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FOETAL WELL-BEING IN PRIMIGRAVID PATIENTS IN A MULTICULTURAL COMMUNITY

Barbara- Ann Lester

A dissertation submitted to the Faculty of Health Sciences, University of the Witwatersrand, in Fulfillment of the requirements for the degree

of

Master of Science (Nursing)- Midwifery

Johannesburg 1998

I, Barbara-Ann Lester declare that this dissertation is my own work. It is being submitted for the degree of Master of Science in Nursing - Midwifery.

Signed.....

.....26th.....day of.....March.....,
1998.

Dedication.

To my family, with gratitude and affection.

SUMMARY

The introduction of free mother and child services in South Africa in 1994, changed the way in which the services were delivered. There was an increase in the number of women seeking services, therefore a need arose to look at what constituted essential, basic services.

The introduction of the maternal held card in State hospitals enabled the women to seek ante-natal care at the venue most accessible to her. This document also involved her in the responsibility of her own care and that of her unborn child.

This study explored the information which mothers had been given ante-natally to assist them with the task of bearing the responsibility of their unborn child's health, which they had unilaterally been given by the Healthcare providers.

A descriptive study was undertaken and 221 primigravid patients were interviewed at a large academic hospital post-delivery using a structured interview schedule. Their records were also reviewed

retrospectively for type of delivery and foetal outcome.

Results of the studies found that the mothers were given insufficient information to equip them with responsibility of assessing foetal health. Health-care providers, it was found, did not give specific information and it appeared that at times, the mothers report of decreased foetal movement was disregarded.

Implications of the study are that healthcare providers need to pay attention to how they provide information.

The women interviewed clearly made the distinction between what was seen as 'teaching' and what was perceived as information given. It is also important to note that although the health workers understand the implications of foetal well-being, patients do not necessarily share the same insight or sense of responsibility. This has implications for the delivery of antenatal services in South Africa.

OPERATIONAL DEFINITONS.

Low- risk patient a patient who has been assessed at first visit and whose health history is not complicated by more than one risk factor.

Hi-Risk Patient a patient whose pregnancy is Complicated by two or more risk Factors for example,Hypertension and advanced maternal age.

Midwives' Patient a patient who is low-risk and whose care is solely supervised by Midwives.

Registered Midwife a practitioner who is registered with the South African Nursing Council to practice midwifery.

Nursing Student a student of nursing who is registered with the South African Nursing Council as a student nurse.

Primigravid. a woman who is pregnant for the first time

Transitional Unit	a unit which observes neonates who need closer surveillance within the first twelve hours post delivery but do not require long-term intensive care.
Doula	a traditional support person during labour
Traditional Birth Attendent	usually a woman in the community who attends to the delivery and after care of the mother and child and who has no formal education in midwifery.
Matenal held Record.	A record containing pertinent information relating to reproductive health. The mother always carries it.

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CHAPTER 1

"When those who are used to speaking out learn to listen, and those who are used to listening learn to speak out, then we'll have real change."

(Porter 1993)

1.1 INTRODUCTION

In February 1996, a patient held card was introduced in the antenatal care of patients at provincial hospitals in the Gauteng province. The card contains a brief summary of pertinent patient history and details of care currently being received. It is specific to maternity care (vide Annexure 1). The service rendered was based on the principle of care being delivered at the lowest level in a cost-effective manner. To achieve this, the patients were assessed and categorized according to their level of risk (vide Annexure.2).

Experienced midwives supervise the care of low-risk patients. Medical practitioners see the 'hi-risk' patients. Introduced simultaneously was the concept of subjective foetal movement monitoring as an assessment of foetal well being. In both categories of patient, foetal health is primarily the responsibility of the mother. The mothers are expected to notice daily foetal movement activity and to report any significant changes, which may or may not occur. In 1994, the Government of National Unity introduced free mother/child services. This resulted in an increase in the number of mothers seeking care. There was a need to rationalize the care being delivered and to introduce effective, low cost interventions such as subjective foetal monitoring. According to McCaul & Morrison (1990) maternal quantitative assessment of the foetus is a useful determinant of foetal well being. The

science of foetal health developed as a result of research, which showed a direct correlation between foetal well being and the perinatal morbidity and mortality rate. The perinatal morbidity rate is a "sensitive indicator of the efficiency of the health services"(AbouZahr, C. Wardlaw, T.Stanton, C and Hill,K 1996:77). Research done by Sadovsky (1973) and Pearson & Weaver (1976) recommended the use of foetal monitoring charts, commonly called 'kick-charts'. These charts involve the mother in counting the movements felt each day and charting them on a Graph (vide Annexure 3). The assumption was made that the mother had the necessary arithmetic skills to complete the task. Freda, Mikhail, Mazloom, Polizzotto, Damus & Merkanz (1993) suggested that research was needed amongst various race groups and cultures and more specifically in developing countries to determine whether these methods were appropriate. The South African Perinatal

mortality rate is estimated to be 77 per 1000 live births (Tinker & Koblinsky 1993). This is higher than the rate of 57 per 1000 as accepted by the World Health Organization (W.H.O 1989a). In the context of the delivery of maternal/child health services in Gauteng, there appears to be lack of clarity regarding what mothers need to be taught about foetal movement and what actually constitutes adequate foetal movement. Currently, practices vary from spending time with the patient to establish her understanding of foetal movement, to asking "is your baby moving?" with little follow-up of what may be a negative or positive response. In designing a teaching approach for mothers, consideration needs to be given to the mothers understanding of foetal movement.

1.2 The Background of the Problem in the South African Context.

The introduction of free mother and child-care in 1994 impacted on the health-care services and the way in which they were delivered. One such outcome was the increase in numbers of women seeking antenatal services. Historically the rural women have had little or no access to these services. This was due to legislation put in place by the previous government in the form of the Group Areas Act, which permitted limited movement from one magisterial area to another. Health services in the rural areas were very limited and 42% of the women who delivered their babies in these areas were unattended during the childbirth process (Hirschowitz & Orkin 1994). The change of government enabled the rural women the freedom to move from one area to another for health care. Women sought care at the large academic hospitals during their pregnancies

because primary health care services (Health Centers) were not available in the rural areas. In addition, research done in the Pretoria-Witwatersrand-Vaal (PWV) triangle, identified a lack of available primary care services (Women's Health Project 1994). As a result of these factors, there was overcrowding of tertiary level hospitals with patients who did not require the skills and expertise offered by these institutions.

This phenomenon is not peculiar to South Africa. Studies done in Britain by Marjorie Tew (1990:18) suggest that hospital supervision of the antenatal period, was "desired as an assertion of social status." She further suggests that " ante-natal care represents escape from the stigma of poverty and social inferiority".

The increase in patient load resulted in the health care professionals looking for the most

cost-effective way to deliver these services. One such intervention was the introduction of a patient held card (vide Annexure 1). This allowed the woman to seek attention from the nearest or most convenient clinic available to her. Another intervention was the rationalization of the number of visits which a woman could reasonably expect. An average of four visits, in addition to the first visit was seen to be sufficient (Theron 1997). In addition, the women were categorized as 'hi risk' or 'low risk' and the low-risk patients became the responsibility of the midwife. The Gauteng health authorities instituted a protocol to enable health care professionals to identify the risk status of the patients (vide Annexure 2). Another aspect of the changes in health that affected the delivery of care, was that in the White Paper for the Transformation of the Health System in South Africa, the Minister introduced the concept of self responsibility in the

attainment of a state of health. In keeping with this philosophy, the responsibility for foetal well being shifted from the caregiver to the mother. The women were expected to assess movement of their foetuses and report on whether this was adequate or not. In the large academic hospital, in which the study was undertaken, no clear policy or protocol was put in place as to what constituted 'good foetal movement' and what should be done should the mother report a change in movement. There was also a lack of continuity of follow-up on reported decreased movements. In addition, although the hand-held card is meant to be implemented on a national level, how effectively it is implemented and used appears to vary from district to district. It is against this background that the researcher carried out her research, which was to establish if the mothers were being empowered with adequate information in order for her to take the responsibility of subjective foetal monitoring.

The researcher also wanted to design a draft proposal for a protocol to be used for teaching student nurses about the surveillance of foetal well being. In academic hospitals, the nursing students have an active role in the care of the mothers in the clinic.

