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# From the editor



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This is the second issue of the new journal which has been well received in the region. We received a large number of papers after the first issue and we look forward to working with the authors, the editorial board and the production team to make this journal a pioneer in the region, in the field of nursing.

In this issue two papers dealt with pregnancy. Dr Yassaee using a descriptive study involving 106 women, discussed the role of mother's preference on the type of delivery. He stressed that most cesareans are performed in private hospitals mainly due to the mother's preference and without obstetric indications. The author stressed that mother's preference has a meaningful impact on the route of her delivery. The paper from Iraq discussed the issue of safe pregnancy. The author carried out an observational longitudinal study, which included (2080) cases of pregnant women. It had been found that of the total (2080) women, (1060, 51%) had a safe pregnancy outcome for both mother and her fetus/newborn, and (1020, 49%) had an unsafe outcome either for mother or her fetus/newborn. The authors concluded that maternal complications are more frequent in the ante partum period, while fetal complication happened more in the post partum period. They recommended improvement of maternal health, and neonatal health. This could be achieved by serious cooperation between community (general population), health institutions and their staff.

AYDIN S, et al presented a paper discussing the role of education on the attitudes of Nurses to HIV Patients. A questionnaire composed of 13 questions was given to the nurses before, and one month after they had

completed a two-day course on AIDS. The author concluded that education about HIV/AIDS can significantly improve the knowledge and attitudes of the nurses; however, more time and educational programs are needed.

Amayreh W et al studied the role of various factors that could influence the type of feeding among infants. Prospective interviews using 12 items questionnaire with 260 mothers were carried out. The authors concluded that the misconception of mothers regarding breast milk insufficiency was the most common reason for using formula, therefore there is a need for mass educational campaigns at various levels.

A study from Jordan investigated the knowledge of nurses about narcotics, using a questionnaire. Only morphine (95%), heroin (74%) and codeine (73%) were correctly identified as narcotics by the majority of participants. Only 12% knew that the frequency of psychological dependence due to use of morphine for cancer pain was less than 1%. The authors concluded that nurses had a poor knowledge about the classification of narcotic drugs and about the potential of addiction in patients using opiates for pain relief.

A paper on the coronal fracture of anterior teeth among schoolchildren aged 10-12 years old in the city of Zarka-Jordan showed that fractured anterior teeth were more common among males than females, and that the prevalence of enamel fracture only showed higher percentage than enamel and dentine fracture and that the percentage of treated fractured anterior teeth in females were much higher than in males taking into consideration that females had less prevalence in fracture anterior teeth than males.

# ROLE OF EDUCATION ON THE ATTITUDES OF NURSES TO HUMAN IMMUNODEFICIENCY VIRUS (HIV)/ ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) PATIENTS IN ISPARTA, TURKEY

## ABSTRACT

**Introduction:** AIDS is a serious disease, and victims of AIDS require special care. It is a reality that the care provided to AIDS patients by nurses, who have been educated about AIDS, is of superior quality. In this study, our main objective was to determine the knowledge level, societal beliefs, and awareness of nurses about HIV/AIDS, and to learn the role that education has on the attitude of nurses, who are primarily in charge of AIDS patients.

**Methods:** Our volunteer-based study was performed with clinical nurses, who had no previous education in HIV/AIDS, working in two hospitals. A questionnaire composed of 13 questions was given to the nurses before, and one month after, they had completed a two-day course on AIDS. The results of the second questionnaire were then compared to those of the first. Wilcoxon signed ranks test was used for the statistical analysis. A p value smaller than 0.05 was accepted as statistically significant.

**Results:** A total of 130 clinical nurses participated in the study. The mean age of the nurses was 26.2±4.8 years. Before the course, only 2.9% of the nurses had any knowledge of HIV/AIDS. Even though they were informed during the course about transmission routes, 69.2% of the nurses (n=90) still felt uncomfortable caring for AIDS patients.

**Conclusion:** Education about HIV/AIDS can significantly improve the knowledge and attitudes of the nurses; however, more time and educational programs are needed to help them overcome their preconceived beliefs, which cause them to hesitate, fear, and, feel anxious when caring for HIV/AIDS patients.

