia of the hip is one of the most common congenital malformations and is a regular cause of disability in children (Dezateux & Rosendahl 2007; Mahan & Kasser 2008). When these children become young adults, dealing with DDH can even be more difficult and painful. The effects of this debilitating condition can severely limit a person's functional ability. Complications can include: (a) premature osteoarthritis, also known as degenerative joint disease, (b) impaired ambulation, and (c) chronic pain.

The development of osteoarthritis is the most common result in those with DDH (Wei-dong, Jia, Zhen-hua, Yue-song & Ming, 2008). This is because of reduced transfer of load distribution in the dysplastic hip that leads to premature cartilage degeneration. The use of magnetic resonance imaging (MRI) and arthroscopy studies has found that there is a significant correlation between hip dysplasia and joint degeneration (Jacobson, Sonne-holm, Søballe, Gebuhr & Lund, 2005). This study, done by Jacobson et al. (2005), indicated that there is an inclination in those with DDH to develop OA at a younger age than that compared to subjects without DDH. Osteoarthritis is also the most common cause of hip pain. Pain and stiffness can be disabling to an individual and can result in severe limitations in range of motion.

A person with DDH can have a difficult time with ambulation and their walking pattern can be greatly compromised. Being one of these individuals with DDH, it is easy to agree with this statement. It is important to understand the mechanics of the hip when ambulating. The dynamics of a person's gait with hip dysplasia will help determine which intervention, use of physical therapy versus surgical repair, would best benefit the

individual related to mechanical changes taking place in the hip (Pedersen, Simonsen, ALkjaer & Søballe, 2004).

#### Statement of Purpose

The purpose of this project was to gain an in-depth review of current literature to see if there is a relationship between implementing metal-on-metal total hip resurfacing surgical intervention versus nonintervention in achieving and maintaining functional ability of young adults with hip dysplasia. With the increase in diagnosis of hip dysplasia, it is important to know what and if interventions are appropriate. Thus, there was a need to answer the question "For young adults with hip dysplasia, does the use of metal-on-metal total hip resurfacing arthroplasty reduce the risk of hip joint dysfunction compared to nonintervention".

#### Conceptual/Theoretical Framework

The Health Belief Model (HBM) will be used here to provide the framework for this paper. In the 1960s, this model was initiated to help figure out why some people use preventive measures to keep themselves healthy, while others do not (Pender, Murdaugh & Parsons, 2006). There are three different aspects identified by the model as to how an individual values him or herself in an environment. These three areas are derived from Lewin's cognitive theory and are noted as positive, negative and neutral. An individual is to try and include the positive aspects into their lives and to stray away from the negative. Illness can be viewed as a negative aspect. Good health can be seen as a positive aspect (Friedman, Bowden & Jones 2003; Pender, Murdaugh & Parsons 2006).

The HBM can be useful in finding people who may or may not use preventive strategies. It can also propose interventions that could possibly help persuade reluctant



individuals to use preventive measures. Prevention is a strategy used to avoid negativity.

There are variables described that may affect the decision one may use to take action to steer clear of disease. They include:

- An apparent threat that he or she may be vulnerable to the disease or condition.
- The belief that taking action is going to benefit health compared to the awaiting consequences.
- How an individual foresees dealing with the disease and its severity on how they would have to live his or her life.
- Perceived benefits prevail over the barriers, for example time, pain, cost, hassle and embarrassment or shame (Friedman, Bowden & Jones 2003; Pender, Murdaugh & Parsons 2006).

Demographics, sociopsychological and structural factors indirectly play a part in modifying the actions taken and is based on one's perception of threat or the potential significance of a health problem. Cues to action, described as immediate stimuli that is needed to generate thought of the threat, or disease, also takes part to modify actions one may take toward a perceived illness. Perceived barriers such as costs, danger, unpleasantness, hassle and use of time may lend toward the negative aspects of illness. Perceived barriers, along with the views of being susceptible to a disease, are two variables pertinent in research to help configure preventive interventions (Friedman, Bowden & Jones, 2003).