1.3 The Setting

The hospital in which the research was carried out, is a large academic hospital, which delivers a comprehensive healthcare service for the central city area. The maternity services which are offered include, family planning services, Termination of Pregnancy (TOP) services, ante-natal clinics, genetic services, specialized diagnostic testing such as amniocentesis. The labour ward currently manages complicated and uncomplicated deliveries. The maternity Unit has the capacity of 64 postnatal beds, 12 delivery beds and 30 antenatal beds. The unit also provides

specialized care for compromised neonates. It serves as a referral centre for patients from the Vaal triangle area who require specialized care. Attached to the maternity unit are the facilities of a Transitional Unit (9 Beds), a Prem Unit (10-15 beds) and a Neonatal Intensive Care (5 beds). The Transitional Unit is situated in the labour ward. Neonates who at delivery, have poor apgar scores, who experience respiratory difficulties and who are unable to maintain thermoregulation, are managed in this unit. The unit is adequately staffed for 9 neonates, but on average, 20 neonates per day are nursed in this unit. The Prem Unit (10 beds) manages those neonates who require long-term high care due to prematurity and any other neonatal complications. A Neonatal ICU has 5 beds and infants who are classified as 'critical' are nursed in this unit.

The total number of deliveries done by the unit is in excess of 9,000 per annum. The mean

average from June 1996 to July 1997 was 673 per month. Although this unit offers a high level of expertise, it also deals with the uncomplicated pregnancies and deliveries. Midwives supervise the care of these patients.

The Peri-Natal Mortality Rate(PNMR) for this setting is not available.

1.4 The Research Question.

1.4.1. What are patients being taught in regard to subjective foetal surveillance?

1.4.2. What do patients understand about foetal monitoring?

1.5 The Purpose of the Study.

To establish what mothers attending the antenatal clinic of a large academic hospital in Johannesburg are being taught about foetal movement. In this unit the mothers share the responsibility of monitoring foetal movement as an indicator of foetal health. The patient population of this hospital is multicultural and

multi-lingual. Given the diversity of language and culture of the patient population, the purpose of the study was to find out what mothers know and understand about foetal movement.

1.6 The Objectives of the Study

The objectives of this study are to:

- Establish the information which mothers had been given about subjective foetal surveillance
- Identify whether the patients were being taught to monitor the movement of their foetuses by counting kicks.
- Identify whether education, age and planning of the pregnancy influenced the way in which the information was given and received.

1.7. Conclusion

Subjective foetal monitoring is a cost-effective means of monitoring the foetus in order to identify the compromised foetus and to enable appropriate referral of those pregnancies where the foetus, is at risk.

It does require that the mothers take a more active role in this regard and that health professionals learn to listen to their patients to make this partnership of care as effective as possible.

The following chapters will include a review of the literature, the methodology used, findings and a discussion of findings and finally, the limitations of the research and the recommendations for midwifery education, practice and research.

CHAPTER 2.

Literature review.

In this chapter the following will be discussed;

2.1 The Historical background

2.2 Selected factors influencing foetal health

2.3 The assessment of foetal well-being

2.4 Conclusion

2.1 The Historical Background

Pregnancy has for many centuries been seen as a physiological event in the lifespan of women. Maternal mortality was to a large degree seen as part of this process.

Field (1990) states that it was only in the 20th century that "pregnancy was seen as a condition that warranted supervision". This ' supervision ' was to a large degree limited to the very wealthy. The rise of the women's movement in

Britain in the early 1900's was synonymous with an increase in the demand for services such as regular antenatal visits, which they deemed prophylactic (Field 1990). Despite the demand for care, several studies done at this time (Ministry of Health, 1929) showed that there was not a decline in the maternal or infant mortality rate. Sylvia Pankhurst observed that until the clinics were proved to be efficient, women could not be expected to use them (Field, 1990). Events during the Second World War led to the evacuation of women to the countryside. Pregnant and lactating women were given extra rations. There was an unexpected reduction in the maternal and infant mortality rate (MacFarlane & Mugford 1984). This event added impetus to the need to reduce the maternal mortality rate. The involvement of physicians in maternity care reinforced this need. Dr.J Campbell (Chamberlain 1990) an obstetrician practicing in Britain in the 1920's, is credited as being the first practitioner to

institute a system of antenatal visits, attention being paid, not only to the health of the mother but to that of the foetus as well. Dr.Campbell recommended a uniform structure of visits for all pregnant women in Britain. She suggested that a medical officer should see the patient at first visit and then again at 32 weeks & 36 weeks. All subsequent visits were to be supervised by trained midwives. Additional to the defined frequency of visits, Dr. Campbell also suggested that at each visit, the uterine height should be checked, the foetal heart listened to and maternal observations such as, blood pressure and urinalysis should be carried out. South Africa was a member of the Commonwealth and as such, the obstetric services were based on the British model of care. These services catered predominately for the white population.

By 1946,there was an improvement in maternal mortality and morbidity in Britain. Reasons for this are unclear. Improved nutrition and socio-economic conditions being the most commonly cited reasons (Macfarlane & Mugford, 1984).

2.2 Selected factors which influence foetal health.

According to Mohide & Enkin (1990), there has been a shift in focus in the past three decades from the well being of the mother to that of her foetus. In the industrialized countries this shift is seen as a result of the improvement of the maternal mortality rate. With the trend towards smaller families, emphasis is placed on a healthy foetus which accentuates the well being of each individual baby.

In the developing countries, this is not true. According to Hughes and Simpson (Stout 1997:172) "women who live in poverty, who have low levels of education, who work in low-wage jobs, and who have

have fewer social resources are more likely to suffer adverse birth outcomes than are the more advantaged women." According to the World Health Organization (WHO), in developing countries people prefer large families to smaller ones. Most women start childbearing too early, stop too late and pregnancy occurs too frequently (WHO 1991).

The Infant and Maternal Mortality rates are taken as measures of comparative disadvantage (AbouZahr Wardlaw Stanton & Hill 1996). Levels of maternal and infant mortality demonstrate a great disparity between industrialized and developing countries. According to the 1996 World Health Organization's statistics, 1 woman in 50 still dies as a result of pregnancy-related complications. The death of a woman of reproductive age can bring hardship to a family in poverty. Studies done by Agarwal (Tinker & Koblinsky 1993) indicated that one fourth of male-headed households rely on female earnings.

It is estimated that one-fourth to one-third of the world's households have women as the sole breadwinners (World Bank 1991). Women in Africa produce most of the food necessary for the household. The death of these women has a devastating effect on the lives of her foetus, infant, family and community. Complications that affect women during pregnancy and childbirth affect the foetus as well. The majority of pregnancies that end in maternal death, also result in foetal or perinatal loss. Pregnancy is a dyad- the mother and the foetus- and services which address maternity care must address the health of both. Many pregnant women in the developing world receive little or no prenatal care (Tinker & Koblinsky 1993: 68). Many reasons are cited for this: lack of resources, poor accessibility, and cultural barriers. According to Koblinsky (Tinker & Koblinsky 1993) routine statistics and studies suggest that women who receive prenatal care experience lower rates of

maternal and infant mortality. It is postulated (although not necessarily so) that foetal surveillance will improve the delivery outcome of the neonate (Hugue Zahidul & Koblinsky 1991). Although criticism of these particular studies alluded to a bias in selection, available evidence does suggest that women who have prenatal services are more likely to use delivery services.

In an effort to reduce the high toll of the infant and maternal mortality, the Safe Motherhood Initiative was launched in Nairobi in 1987 by the World Bank, W.H.O and agencies from 45 countries. It was intended that this strategy would reduce maternal illness and death by half by the year 2000. This obviously would impact on the health of the foetus and neonate. Elements of this program include the following:

- Improved family planning services
- Improvement of ante-natal services
- Management of maternal problems & infections

- Improvements in delivery practices
- Safe Abortion practices
- Obstetric first aid
- Routine care and screening of the neonate

South Africa is a mixture of first and third world and the Safe Motherhood Initiative has been implemented to address the disparities in health care which were prevalent during the years of apartheid.

2.3 The assessment of Foetal Health

Foetal well-being as a science gained impetus with the development and extension of the provision of ante-natal services when mother and foetus were seen as a unit and as such social implications of care began to play a role.

It was not until 1918 that Meyer of Geneva first heard a foetal heart (Field 1990). Knowledge of the physiology of pregnancy was limited. The development of x-rays in the early 1900's allowed doctors to measure the pelvis and at the same time obtain information about the foetus in utero. In the 1920's the term "perinatal mortality" was first used. It referred chiefly to foetal death (Chamberlin 1990). Causation was at that time thought to be obstetric, if the death occurred at birth or within the first seven days. Any death after that was considered to be paediatric.

Pioneering work in the epidemiological analysis of perinatal deaths done by Dugald Baird of Aberdeen led to the development of a management procedure to be used in the care of the foetus and the neonate. Baird suggested a regime of regular antenatal visits, attention being paid to the health of mother and foetus (Oakley, 1982). The use of ultrasound by Ian Donald in the early 1960's allowed for the non-invasive assessment of the foetus in utero, in a safe and precise manner. Of major significance, was that the ultrasound allowed for serial readings to be made on the same foetus. Important to note too, was that for the first time foetal movements could be compared, which enabled biophysical measurements to made of functions such as respiratory movements, gross body movements, fine detailed movements of the fingers and toes and cardiovascular functioning (Hepper, 1990). Movement was to become an important indicator in the assessment of foetal health and numerous

studies carried out attempted to define and characterize the movement in order to establish a norm reference for what constituted a healthy foetus (Gegor 1991;Davis 1987;Freda; 1991). According to Hepper (1991) one can use the behaviour of the foetus to assess it's health status. Hepper suggests that observation of foetal behavior reflects the integrity of the neural system. To exhibit normal behaviour requires an intact neural system. He postulates that foetal movement may well provide an indication of neural dysfunction and in observing foetal behaviour and movement, one can assess foetal well-being.