**Key words:** Human Immunodeficiency Virus, Acquired Immunodeficiency Syndrome, nurse, healthcare, education, attitude

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## Introduction:

The spread of the Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) is increasing in spite of continuing efforts to limit it. According to a 2005 report on HIV prevention by the United Nations (UN) and the World Health Organization (WHO), the number of people in 2005 who were living with HIV increased to 40.3 million, while the number of newly infected people increased to 4.9 million; and deaths from AIDS increased to 3.1 million worldwide. (1) According to this report, treatment and prevention should support each other. The report also suggests that knowledge and awareness of HIV/AIDS transmission promotes reproductive and sexual health. Furthermore, preventing mother-child transmission and preparing and using vaccines and microbicides are also reported to be important.

AIDS is a serious disease, and AIDS victims require special care. (2) It is a reality that the care of HIV/AIDS patients by nurses, who have been educated about the disease, is of superior quality (3).

In Turkey, nurses are dealing not only with caring for both out- and in-patients, but they are also taking a greater role in mother-child health-care centers and primary care services. In addition, they are in charge of administering intravenous drugs and vaccines. Consequently, because of their increasing role in patient care, it is very important to educate Turkish nurses about HIV/AIDS.

Another aspect of this subject, which is as important as patient care, is determining the attitude of the nurses towards the HIV/AIDS patient and determining whether education causes any marked difference in their preconceived attitudes. Although many studies have been conducted about the approach of nurses to HIV/AIDS

patients, (4,5) there is not much in the literature, especially about Turkish nurses.

In this study, our objectives were:

- to determine the knowledge level and awareness of nurses about HIV/AIDS;
- to learn their preconceived attitudes and approach in dealing with HIV/AIDS patients; and
- to determine the role that education plays regarding the nurses' knowledge of HIV/AIDS and their preconceived attitudes towards HIV/AIDS patients.

## Method:

### Setting

Our study was performed with both the Suleyman Demirel University Medical School and the Isparta District Hospital, which are located in the urban center of Isparta. These facilities serve an estimated population of more than one million, which includes both the urban and neighbourhood populations.(6) Our target population was composed of volunteer nurses, who had not previously received any HIV/AIDS education or training. All of the nurses worked in clinical services. In Turkey, secondary and tertiary care hospitals tend to be used for first attendance services (7), so our nurses are dealing with many patients and diverse medical issues. Receiving HIV/AIDS education is an important issue for these nurses.

### Data Collection

This study centers on a two-part questionnaire. One part includes the socio-demographic data of the participants, and the second part includes 13 questions concerning the general attitude of the nurses towards HIV/AIDS patients and their level of knowledge about the disease. Answers were in the form of yes, no, or indefinite. Next, these nurses participated in a two-day training course presented in slide format. The course consisted of information about the clinical features of HIV/AIDS, the social and psychological problems of the patients, transmission routes of the disease, and progression of the disease around the world. One-month after the two-day training

course, the nurses were given the same questionnaire again. Then, the results of the second questionnaire were compared to those of the first.

### Statistical Analysis

Data were evaluated statistically by Wilcoxon signed ranks test. A p value smaller than 0.05 was accepted as statistically significant.

## Results:

A total of 183 clinical nurses work at the Suleyman Demirel University Medical School and the Isparta District Hospital. Our study included 130 of those nurses (71%), who volunteered to participate in the study; 70 of them work in the Suleyman Demirel University Medical School, and 60 nurses work in the Isparta Government Hospital.

The mean age of the nurses was  $26.2 \pm 4.8$  years (minimum 21, maximum 32). The age, service period, and educational status of the nurses is shown in Table 1.

Before participation in the two-day training course, only 26.9% of the nurses (n=35) had enough knowledge to prevent transmission of the disease. Following the course, the percentage increased to 72.3% (n=94). Even though they were informed about transmission routes in the training course, 69.2% of the nurses (n=90) still felt uncomfortable about caring for AIDS patients. Although the fear of caring for a HIV/AIDS patient decreased significantly, about one fourth (32) of the nurses were still afraid.