The use of the HBM in this paper will help to understand how prevention is a key factor in health practices and is established from evidence based studies. It is how a person views his or her health condition with their own beliefs that will help them to

decide if they want to sway to the negative aspects, the positive aspects or neutrality regarding his or her health. By understanding the HBM, we will be able to influence an individual's health care decision based on how he or she views their health condition.

### Key Definitions

For the purpose of this study, the following terms are defined:

Acetabulum: the cup shaped formation in the hip which houses the femoral head

Dysplastic: refers to hips having insufficient acetabulum formation. This may not necessarily be clinically apparent, but it causes various radiographic abnormalities (Poline & Kennedy, 2008).

Dislocatable: the head of the femur bone can be displaced from the acetabulum related to stress maneuvers (Polina & Kennedy, 2008).

Dislocated: this is where the femoral head is located completely external from the acetabulum (Polina & Kennedy, 2008).

Harris Hip Score: this is a questionnaire that addresses how one feels they are doing after hip surgery compared to prior. It assesses pain, function, which includes daily activities and gait, range of motion and absence of deformity. It scores all categories together and ranges from 0-100. The scoring outcomes are as such: 90-100 points indicates excellent outcomes, 80-89 indicates good outcomes, 70-79 means fair, 60-69 is poor and anything less than 60 indicates a failed result (Harris, 1969).

Osteoarthritis: a chronic condition that affects joint function related to disruption and may lead to loss of cartilage in the joint. Other changes may also occur to the affected joint.

The term osteoarthritis (OA) may also be identified as osteoarthrosis or degenerative joint disease (DJD) (Altman, 2008).



Subluxated: the femoral head being partially displaced outside the acetabulum (Polina & Kennedy, 2008).

UCLA Hip Score: scoring system that compares how one feels after hip surgery as compared to before surgery. This scores the sections of pain, walking, function and activity separately to learn more specific evaluation of each. Each section is rated from 0-10 with 0 meaning complete dysfunction up to 10 meaning full activity (Williams, Petruccelli, Elliott, Bauman & de Beer, 2008).

#### Significance of the Study

This independent study will aid young adults, medical practitioners and researchers with information related to hip dysplasia and intervention/s that may or may not accommodate the individual best functional outcome. It is important as a health care provider to understand what may be the best way to help an individual with hip dysplasia in preventing further joint dysfunction. Having this knowledge will allow options for the best possible outcomes in the care of these individuals.

#### Assumptions/Limitations

An assumption that is made is that a person has to be in pain before any treatment should be considered or initiated. It can be falsely assumed that osteoarthritis is a condition that would affect an older adult rather than a younger adult. It can be assumed that if there is no intervention done for total hip resurfacing that this is called nonintervention.

There are few studies that look at the functional outcomes of patients (such as gait and pain perception) who have undergone therapy for DDH. The effectiveness of interventions in DDH is not known because there is a high rate and unpredictable nature

that it will resolve on its own when a person is in their youth. There is also an absence of comparative studies of using intervention versus not using intervention in hip dysplasia (Shipman, Helfand, Nygren & Bougatsos, 2006). A limitation to this study is then the lack of information or studies that have previously described the effectiveness of interventions on functional outcomes of those young adults with hip dysplasia.

### Summary

Hip dysplasia is becoming a common diagnosis related to the technology of ultrasonography. It is important to treat hip dysplasia when a person is in early childhood when nonsurgical interventions can be implemented with good results. It may be more difficult to treat an individual for hip dysplasia when the condition is severe or when it is not diagnosed early on. This independent study will look at interventions to best promote functional ability, thus helping to prevent the likelihood of developing osteoarthritis and disability.