The question needs to be asked, what is normal behaviour of the foetus? According to Hepper(1991:194-195) "any observable action or reaction of the foetus" is considered normal foetal behaviour. Physiological & anatomical functions such as heart rate, stomach and bladder emptying can be observed on the ultrasound, this

has enabled in utero diagnosis of a normal foetus.

Biomedical and biochemical tests have enabled a more detailed assessment of the condition of the foetus to be undertaken, the latter being to a large degree, invasive in nature.

The use of amniocentesis, chorionic villus sampling and alpha-feto-protein assessment has led to the early detection of foetal handicap (Hepper, 1991). These tests for the most part are particularly useful in early pregnancy.

Assessment from the 28th week of pregnancy is reliant on the biophysical profile, the non-stress test (NST) and foetal movement counting.

The Foetal Biophysical Profile was proposed as an assessment technique by Manning, Platt & Sipos in 1980. The use of the Foetal Biophysical Profile (FBP) is based on a composite assessment of five foetal parameters (Reeder, Martin & Koniak-Griffin 1997: 1073). The assumption is made that observation of several variables, is superior to

the observation of a single variable. It involves the use of an ultrasound and a cardiotocograph. The five foetal parameters which are evaluated are: the NST, the observance on ultrasound of the amniotic fluid volume, foetal tone, foetal movements & foetal breathing activity. Each of these variables is scored 0-2. If the parameter is normal, then a score of 2 is given. The sum of the scores is used to determine foetal health. A score of 8- 10 indicates a healthy foetus. Research studies have shown this test to be particularly reliable in high-risk pregnancies (Arulkumaran,James, Steer, Weiner and Gonik 1995). In a controlled trial, Manning, Lange & Harman (1984) compared the predictive value of the biophysical profile (BPP) and the NST. They found that biophysical scoring was able to predict 50% of perinatal deaths. They suggested that biophysical profiles were more sensitive than non-stress tests. A similar study (Platt, Walla, Paul, Trujillo, Loesser, Jacobs,

Broussard 1985) found a predictive value of 67%. The non-stress test (NST) is commonly used to assess foetal well-being. A cardiotocograph is used to observe changes in foetal heart rate (FHR). The test is usually performed when the patient is not in labour and therefore the foetus is not under any stress. The heart rate of a non-acidotic foetus will temporarily accelerate in response to foetal movement (Reeder et al 1997). If two or more accelerations are observed in 20 minutes, in response to foetal movement, the test is said to be 'reactive'. The accelerations should not exceed more than 15 beats above the baseline and last for 15-20 seconds. It does require expensive equipment in the form of a cardiotocograph. The mother is required to participate by pushing the movement sensor button each time that she experiences a movement. The movement is marked on the graph paper when the mother pushes the button. In this way, there is visual representation of the changes in the

foetal heart rate in response to foetal stimulation. There are factors which influence the reactivity of an NST. The blood glucose level is important and when the mother has not eaten prior to the performance of the test, a negative result may be produced. Nicotine has been shown to reduce foetal movements for 4-6 hours and this would result in a negative test. The foetus could also be in a sleep cycle and this would result in a negative result. The test requires that the staff who use the machine are sufficiently skilled to interpret the resulting recordings. The advantage of the NST is that it is non-invasive and relatively simple to use. It is a useful test to perform when there is a history of decreased foetal movements and management decisions have to be decided. Arulkumaran et al (1995) suggests that the NST is particularly useful for foetal surveillance in prolonged pregnancy. He does suggest that if accelerations do not occur within the first ten minutes, the

trace should be continued for at least forty minutes prior to confirming the test as non-reactive and making management decisions on this basis.

Foetal vibro-acoustic stimulation has been used to reduce the number of nonreactive NST's and subsequently the number of surgical interventions during pregnancy. This test involves the application of an instrument to the mother's abdomen, which produces a sharp sound. It is intended to startle and wake the foetus. Acoustic stimulators specifically designed for this purpose, emit sound levels of approximately 80 dB at a frequency of 80 Hz (Reeder et al 1997). Arulkumaran, Anandakumar, Wong & Ratnam (1989) evaluated maternal perception of sound-evoked foetal movement and found that it was a good predictor of foetal health. In their research, the NST was used with adjunctive foetal acoustic stimulation to reduce the number of non-reactive NST's. Their findings concluded a low incidence

of false negatives (3.4%). Arulkumaran postulated that because of growing concern for foetal health there has been an increase in the demand for tests which are not only expensive but require time and skilled personnel. He suggests that maternal perception of sound-provoked movement may be a cost-effective method of confirming foetal health. He does warn that an absence of movement in response to stimulation does not always indicate foetal ill health.

In the context of primary health care in South Africa, Hofmeyr, Lawrie & de Jager(1997) are currently in the process of clinically evaluating acoustic stimulation using an empty soft-drink can. The benefit of this, is the exclusion of expensive vibro-acoustic stimulators and electronic monitoring equipment.

Another test for foetal well being is the use of Doppler ultrasound to evaluate placental blood flow. Doppler detects the movement of red blood cells in the vessels. It is used chiefly to

measure blood flow and velocity. It is a useful tool for the detection of intra-uterine growth retardation, with "a sensitivity prediction of 55%" (Reeder et al 1997:1061). In a randomized trial, Trudinger & Boylan (1987) compared revealed versus concealed Doppler measurements in the management of hi-risk pregnancies. In the concealed group, obstetric interventions and prolonged stays in neonatal units were more frequent. This study needs to be replicated to confirm the value of the Doppler Study as an assessment tool in the clinical evaluation of the foetus at risk.

Proud and Grant (1987) published a controlled study which looked at placental grading as an indicator of foetal health using an ultrasound. Two large groups (1000 women per group) were used. In the experimental group the results of the doppler studies were revealed to the caregivers. The control (blinded) group had no feedback with reference to the results of the

doppler studies performed. There was a higher incidence of meconium stained liquor in the control group and the 5 minute apgar score was below 7. The unequivocal results warrant further investigation of the theory that revealed tests are more predictive of foetal jeopardy. Biochemical tests for foetal wellbeing are achieved by using maternal serum. Alpha-fetoprotein is specifically used to detect neural tube defects. Plasma and urinary oestriols (E3) have been used extensively in the past to determine the foetal condition. It was thought that abnormal levels of E3 indicated that the foetus or placenta, were compromised. Currently, oestriol determination is not used in the management of complicated pregnancies (Reeder 1997). Harper, Greenberg, Farahani, and Kierney, (1981) concluded that, from the comparative study done by the researchers to evaluate fetal movement, biochemical and biophysical parameters, foetal movement counting was more useful than the

assessment of serum oestriol levels in the determination of foetal outcome.

Maternal perception of foetal movement is one of the oldest and least expensive means of foetal surveillance. It has been shown to significantly reduce foetal and perinatal mortality (Moore & Piacquadio 1989). In this prospective study foetal mortality dropped from 44 per 1000 to 10 per 1000 births.

It was Sadovsky & Yaffe (1973)who suggested that each foetus has its own individual movement pattern and that maternal perception of the movement was dependent on her subjective reaction to the movement. In his study he found that mothers perceived 87% of recorded movement (Davis 1987).

Sadovsky also introduced the concept of the movement alarm signal (MAS) which can be defined as a reduction in foetal movement to three or fewer movements perceived in a 12-hour period.

Sadovsky and Yaffe (1973) suggested that the mother should note foetal movements 3 times per day, one hour in the morning, an hour in the afternoon and finally an hour at night.
The sum of the three hours should then be multiplied by four to determine the daily foetal movement rate (DFMR).
In the Sadovsky (1973) study of 616 high-risk patients, 97 patients were identified by means of MAS. 78% of these patients had poor pregnancy outcomes. It was also noted that foetal death was associated with a rapid fall in foetal movement over 3-4 days followed by a period of no foetal movement for 12-48 hrs. In addition, decreased foetal movement was also associated with intra-uterine growth retardation and small for gestation babies. Sadovsky & Yaffe(1973) suggested that factors such as the woman's character, occupation and stage of pregnancy could influence maternal reaction to foetal movement.

Pearson and Weaver (1976) developed a system for counting movement, commonly called the Cardiff Count to Ten [vide ANNEXURE 2]. This system required that the mother count the first ten movements felt each morning and that the time when the tenth movement was felt should be noted. Ten movements was thought to be the minimum safety parameter for foetal well-being. The information is then plotted, using a graph.