Before the course, 97.6% of the nurses thought that materials used by HIV/AIDS patients should be marked; that ratio increased to 99.2% after the course. Both before and after the training course, all of the nurses reported that hospital workers should have the right to know the HIV status of a patient.

The number of nurses reporting that they did not experience any anxiety in having social contact with these patients increased from 35 to 87 after the training. However, 29.2% noted that they still experienced some anxiety in caring for HIV/AIDS patients after the training.

Before the training course, 95 nurses felt that they had the right to refuse to care for a person suffering from HIV/AIDS. After training, only 24 maintained this belief. While 75 nurses refused to work in the same surroundings with AIDS patients before the course, this number decreased to 28 after the course. Before the training course, 59.2% of the nurses suggested that HIV (+) hospital workers should not work compared to only 29.2% after the course.

Before the training course, 70.7% (n=92) of the nurses were hesitant to have social interaction with HIV/AIDS patients; this ratio decreased to 26.1% (n=34) following the course.

Before the training course, 56.9% of the nurses felt uncomfortable providing care to AIDS patients, but this number decreased to 26.9% (n=35) following the course.

Prior to the course, all nurses agreed that the materials of HIV/AIDS patients should contain a special marking, and all health area workers had the right to know the HIV status of the patient. Despite the training, 66.1% of the nurses still felt anxious about getting HIV from patients.

Statistical data about the nurses' answers to the questions before and after the training course are shown in Table 2.

## Discussion:

In Turkey, the first case of AIDS was diagnosed in 1985. By 1997, the number of HIV/AIDS cases had increased to 753, and by 2001, 1246 cases were reported. (8) It is estimated that today, nearly 20,000 persons in Turkey are infected with HIV. The Turkish Ministry of Health has taken some precautions against this rapidly transmitting disease. First, HIV/AIDS was included in the Declaration Obligated Diseases list, which means that all HIV/AIDS cases should be declared to the Ministry of Health when they are diagnosed. Following inclusion in this list, the Ministry required that all blood and blood products be tested for HIV. In 1987, an AIDS information center was established to provide information to doctors and health care providers as well as the general

public. Next, use of disposable invasive tools gained popularity. In addition, the Ministry of Health, also put in place some controls concerning sex workers.

Because of the information broadcast by the Turkish media, AIDS was thought to be a disease specific only to homosexuals. More than 90% of the people in Turkey are Muslims, and according to their religious belief, homosexuality is not accepted, and polygamy is a sin. For these reasons, HIV/AIDS patients were isolated. People thought that being in the same environment, shaking hands, or eating with them would increase their risk of contracting HIV/AIDS. These false beliefs became ingrained and have been difficult to change. When asked to take an HIV test to control the spread of the disease, Turks were both insulted and unwilling to participate because of their beliefs that the disease resulted from homosexual or polygamous acts. (9) Many studies have dealt with the approaches employed by health area workers in caring for HIV/AIDS patients and the associated psychological results. (4,5,9,10,11)

In Turkey, people who are HIV (+) have been excluded from social events due to people's perceptions about how this disease is spread. (12) It is important for AIDS patients to have contact with their doctors and nurses. (9)

In our study, before the training course, 61.3% of the nurses felt anxious around HIV (+) patients, and 63% feared social contact with HIV (+) persons. These results are concordant with results of other studies conducted outside Turkey. (11,13) Our study indicates that health area workers experience anxiety while caring for AIDS patients, which is also concordant with other studies, (2,9,11,14) Although following the training, these ratios decreased, it is interesting that about one fourth of nurses still

experienced anxiety or fear when dealing with HIV/AIDS patients. This may be due to their lack of experience because about one fifth of the nurses stated that they did not have enough knowledge about the transmission of HIV/AIDS even after the course. Before the training course, 73% of the nurses thought that they had the right to refuse to treat a HIV/AIDS patient. This finding indicates that uneducated health area workers had a negative attitude towards HIV/AIDS patients. There are some studies about the emotional effects of AIDS on health area workers. (9, 14, 12) Duyan et al found that doctors feared or were anxious about interacting with HIV/AIDS patients, which affected the care of those patients. (9)

It is very interesting that the training course did not make a difference in the feelings of the nurses despite their increased knowledge about transmission of the disease. Although three fourths of them thought that they had enough knowledge about preventing transmission, knowledge could not alter the feelings for 69.2%.