## CHAPTER II

### Introduction

Developmental dysplasia of the hip is one of the most common congenital malformations and is a regular cause of disability in children (Dezateux & Rosendahl 2007; Mahan & Kasser 2008). Several reports note that the incidence rate of DDH varies between 1.5 and 20 per 1000 live births (USPSTF, Polina & Kennedy 2008). When children with this condition become young adults, dealing with DDH can be increasingly difficult and painful. The effects of this debilitating condition can severely limit a person's functional ability. This literature review will assess the use of the metal-on-metal total hip resurfacing surgical procedure versus not using any intervention to aid in the functional outcome of young adults with hip dysplasia.

Sources of evidence used to search for studies related to this project include Cochrane Library Database, PubMed, Cumulative Index to Nursing and Allied Health (CINAHL), and National Guideline Clearinghouse. Also reference lists of relevant articles were searched for additional information and the Google Internet search bar was used to find defining terms. The focus on the study technique was to utilize randomized controlled trials to generate data to find relevant information.

Keywords that were used to conduct the research for this study included osteoarthritis, hip dysplasia, total hip resurfacing, intervention and young adults.

### Review of Literature

In teens and young adults, hip dysplasia is characterized by proximal femur malposition and an acetabulum that is shallow and obliquely-oriented (de Kleuver, Kapitein, Kooijman, van Limbeek, Pavlov & Veth, 1999). There is a poor understanding



of the cause and nature of hip dysplasia. As stated previously, there are screening guidelines that are established to detect DDH early in an infant's life but the effectiveness of these remains controversial. There was no direct evidence, as noted by the U.S. Preventive Services Task Force (USPSTF), that screening for DDH leads to a reduced need for surgery or improved functional outcomes. Even with early diagnosis, nonsurgical intervention sometimes does not work to correct the malformation from DDH. If this happens, surgical intervention is most likely necessary to correct the problem. As indicated by the U.S. Preventive Services Task Force (2006),

there is evidence that screening leads to earlier identification; however, 60% to 80% of the hips of newborns identified as abnormal or as suspicious for DDH by physical examination and >90% of those identified by ultrasound in the newborn period resolve spontaneously, requiring no intervention (p. 1).

As described previously, hip dysplasia can be treated surgically or nonsurgically. The use of abduction braces or harnesses may be used in children as nonsurgical interventions for hip dysplasia. These devices may not be useful in all cases, thus surgical intervention is the next step for treatment. Complications can arise from both surgical and non surgical interventions. A serious and common complication associated with the use of surgical intervention and nonsurgical intervention is called avascular necrosis. This is a condition in which there is an interruption of growth to the proximal femur in the hip (Connolly & Weinstein, 2007; USPSTF 2006). The USPSTF (2006) indicates that rates of avascular necrosis occurrence vary between 0-60percent for both types of intervention. For a person with hip dysplasia who has avascular necrosis, treatment is focused on the proximal femur to improve its biomechanics.

There are many different surgical techniques used in the treatment of DDH. The majority of them involve reducing the head of the femur to fit better into the acetabulum and sometimes additional procedures are needed to the acetabulum, femur or adducting tendons in the hip (Shipman, Helfand, Nygren, & Bougatsos, 2006). This is done to spread the weight distribution of the body more evenly in the hip to prevent an increased load to a single small portion of the acetabulum (de Kleuver et al., 1999).

The surgical intervention featured in this independent study is that of total hip resurfacing. Establishing that an individual has DDH is most usually done by x-ray, but computed tomography (CT) and magnetic resonance imaging (MRI) can also be used. Once a diagnosis of DDH is recognized the next step is the decision of treatment. A major factor to decide to treat or not may be if the individual has pain or functional disability and how severe it is. Not only should an intervention be implemented for those that present with pain or disability, but it should also be strongly considered as a means of prevention. Dysplasia that goes untreated will cause arthritis and hip joint deterioration. As indicated earlier, DDH is a major cause of OA and disability. Treating hip dysplasia early before these conditions start would seem like a logical thing to do to enhance an optimal outcome.