A study done by Westgren, Almstron, Nyman & Ulmsten (1987) compared the NST results with maternal perception of foetal movement in 259 hi-risk pregnancies. They found that maternal perception of foetal movement was more reliable as a first line screening test.

Neldham(1980) did a comparative study of 2250 pregnant women. An experimental group of 50% of the women were given specific information on counting movement. The control group were not given this specific information. There were 8 intra-uterine deaths(IUD's) in the control group

and no deaths attributed to the experimental group. All the women who experienced the intra-uterine deaths (IUD's) reported decreased and/or absent foetal movement 1-6 days prior to the event.

Neldam did conclude that maternal perception of foetal movement was valuable as a screening test, but suggested that to enable the identification of the foetus at risk, the mother needed to be given specific instruction with regard to movement counting rather than having a general impression of foetal activity.

Neldham replicated this study in 1983 (Davis 1987). 3111 participated in the study and similar results to the 1980 study were found.

Freda, Mikhail, Mazloom, Polizzotto, Damus & Mekatz (1993) in a randomized quasi-experimental study compared the Cardiff Count(Vide:35) and the Sadovsky Method. They looked at the issue of compliance and whether women found it easier to remember to count using one of the two methods.

There was not a significant difference between the two methods although women did use the Sadovsky method of charting more frequently.

A study done by Liston, Cohen, Mennutti & Gabbi in 1982 confirmed previous studies by Sadovsky and Weaver that foetal movement counting was an effective and reliable way of assessing foetal wellbeing. Chamberlain (1990) suggests that tests for fetal wellbeing are a necessary and an integral part of obstetric care. Foetal movement as experienced by the mother is a valuable indicator of foetal well-being which can be implemented as an inexpensive assessment tool to identify those mothers and foetuses which may require special care or interventions.

Freda et al (1993) found that an inherent limitation of their study was the fact that only urban woman had participated and that factors such as language and literacy level could not be excluded as a variable. Sorokin, Le Roy & Dirker (1982) found that maternal perception of movement

is modified by several factors, especially psychological factors. Mikail, Freda, Merkatz, Polizzotto, Mazloom and Merkatz (1991) addressed the issue of maternal attachment as an effect of movement counting. Results of this study demonstrated that foetal-maternal attachment was enhanced when the mothers participated in movement counting. This study was conducted in a predominately white, middle-class urban area. Smith, Davis & Rayburne(1992) found that the respondents in their study, expressed feeling reassured when instructed on the methods of foetal movement observation. This would concur with the results of the study done by Eggersten & Benedetti(1987) who interviewed 254 women. 85% of this study stated that they found counting reassuring.8% (n=254) found that it caused more concern than reassurance. Review of recent literature showed no recent research, which examined cultural or ethnic factors, which may impact on maternal perceptions.

Research has been done by midwives in developed countries which has assessed the value of maternal surveillance of foetal wellbeing.

It would appear that there hasn't been any research done by midwives in developing countries to assess the efficacy and adequacy of maternal assessment of foetal wellbeing. In a country such as South Africa where the methodology may well be invalidated by low literacy rates, cultural bias and poor understanding of the language of instruction, the efficacy and appropriateness of these methods remain unknown. Inadequate research has been carried out in the developing world concerning the impact of teaching mothers who often are illiterate, who are attended by a caregiver whose language is other than her (the mothers) home language, the importance of subjective foetal surveillance. It is evident that methods that require counting and graph work may not be suitable for all mothers.

Smith (1990) in discussing the necessity for continuous intrapartum monitoring suggests that adequate assessment of fetal well-being antenatally may help to define those patients who require continuous intrapartum monitoring as opposed to intermittent monitoring.

Grant, Valentin, Elbourne (1989:349) completed a large randomized controlled study to assess the implications of routine counting of foetal movement on women and perinatal services. Their recommendation was that because at least a third of all the women tested demonstrated anxiety about foetal movement at some stage of their pregnancy, there was "a need for appropriate information and explanation".

The issue of information and education is an important one and one which needs to be revisited if we are to make significant progress in empowering pregnant women to share the responsibility of their foetus's health.

Field (1990) in writing on the effectiveness of ante-natal care states that women need to be encouraged to be 'partners' in their own care. Using the maternal held patient record is one of the recommendations, which she suggests to assist this partnership. Sarah Neill (1996) who examined parent participation in care, identified that communication was a key factor affecting patient's participation in care. She also suggested that health-care workers need to develop skills to provide support and encouragement to parents. It was also identified that when a patient is stressed it may affect her ability to retain information.

The goal of all antenatal care is to minimize perinatal morbidity and mortality. According to Van Coeverden de Groot (1993) the South African perinatal mortality Rate (PNMR) varies from area to area. In Kwazulu the estimated PNMR was 38 per 1000 total births, whilst in the Western Cape, the data indicates a PNMR of 30-35/1000. No post

apartheid statistics could be found for the other provinces. The perinatal mortality rate is a sensitive index of the quality of perinatal care that is provided for the community.

Prenatal care can play a role in identifying those foetuses who require appropriate delivery care. To achieve this requires constant surveillance of the foetus incorporating all the modalities available. Subjective foetal monitoring is one such intervention but it requires the involvement of the mother in the care of her foetus. Midwives and other health-care workers will need to relinquish their control of the pregnancy in order to empower the women in their pregnancies. Leenan (1996:4) when writing about patient's rights suggests that "modern health care can only function when doctors and patients behave as partners." Andrea Gilkison (1991:420) states that 'education is never neutral, it either oppresses or liberates.' In this context one must question to what end,

antenatal education is given to mothers. Gilkison suggests that midwives and doctors are 'convinced that they are the best authorities on what clients should learn'. In a study conducted in Britain in 1991 Linda Hayes researched the needs of ethnic minorities. An issue which was explored, was that of language and whether it played a role in the Asian community when it came to seeking care during pregnancy. Hayes recommends that in order to effect good maternity care, intimate and sensitive communication between the caregiver and the mother is essential. She suggests that midwifery services should elicit the assistance of people who have a knowledge of ethnic culture and language. Dawson, Gauld & Ridler (1993) postulate that a difference exists between information and advic or education given. Giving information implies 'trust' and involves the mother in choice, whereas education implies that the mother is lacking in knowledge.

Jane Katz (1997) discusses effective patient teaching. She states that in order to enhance the patient's recall of the information given, instructions should be limited. The author identified several factors which need to be considered when giving patients education: be specific, keep it simple in language and terms and be aware of barriers to learning such as language, culture, literacy and emotional factors. She concurs with Neill (1996) that, stress plays a part in the way in which people and particularly patients, hear and receive information. Education is a two way process. Before providing women with the necessary information, health-care providers should ensure that they are conversant with the women's view of services and the constraints on the women, which may prevent them from making use of the services. Discussing the ethics of midwifery, Thompson & Thompson (1997) suggest that, because midwives are constantly struggling with inadequate

resources to care for women and their babies, the best way to achieve safe practice is to protect the health of the women which in turn protects the health of the foetus. It is imperative that midwives pay more than lip service to the role that they have to play to protect both mother and foetus to ensure this safe practice.

2.4 Conclusion

An historical overview of midwifery practice provided the background to the study. Specific literature researched indicates that foetal movement is a reliable indicator of foetal wellbeing. Subjective foetal monitoring is a cost effective assessment tool which is pertinent to a developing country such as South Africa.To empower women in the care of themselves and their foetuses, health-care professionals and in particular, midwives need to look at what women are being taught concerning foetal surveillance.

CHAPTER 3.

METHODODLOGY.

3.1 Introduction

The original intent of the researcher was to use a descriptive comparative study to examine the information which was given to primigravid mothers to empower them to subjectively assess the well being of their foetuses. Comparisons were to be made between two groups of primigravid patients who had been randomly selected. The control group, were to be given routine information with regard to the movement of their foetus. The experimental group, were to be given specific information about foetal movement. Included in this specific information was the importance of movement, the types of movement such a gross foetal movement, hiccoughs and sleep periods. The information gathered would then be used to design a protocol for teaching nursing students the most appropriate method to impart the information to patients

which would assist them in the accomplishment of subjective foetal monitoring.

The pilot study was carried out at a regional hospital, which reflected a similar patient population and midwifery unit. The pilot study identified a need to change the methodology to facilitate the changes which were occurring in health services.

This chapter will include the following;

3.2 The Original Methodology

3.2.1. The Study Design

3.2.2. The Sampling Process

3.2.3. The research Instrument

3.3 The Pilot Study

3.4 The Revised Methodology

3.4.1.The Research Design

3.4.2.The Sampling Process

3.4.3.Data Collection

3.4.4.The Research Instrument

3.5 Reliability and Validity

3.6 Data Analysis

3.7 Ethical Considerations

3.2 The Original Methodology

3.2.1 Study Design

A descriptive comparative study was to be undertaken using two groups of mothers who fitted the selection criteria. (Vide: 3.2.2) A descriptive comparative design would have enabled the researcher to assemble a range of data in order to establish the differences if any, which existed between the control and experimental groups. It would also have identified any similarities, which were common to both groups. An advantage of this design was that the researcher would have been able to describe what was currently being taught (Control Group) in the clinic and the advantages and disadvantages of the information given to mothers in the experimental group.

3.2.2. Sampling Process

3.2.2.1 Patient Population

All patients seen in the antenatal clinic at the hospital represented the study population. The average number of mothers seen per month is 1500 patients. This included routine visits and new patients booked. The number included multiparous and primiparous patients. The identified patient population was multi lingual, multicultural and multiracial.

3.2.2.2 Patient Sample

A convenience sample was to be used. Defined in this instance as "the use of any available group of research subjects" (Wilson 1994: 178). The disadvantage of this method of sampling would be the lack of control over the actual sampling process and possible bias. To limit these disadvantages certain selection criteria were employed.

The sample would be divided into an experimental and control group. The normal selection practice of patients at the clinic was adhered to, that is, that the mothers were allocated to the midwives clinics only after they had been certified as 'low risk'. The mothers were then allocated a midwife according to a number quota. This was done to enhance the randomization of the sampling process.

The s mple was to be drawn from patients attending the hospital's antenatal clinic, who fitted the following criteria:

- Primigravid patients, so as to exclude previous pregnancy perceptions
- Midwives patients (were to be used) which by definition categorized them as low-risk patients, which would limit any possible risk to the patients participating.
- Near term patients (were to be used) that is patients who were more than 36 weeks pregnant

by dates. The rationale was that these patients would then have been seen more frequently at the clinic, which would have facilitated follow-up.

3.2.2.3. Caregiver Sample

The sample of caregivers was to be the total number of Registered Midwives working in that clinic. At the time, that number was sixteen midwives who provided regular antenatal services. Fifty percent of the midwives at the time provided more than one clinic per week. The sample was to be divided into two groups, an experimental group and a control group. Random selection was to be done using the 'lottery technique'.

3.2.3 The Research Instrument

3.2.3.1. Experimental Group

Patients selected for this group would be the patients who attended the clinics of the midwives in the experimental group (Vide

3.2.2.3.) They were to be given in depth information at 36 weeks and /or on first contact, with regard to foetal movement. Information given was to include the importance of noting movement, the changes of movement near term and the fact that foetuses sleep for periods. This was to be additional to what was considered normal care. The same patients were to be followed up post delivery and interviewed using a structured questionnaire [Vide Annexure 4] and their records were to be reviewed for delivery outcome [Vide Annexure 5]

3.2.3.2. Control Group

This group was to consist of midwives patients in the midwives control group who fitted the selection criteria of parity and gestation. This group were not to be given the additional information with regard to foetal movement but would be given what was considered normal care and information with regard to foetal movement.

3.2.3.3 Experimental Group

An information sheet was to be given to all caregivers in the experimental group, which detailed the additional information, which was necessary for the mothers in the experimental group [Vide Annexure 6]

Mothers in the control group were to be given routine health information, which may or may not have included a kick-chart [Vide Annexure 3].

An interview Schedule was to be used [Vide Annexure 4] to interview mothers in both groups postnatally. Areas to be probed would have included whether or not the mothers were told about foetal movement and if they had been, what had they been told. In addition, it would be established if the mothers had understood the given information and also whether they had used this information.

A checklist [Vide Annexure 5] would have been used to review the post delivery records. Items that were to be reviewed were to include whether the foetus was alive or dead and if there had

been any evidence of asphyxia. Apgar scores would be recorded as well as any resuscitative measures, which may or may not have, been used [Vide Annexure 5].

3.3 THE PILOT STUDY

A pilot study was carried out at a regional hospital in Gauteng. This particular institution was chosen because of the similarity of the characteristics of the patient population to the hospital chosen for the study.

Seven patients were selected for the pilot study. This total was arrived at because that was the total number of primigravid patients in the clinic on that day. The following selection criteria was used:

- They were primigravid.
- They were near term.
- They were midwives' patients.

The patients were divided into two groups. Four were given specific information (Vide Annexure 6) regarding foetal surveillance. The women were told why it was important to notice their baby's movement patterns, sleep patterns and what to do when the movement was decreased.

The remaining three women were given routine information, which is the policy in that particular institution. The information was similar to the information used at the tertiary hospital. These women all signed an informed consent form [Vide Annexure 7]. The patients files were all clearly marked to distinguish them from patients not in the study and to alert the staff which would enable them to inform the researcher when the patients delivered. In addition the patients were given the telephone number of the researcher so that she could be informed when they went into labour and delivered. This would enable the researcher to

The patients were divided into two groups. Four were given specific information (Vide Annexure 6) regarding foetal surveillance. The women were told why it was important to notice their baby's movement patterns, sleep patterns and what to do when the movement was decreased.

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interview the subjects post delivery. It would also enable the mothers to communicate with the researcher should they require more information.

Outcome of the Pilot Study

None of the patients in the experimental group delivered at the hospital at which they had received their antenatal care. Follow-up calls established that they had delivered at clinics nearer to their homes. This was due to transport difficulties experienced after normal working hours.

Patients in the control group not only did not deliver at the hospital but also failed to attend follow-up clinic visits. Reasons cited for this in two of the patients who could be traced were, transport difficulties and long queues. One of the women thought that once she had booked in, it would only be necessary to arrive again when in labour. In addition it

appeared that it might be difficult to obtain primigravid patients for the study. Two full days were spent at the clinic and the researcher was only able to enroll 7 women in the study. This was the total number of primigravida's seen in the clinic on those two days.

The difficulties above identified a need to modify the research methodology. Permission to do this was submitted to the Postgraduate Committee and was subsequently granted. (Vide Annexure 8)

3.4 THE REVISED METHODOLOGY

3.4.1 THE RESEARCH DESIGN

As revealed in the pilot study, it was no longer possible to undertake a comparative descriptive study. The use of experimental and control groups was not feasible due to the changes which had taken place in the health care structures. Thus the research design was altered to that of a descriptive exploratory study. A descriptive

study enabled the researcher to establish the information which patients were given antenatally concerning the movement of their foetuses; who gave the information and how much of the information was understood by the patients. A descriptive study allowed the researcher to establish a broad range of data in order to be able to describe the information that is currently being given to women antenatally.

The same instrument was used:

- A structured interview schedule was used (vide Annexure 4) to interview primiparous patients 6-24 hours post delivery, in the postnatal wards of the hospital.
- The records of these patients were also reviewed retrospectively to establish foetal and delivery outcome [Vide Annexure 5].

As a result, there was no need to divide the caregiver group into two and this aspect of the study disappeared.

3.4.2 THE SAMPLING PROCESS

3.4.2.1 PATIENT POPULATION

All the patients who delivered their babies at the hospital represented the study population. The study was carried out during the months of June and July 1997. The months of June and July were chosen for the data collection in an attempt to avoid possible effects of the Termination of Pregnancy Act which was promulgated in February 1997. The number of deliveries for the months concerned was 643 and 674 respectively. This number included multiparous and primiparous patients.

3.4.2.2 PATIENT SAMPLE

A convenience sample was used. Defined in this instance as the " use of any available group of subjects" (Wilson 1994: 178). The disadvantage

of this method of sampling would be the lack of control over the actual sampling process and the possibility of bias. To limit these disadvantages, only primigravid patients were used so as to limit previous pregnancy knowledge and perceptions.

3.4.2.3 SAMPLE SIZE.

This was determined in consultation with the statistician who estimated that 30% of the patients would have been primigravida's and thus it was calculated that a sample size of a 200 was considered sufficiently representative. This estimation was arrived at by taking the total number of deliveries for the previous year. The total number of deliveries for the 12 month period was 7790. The deliveries were equally distributed over the year and there was an average of 708 deliveries per month. The number of primigravida's delivering during the same period of time averaged 230 per month. The total

number of primiparous deliveries for the 12 months was 2757.

Based on the pilot study, it appeared that it would not be possible to obtain a sample of a 200 primigravida's in one month. In consultation with the statistician it was decided to extend the period of data collection to two months.