The technique of total hip resurfacing (THR) has recently been a popular procedure for use in active, young adults, but by no means is this a new procedure. Surgeons have been using this technique for more than 50 years to treat people with arthritis and avascular problems of the hip. This procedure involves removing cartilage and bone that is diseased from the femoral head. A hollow metal hemisphere is replaced in this spot and then inserted into the pelvis acetabulum (Cigna Medical Coverage Policy,



2008). The benefits of this procedure are that it is conservative of bone, it restores the anatomy of the hip and it can stimulate a low level of stress shielding (Bengts, Sangiorgio & Ebramzadeh, 2008). Since bone restoration of the femoral neck is accomplished with this procedure, it makes for easy conversion to a total hip arthroplasty if needed at a later date.

According to Shipman, Helfand, Moyer, and Yawn (2006), there is lack of information regarding studies to compare intervention versus nonintervention. Due to this, I will look at studies that have used intervention, particularly metal-on-metal total hip resurfacing to treat DDH and prevent or treat osteoarthritis and functional disability.

A recent study was conducted regarding twenty-six total hip arthroplasties done on twenty-one patients with osteoarthritis related to mild DDH (Wei-dong, Jia, Zhen-hua, Yue-song & Ming, 2008). A metal-on-metal prosthesis was utilized. There were fifteen females (71.4%) and six males (28.6%) in the study. This study showed positive clinical outcomes in that there were not any complications related to the THA such as hip dislocation, infection or fracture on follow-up. The surgery also helped to equal out the length of lower limbs in all 9 of the patients that had preoperative discrepancy ranging from 0.8-1.2 cm. All 12 patients that went into surgery with equal limb length came out of surgery with equal length. Another major accomplishment of this surgery in this study was that the pain was almost completely relieved and considerable improvements were made in regards to range of motion. These two outcomes were measured using the Harris hip score (HHS). With the mean age of patients being 46.5 years (37-59 years), there was not much difference noted in the Harris hip score regarding pain between the different ages of patients. The Harris scores regarding pain greatly improved from 35.5

preoperative to postoperative at 90.7. The follow up period for this study lasted from anywhere between 9-29 months, with the mean being 18 months. Even though this is a small sample study, the results indicate that there was much success with the use of the metal-on-metal hip prosthetic in reducing pain and increasing the functional ability of the hip. There was also only a short follow up on patients in this study, lacking the assessment of long term results.

A specific example from Wei-dong et al's (2008) study was the experience of a 57 year old female patient. She had a diagnosis of bilateral hip osteoarthritis secondary to developmental dysplasia of Crowe type I (mild dysplasia). She had been experiencing pain for 30 years and had had definite motion restriction for 3 years. She underwent THR to both hips. Her preoperative Harris score for pain was 35 on the left hip and 40 on the right. Six weeks after having the surgery, her scores increased to 88 and even were higher six months post operatively at 96. This experience helped her to gain much pain relief and she was able to dance as she could before.

Another study (Amstutz, Antoniadis & Le Duff, 2007) used the metal-on-metal resurfacing approach to examine post operative outcomes. The authors found significant overall improvement compared to the preoperative condition. The follow-up period in this study ranged from 4.2 to 9.5 years, with the median being 6.0 years. This study included 42 females and 9 males with the diagnosis of osteoarthritis secondary to developmental dysplasia of the hip. Using the University of California at Los Angeles (UCLA) hip score, pain ratings showed improvement from 3.2 preoperatively to 9.3 post op, ambulation scores went from 6.0 to 9.7 points respectively, function scores went from 5.7 to 9.6 respectively and the activity scores went from 4.6 to 7.3. Flexion also improved