3.4.3 DATA COLLECTION

The hospital is a large 900 bed academic hospital. It was selected because the patient population is representative of the South African population. Student nurses obtain their practical experience at the same hospital.
It serves as the referral hospital for a number of regional and community services.
In order to gather data, the researcher interviewed 221 primiparous patients during the months of June and July 1997. Only 220 interviews were used because one of the respondents was excluded for ethical and legal

reasons. The researcher intended to conduct all the interviews, but due to the demand for beds, patients were being discharged within six (6) hours after delivery. Due to the researcher's own work schedule, it became necessary to obtain the help of a research assistant. The assistant was trained by the researcher on the importance of obtaining consent, how to use the interview schedule and if necessary, to probe to clarify ambiguous answers. The assistant conducted 37 interviews and was financially remunerated for each interview completed. The assistant only participated during the first week of June, as the problem of the early discharge of primiparous patients was discussed with the ward staff and resolved. The interviews, which were completed by the assistant were discussed with the researcher and checked for consistency. The interviews were all conducted in the postnatal wards of the hospital. Consultation

with the ward staff identified that mid morning and late afternoon were the times best suited to the staff and the patients. An average of 20 minutes per interview was the norm, except in cases where the researcher needed assistance with language. Translation was achieved by using other staff members and in some cases, other mothers in the wards who were proficient in the particular language. When another patient in the ward volunteered to assist with translation, the researcher clarified the question of confidentiality with the interviewee and in all the cases, they expressed that this was not a problem for them.

During the months of data collection, 484 primiparas were delivered at the hospital where the research was conducted. The researcher was unable to interview all the primipara's because those who delivered during the night, were frequently discharged prior to the researcher reaching the ward in the morning.

There were patients who refused to participate in the study and the researcher respected their wishes.

3.4.4 RESEARCH INSTRUMENT

3.4.4.1 THE INTERVIEW SCHEDULE

In the revised methodology, the original interview schedule was kept. The only adjustment was in the order in which the questions were asked [Vide Annexure 4].

A structured interview schedule was used so that the questions would be asked in a same way to each patient. This would exclude bias on the part of the interviewer and increase reliability. Areas that were probed were whether or not the mother had been told about foetal movement and if they were what information had they been given. The schedule also addressed the issue of whether the mothers understood the information they were given and in addition,

whether they had used the information, which they had been given.

3.4.4.2 THE RECORD REVIEW CHECKLIST

The checklist was not altered for the revised methodology (Vide Annexure 5).

The final Interview Schedule and Record Review Checklist were based on the literature review and modifications to the original documents, after completion of the pilot study.

3.5 RELIABILITY AND VALIDITY

To reduce the possibility of bias and distortion being introduced, a structured interview schedule was used. This consisted of objective type questions (Annexure 4). The interviews were carried out by the researcher herself with the exception of 37 interviews (refer 3.4.3 above). Face validity was achieved by consulting with experts in the field. They were asked to comment on the instruments to be used prior to the study

being carried out. Areas for comment pertained to whether the questions asked, related to what the researcher intended researching.

3.6 DATA ANALYSIS

The data was analyzed using Microsoft Office Excel 97. Descriptive statistics are displayed in Bar graphs and Pie charts. Pearson's correlation coefficient and bi-variate analysis were performed on the data.

3.7. ETHICAL CONSIDERATIONS

In order to protect the rights of the individual, the following ethical considerations were implemented.

Permission was requested and granted from the Committee for Research on Human Subjects (Medicine) at the University of the Witwatersrand (Annexure 9). Permission was also requested from the Gauteng Health authorities, the Superintendents and the Senior Nursing Service Managers of the two hospitals used in

the study. Verbal permission was granted in all cases.

The research subjects were asked to sign consent (Vide ANNEXURE 7).

CONCLUSION

In this chapter the methodology and pilot study were described. Problems encountered in the pilot study resulted in a revised methodology and this was described.

CHAPTER 4 FINDINGS.

This chapter will include the findings and discussion of the findings.

The findings which are discussed are:

- demographics, which addresses issues such as age, education and whether the pregnancy was planned or not
- whether or not the patient sought care
- the type of education given and how the patients remembered the information that was given .
- the characteristics of movement is examined to establish commonalities, similarities and differences.

4.1 Findings and Discussion of Findings.

During the months of June and July 1997, 221 primiparous patients were interviewed in the postnatal wards of the Johannesburg Hospital. One of the interviews was excluded from the study for ethical reasons and because it was necessary to maintain strict privacy with regard to this patient's records. Thus, 220 interview schedules were recorded and analyzed.

4.1.1. Demographics

4.1.1.1. Age

Age was addressed because there was a perception that there would be a significant number of teenage pregnancies.

The mean average age of the study sample (n=220) was 21.9 years, with a standard deviation of 3.929 years and a variance of 15.4 years. The youngest subject being 14 years and the oldest being 39 years. (59) 26.8% of the sample (n=220) were teenagers.

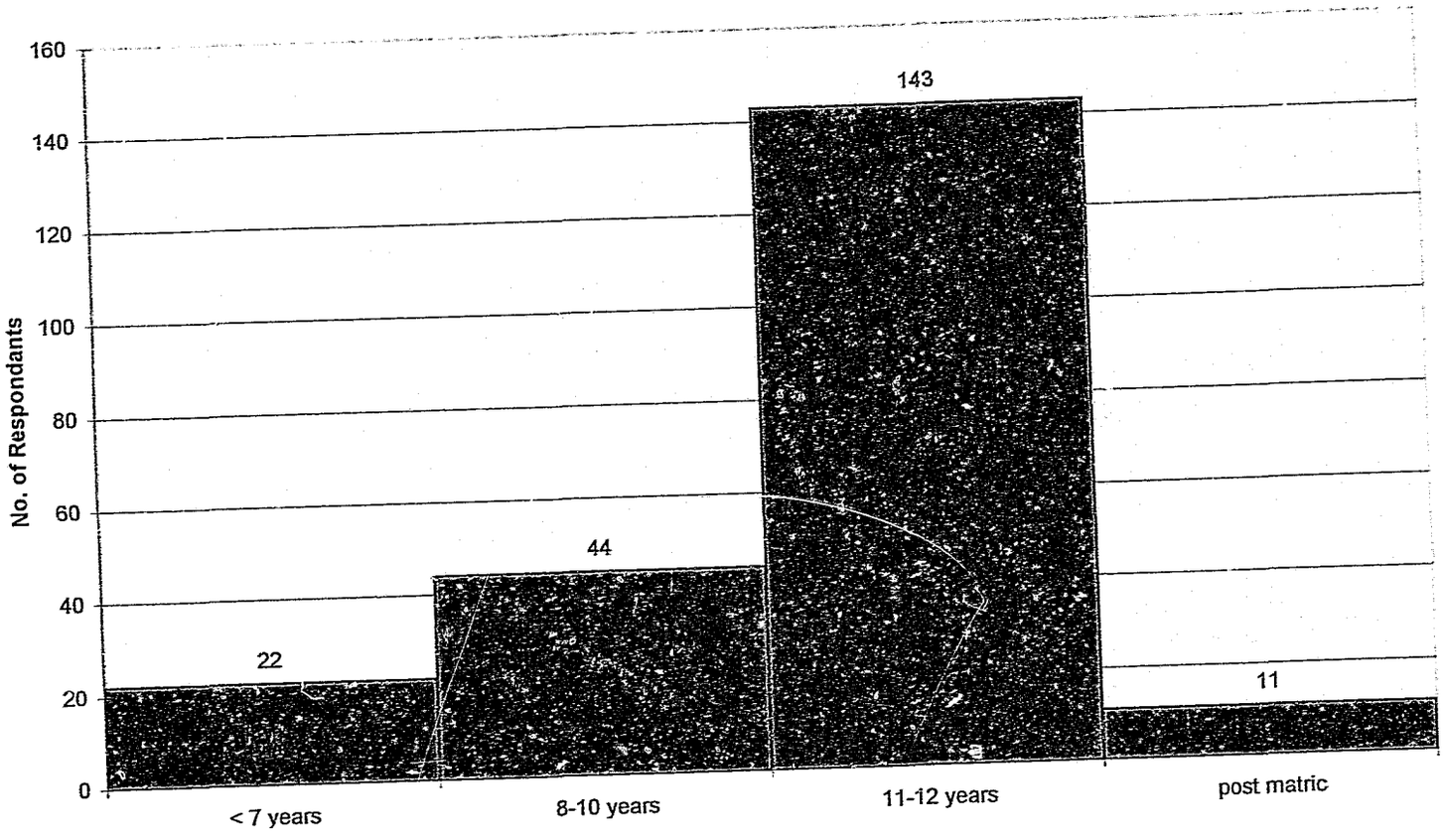
4.1.1.2 Education level

The level of schooling was assessed to establish if literacy played a significant role in the way in which mothers received and responded to education given antenatally. 7 years of schooling was taken as functional literacy based on the Curriculum 2005.

- One mother had received no formal schooling at all and was illiterate.
- 22 mothers had < 7 years of schooling
- 44 mothers had 8 -10 years schooling
- 143 mothers had >10 years
- 11 mothers had post schooling education (see fig.1. page 71).

The issue of education is discussed under *limitations* (vide 5.1:) as the researcher felt that this was an area that the subjects being interviewed were not always forthcoming with accurate information.

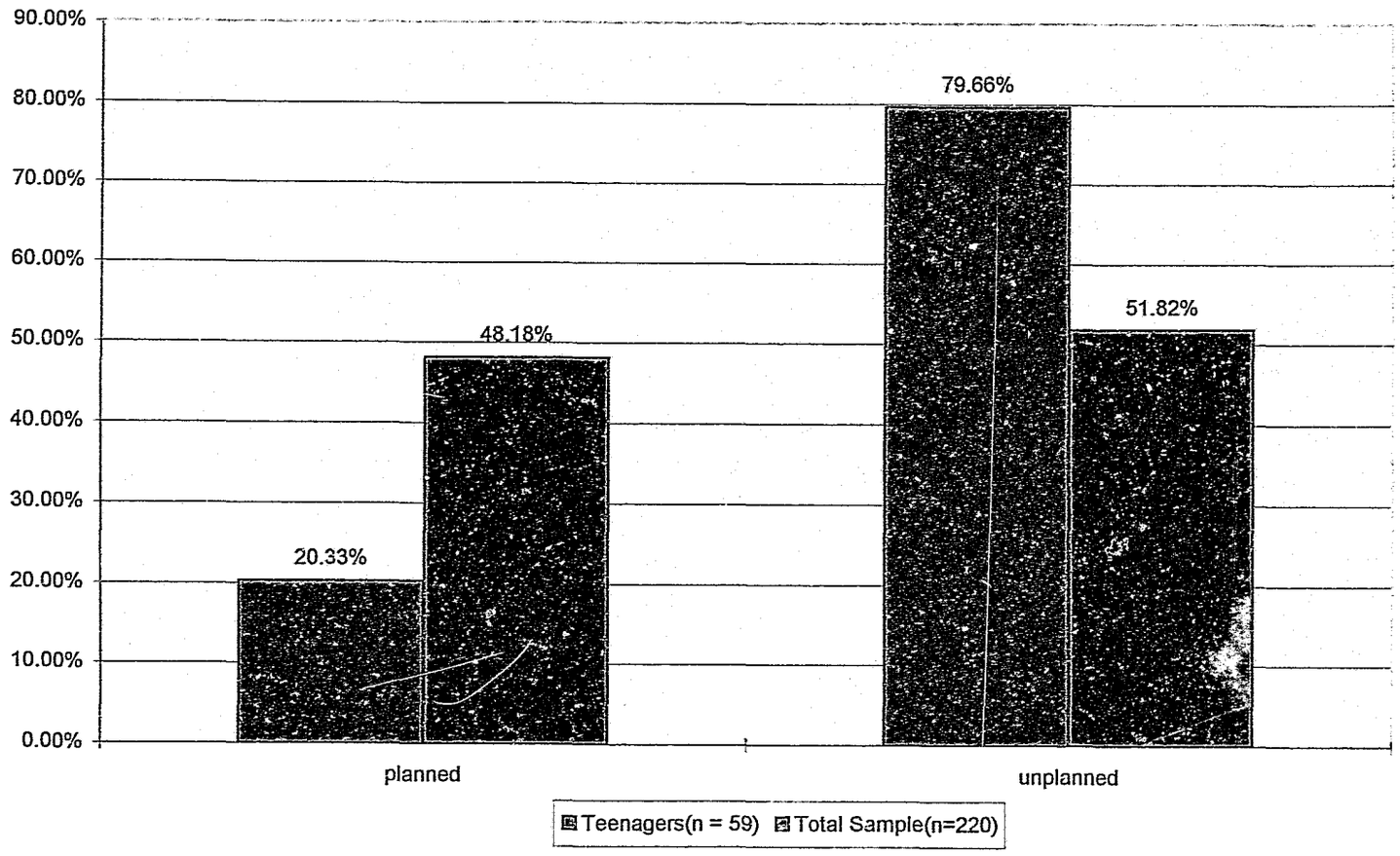
Fig. 1 - Distribution : Education Level of Mothers (n = 220)



4.1.1.3. Planned versus unplanned pregnancy (Fig 2 page 73).

Of the 220 subjects interviewed, 106 women (48.18 %) said that the pregnancy was planned and 114(51.82 %) stated that the pregnancy was unplanned. It was not clear whether this question may have had cultural significance. No recent research of this factor could be found that would confirm that culture could play a role in the interpretation of this question. In order to probe this area, further research needs to be done.

Fig.2 - Planned vs Unplanned Pregnancy (n=220)



4.1.1.4 Bivariate Analysis

The researcher was of the opinion that there appeared to be a relationship between the age of the mother and whether the pregnancy was planned or not. Of the mothers who stated that the pregnancy was unplanned the average age was 23.7 years.

Only 12(20,3%) of the 59 teenagers (n=59) said that their pregnancies were planned.

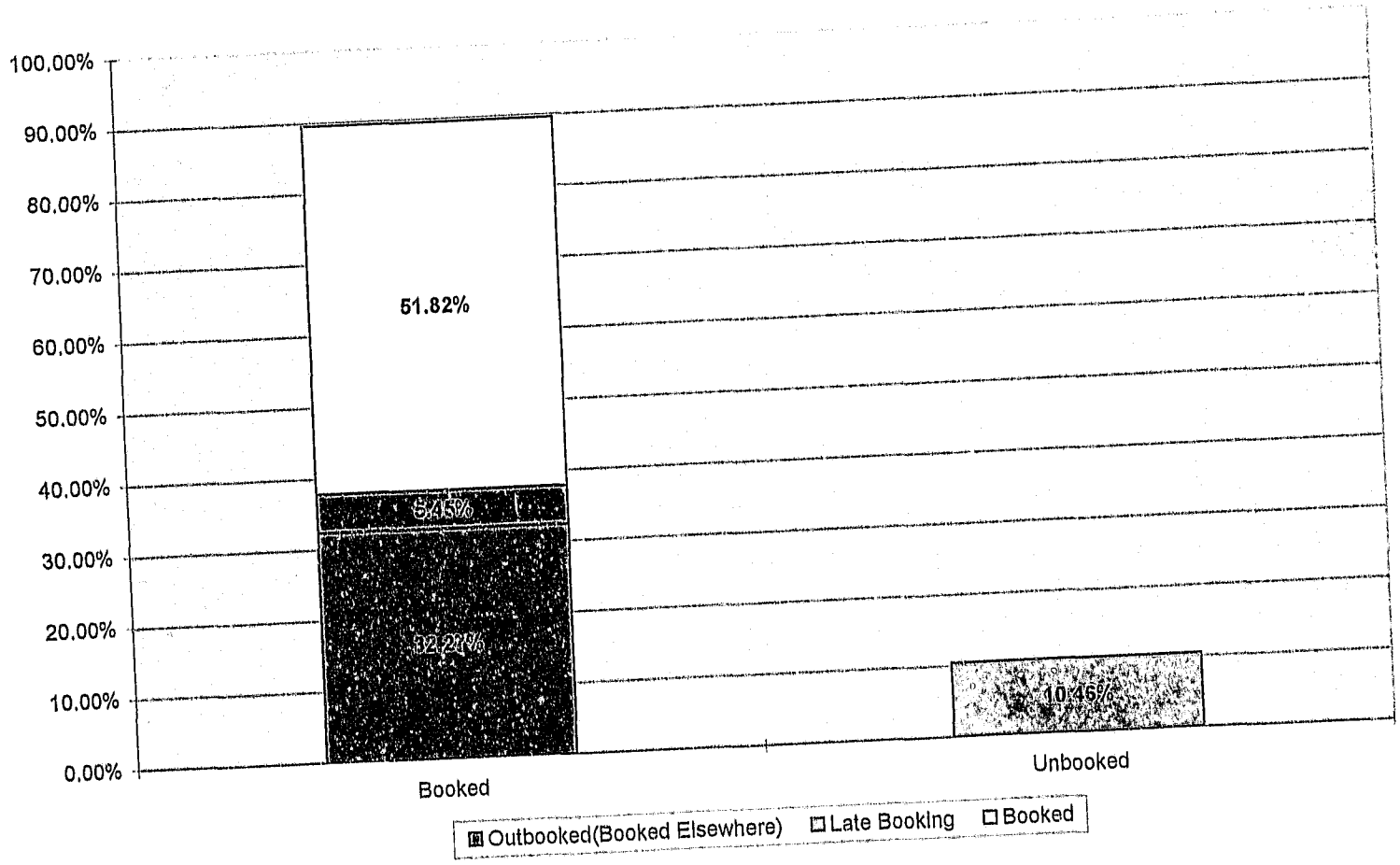
There was a higher percentage of unplanned pregnancy in the teenage group (n=59). 47 of the teenagers (79.7%) stated that their pregnancies were unplanned. This suggested a correlation between age and whether the pregnancy was planned or not. Application of Pearson's Coefficient demonstrated a weak correlation r=0.3167871.