from 106° to 129.6°. Of these 51 patients, 5 of them needed to have a total hip arthroplasty related to failure of the resurfacing arthroplasty. Although one of the hips displayed radiolucency, being invisible on x-ray, around the metaphyseal femoral stem, there were not any complete acetabular radiolucencies. In this study there were not any indications of acetabular failure or loosening of the prosthetic components. This study indicated that if a patient went into surgery with equal leg lengths, they also came out with equal leg lengths. The discrepancy of limb length in this study indicated that preoperatively there were 22 patients (43%) that had a discrepancy. One of those patients was affected bilaterally. Sixteen of the 23 hips involved resulted in equal lengths of the lower limbs postoperatively. The other seven hips remain unequal in length after surgery. A limitation to this retrospective study is that of the short time for follow-up, given that finding more effective responses would occur in follow-up greater than ten years (Amstutz, Antoniadis & Le Duff, 2007). Overall, this study displays a positive nature in the outcomes from the total hip resurfacing procedure indicating that it is likely to have a positive life changing experience.

Although the last two studies described stated an increase in motion from the total hip resurfacing procedures, this next study noted that the range of motion may not be as good as in total hip replacement. Bengs, Sangiorgio and Ebramzadeh (2008) indicated that the metal-on-metal resurfacing prosthetic showed impingement of the femoral neck in twenty nine out of thirty motions. This impingement included almost the entire femoral neck, thus can lead to possible loosening of the resurfacing components and fracture of the femoral neck. In this study, however, an in vitro model was used. It showed that the femoral head and acetabulum in the native, intact hip was not as compatible as that of the



instrumented hip. This allowed for more range of motion because of less control and slight subluxation. Because this study was in vitro, it was not able to show the multifaceted character of that of an in vivo hip implantation. Also, when a person walks, the hips move in synch with that of the lumbar spine and pelvic mobility, which cannot be demonstrated in vitro essentially, which could compensate for the impingements noted from this hip arthroplasty. This study also did not account for different types of pelvises and their anatomy. It only used standardized composite femurs and pelvic bones. There are also different types of implantation techniques to be use when implanting a hip. This study only used one reproducible position throughout. As indicated above, the information in this study had many faults trying to reproduce hip resurfacing.

A study done by Quesada, Marker, and Mont (2008) found that the use of metal-on-metal hip resurfacing actually can increase range of motion and activity and account for a gait pattern that is closer to normal. The THR revision is also easy to repair and conserves bone of the femoral neck. This study shows data indicating that THR accounts for a lower percentage of hip dislocation, being 0.21% which is indicated in the international literature. The senior editor of this paper (M.A.M.) performed 1486 resurfacings resulting in only 2 dislocations. This study also states that disadvantages can include increased risk for fracture of the femoral neck and decreased bone conservation in the acetabulum. There are also possible problems with the metal ions from this prosthetic. This study denotes that the most appropriate population to perform total hip resurfacing on is in young adults under the age of sixty and men who are active. There are critics of this study that do not necessarily agree with the noted advantages and state that there is not any evidence of long term data to support these advantages.

## CHAPTER III

### PROJECT

#### Introduction

The understanding of hip dysplasia and its potential treatments for young adults are important to understand so that the optimal outcome can be achieved to help these people attain better function ability for an improved quality of life. The purpose of this study was to provide up to date information about hip dysplasia and how metal-on-metal hip arthroplasty can benefit young adults prior to developing osteoarthritis, impaired ambulation and/or chronic pain. This will lead to increased awareness of the benefits of treatment prior to the development of disabling symptoms.

#### Project

The target audience of this study was peers and potential healthcare providers attending a research forum at the University of North Dakota, who may encounter patients with signs and symptoms of DDH or care for these patients. The intent was to help these people understand the need for accurate diagnosis of DDH and the benefits of treating a child when very young. "Metal-On-Metal Total Hip Resurfacing Surgical Intervention versus Nonintervention in Achieving and Maintaining Functional Ability of a Young Adult with Hip Dysplasia" was presented at the University of North Dakota Graduate Forum as a poster display (Appendix).