4.1.2 Booked versus unbooked

The researcher addressed the issue of whether the mothers had received care ante-natally or not. It was interesting to note that the majority of the patients had some sort of care during their pregnancy. 197(89.54%) of the sample (n=220) stated that they had sought care. They were classified as booked patients and included patients who were booked at the hospital (51.82%) and patients who were booked elsewhere (32.27%). The patients who had booked elsewhere and were transferred to the hospital, were classified as outbooked. It appeared from the interviews that the patients were taking advantage of the maternal-held records, which enabled them to use the most accessible or convenient clinic to them. This was evidenced by the number of patients who delivered at the hospital (197) but had received their antenatal care elsewhere (71) (vide Fig.3 page 77).
Two of these patients were teenagers, 15 & 18 years respectively and they reported that they

had come to Gauteng because the staff at the clinic in KwaZulu 'shouted' at them because they were teenagers. It was evident from the interviews that women came from countries other than South Africa. Among the countries that were represented were Maputo and Zimbabwe. There were a number of patients who had received their care at a primary health clinic (41 women) and because of problems, had been transferred to the academic hospital. They were categorized as 'outbooked' (vide fig.3 page 77) but fell into the category of booked patients. 'Late bookers' were those patients who had, had a first visit with no subsequent visits. They amounted to 5.45% of the booked patients.

Fig.3 - Booked vs Unbooked (n = 220)



4.1.3. Type of Education Given.

The patients were asked a number of questions concerning education and foetal movement. Several areas were probed under this topic to establish the following:

4.1.3.1. If they were aware of movement

4.1.3.2. If they were taught about movement

4.1.3.3. The information which they had been given about movement.

4.1.3.4. If they were taught to count foetal movement.

4.1.3.5. If they found counting helpful.

4.1.3.1 An awareness of movement

98.18 % of the patients (n=220) were aware of the movement of their foetuses. Only 4 patients of the 220 interviewed said that they were unaware of their baby's movement. The youngest of these patients was 15 years and the oldest was 26 years. Two of them were booked although late-bookers and the remaining two, were

unbooked. This would suggest that patients attending clinic had an awareness of movement.

4.1.3.2 If Movement was taught.

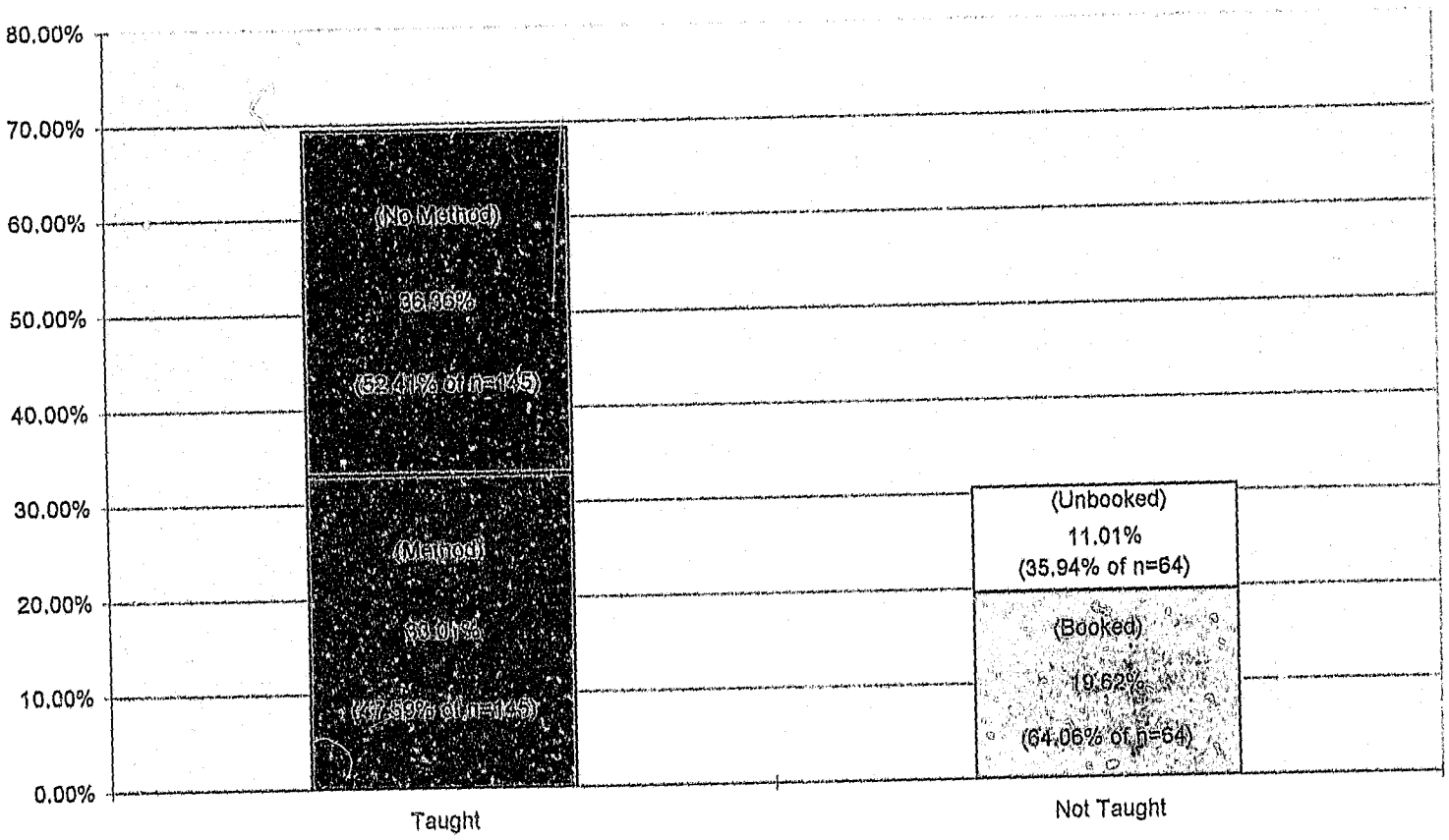
All the respondents were asked if they had been taught about their baby's movement. 220 respondents answered this question.

In this sample of patients (n=209), 145(69.3%) said that they were taught about movement and 64(30.6%) said that they had received no education (vide Fig.4 page 81). The respondents who had been taught or who had information about foetal movement (n=145), were asked if they had been taught to count the movements. 70(48.25%)of these respondents(n=145) stated that they had been taught to count, whilst the remaining 75(52.08%) had not been taught to count (Vide 4.1.3.4.). Included in the number of patients who said that they had received no education whatsoever in their pregnancies, were the patients who were unbooked (23) and therefore had not received care during their pregnancies.

Only 11 of these patients (23) had had no education at all and it appeared that the patients were taught by their own mothers, sisters and significant others.

The word education seemed to have created difficulties with some of the mothers, who appeared to make the distinction between what was education and what was information. On several occasions, the patients said that they had not been given education but on further probing, it appeared that they had been given information concerning their baby's movement. This issue is discussed in (5.2:).

Fig.4 - Education on Foetal Movement Given by Midwives and Others (n = 209)



4.1.3.3. The information which was given.

The 145 (69.3%) mothers (n=220) who had been taught, were asked to recall the information which they had been given. The information was categorized as follows;

Insufficient information

Inaccurate information

completely accurate information given

The majority (79%) of the patients (n=145) who had been taught had been given insufficient information (vide Fig.5 page 86).

Insufficient information was said to be as follows:

The mother was told the baby must move everyday. She may or may not have been told to count movement using a kick-chart [ANNEXURE 3] or Sadovsky's method [ANNEXURE 10].

She may also have been told that if the baby wasn't moving then she should come to hospital.

These mothers were not told why they should observe their foetuses movement. They were also not given information with regard to sleep

patterns, changes in movement, which might occur in the last month of pregnancy and what to do, when there was evidence of decreased movement, other than coming to the hospital. No information was given concerning the different types of movement or the relationship of the mothers eating habits to movement. Five mothers had been told that if the movement was decreased, they should eat something and the baby should respond by moving within an half an hour.

Inaccurate information was seen as information, which was considered unsafe, for example where the mother had been told that two movements were adequate, or that the baby didn't have to move every day.

15% of the mothers (n=145) fell into this category. (Vide Fig.5:86)

The analysis of whether or not the mother had been taught was difficult as 64(30.63%) mothers stated that they hadn't been taught about movement in the healthcare setting. Included in this sample (n=64) were 53 mothers who had obtained information elsewhere. Magazines and books were mentioned as sources of information. The patient's own family played a role in numerous cases. Mothers, sisters and significant others gave information to patients. This information for the most part fell in the "insufficient" category of information given and in two instances, the information given by family members was not safe. One patient had been told that her baby should only move once per day and the other patient had been told that it was unnecessary for the baby to 'play' every day.

The physiotherapist was mentioned by 6 of the patients who had attended her exercise class.

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