The poster presentation was developed based on findings from an extensive literature review. It was available for peers to view and discuss the findings, with the researcher being available for questions and answers. Current comprehensive information



## Summary

There was not a significant amount of interaction with the target audience; however, it indicated there was necessity for this project. It showed that not everyone knows what hip dysplasia is or that it can cause significant disability. It also indicated that wear on the hip joint over time can lead to significant functional disability and total replacement of the joint. This denotes that there is a need to educate about the importance of joint health.

## CHAPTER IV

### Nursing Implications

When it comes to nursing, there are some implications that come into play. They include practice, research, education and policy. These are addressed to help gain insight of the nursing profession. It is important to discuss these implications because of the major role they play throughout our career. By conducting this study, I have found that I have gained knowledge to fulfill all of these implications and will help me in my nursing practice.

### Expected Results of Project

The expected results of this study included several outcomes. This was a very educational learning experience for me because being one with hip dysplasia I have found many types of opportunities that there are to help better my medical condition. I also have a sister that has DDH who would also benefit from my research findings. It is anticipated that the individuals who attended the poster presentation will have a better understanding that individuals with DDH can benefit from early treatment rather than waiting until disability and/or pain develops to treat this individual. This will also help me as a healthcare professional to understand that there is treatment for DDH early on and that it is not always the patient's best interest to wait for treatment.

### Practice

The nurse practitioner can play a valuable role in identifying patients with DDH. A patient can be assessed by the nurse practitioner and can be educated about this condition. It is important for the practitioner to know the basic physiology of the hip and

to recognize when further help may be necessary. An appropriate referral can be made to help this patient get the help that he or she needs.

Increasing the awareness of DDH by the nurse practitioner can help promote adequate screening and treatment of this condition. It is important to catch this early on and use nonsurgical treatments if able. Developmental hip dysplasia is often hereditary, so it is important for the practitioner to ask questions about other family members as well.

#### Research

A better understanding of the disease will help to make earlier diagnosing of DDH possible, especially since the cause of DDH can be related to genetics (Rubini, Cavallaro, Calzolari, Bighetti, & Sollazzo, 2008). Earlier diagnosis could thus mean earlier treatment. It is important to decipher between the risks and benefits of treatment for DDH, but there is good evidence that initiating treatment before disabling symptoms occur is key. As indicated by Shipman, Helfand, Moyer, & Yawn (2006), there is lack of information regarding studies to compare intervention versus nonintervention for treating hip dysplasia. Further research is needed in order to help practitioners recognize this disorder and to help healthcare consumers make the best decisions in treating DDH to obtain the best possible functional outcome.

#### Education

It is important to keep healthcare professionals up to date with all current trends in healthcare. Having educational meetings has proven to be beneficial in keeping staff updated, thus improving the healthcare outcomes of patients (Forsetlund, Bjørndal, Rashidian, Jamtvedt, O'Brien, Wolf, Davis, Odgaard-Jensen, & Oxman, 2009). Increased



awareness of this disorder will help improve the diagnostic ability of the practitioner and will give patients more known beneficial options for treatment.

### Policy

When discussing information about developmental hip dysplasia it could be advised to use the Health Belief Model as a guideline. This can help the practitioner decide with the patient what type of treatment would be the best at the current time for the patient. Including a patient in their treatment plan can help optimize the compliance of treatment and reach goals of functional ability and reduction or elimination of pain. Guiding the patient with information regarding the treatment options of DDH would be presented as well as its effects on functional ability outcomes and pain reduction thus allowing the patient to feel confident that they are helping to make the best healthcare decision for their own best interest.

### Summary

As previously stated, it is important for early diagnosis and treatment of developmental hip dysplasia. Not only should the extensive research that I have done prompt healthcare workers to the importance of the recognition of this disease, it also helped me understand this condition more as a person living with it. Although more research is needed in this area, the findings so far have been promising in such that earlier diagnosis of DDH and earlier treatment can help to prevent disabling conditions that can and do arise from not treating this condition.