All of the nurses thought that they have a right to know the HIV status of a patient, and they suggested marking patients' materials with special indicators. This may be an indication of the nurses' anxiety about the disease, and their attempt to prevent transmission of HIV/AIDS to themselves.

In some studies, it has been concluded that even with the negative messages about HIV/AIDS from the media, with education, people experience an improved attitude towards HIV/AIDS patients, and they can tolerate being in the same surroundings with those patients. (15) This is concordant with our study.

Currently, the number of HIV/AIDS cases diagnosed in Turkey is 1246. Of that number, 340 are sick, and 727 of them are HIV (+). Nurses, experienced in the treatment of AIDS patients, are limited. It is a fact in Turkey

that the lack of HIV/AIDS education and training for nurses is a serious problem. Over the last 15 years, a thorough HIV/AIDS education has not been provided to nurses to improve AIDS patient care even though some studies show that educating nurses in AIDS improves patient care. (13, 16) Unofficially, it is estimated that nearly 20,000 people in Turkey are infected with HIV so the lack of educated nurses can become a major issue in the future care of HIV/AIDS patients.

In our study, it was shown that even though a short training course in AIDS significantly improved the nurses' knowledge about the disease and had a positive affect on patient care, the nurses still have some hesitation, fear, and anxiety. Further courses or educational programs may be needed to resolve any remaining negative attitudes.

There are some limitations of this study. Although the questionnaire was used in another study (9), it was not validated. None of the nurses had any previous experience with AIDS/HIV patients; thus, we could not compare experienced and inexperienced groups. As this study was based on self-report, further studies may be needed to research nurses' actual approach.

## Conclusion:

From this study, we gain some insight into the educational needs and false beliefs of our clinical nurses. We conclude that HIV/AIDS education can significantly improve their knowledge level and attitudes, but more time and educational programs are needed to help them overcome their hesitation, fear, and anxiety resulting from societal misconceptions. In order to overcome these issues, to have nurses provide adequate care for HIV/AIDS patients, and to further patient/community education, we have to initiate a countrywide educational program on HIV/AIDS.

Table 1. Demographic data of the nurses

Age (year)	26.2±4.8 (min 21- max 32)
Professional experience (year)	5.9 (min 2-max 14)
High school graduated (n)	72 (%55.3)
Experience with the patient with AIDS	None

Table 2. Questions, answers and p values

Questions	Before the course			Following the course			z value	p value
	Yes n %	No n %	Indefinite n %	Yes n %	No n %	Indefinite n %		
Do you have enough knowledge about preventing transmission of HIV/AIDS?	35 26.9	80 61.5	15 11.5	94 72.3	29 22.2	7 5.3	-6.273	P=0.000
Do you feel uncomfortable about unpreventable transmission of the virus although there is no therapy for it?	96 73.8	24 18.4	10 7.6	90 69.2	35 26.9	5 3.8	-0.302	p>0.05
Are you afraid of caring of the HIV/AIDS patients?	82 63	44 33.8	4 30	32 24.6	85 65.3	13 10	-6.009	P=0.000
Should materials of the HIV/AIDS patients be marked with special indicators?	127 97.6	- -	3 2.3	129 99.2	- -	1 0.7	-1.414	p>0.05
Do hospital workers have a right to know HIV status of the patient?	130 100	- -	- -	130 100	- -	- -	-0.000	p>0.05
Should special applications in surgical interventions be applied to the HIV/AIDS patients?	20 15.3	93 71.5	17 13	74 56.9	48 36.9	8 6.1	-5.851	P=0.000
Do you feel anxiety about having social contact with the HIV/AIDS patients?	80 61.3	35 26.9	15 11.5	38 29.2	87 66.9	5 3.8	-3.776	P=0.000
Do you have a right to reject to care of the HIV/AIDS patients?	95 73	20 15.3	15 11.5	24 18.4	85 65.3	21 16.1	-6.277	P=0.000
Do you think you can work in the same surroundings with HIV/AIDS patients?	32 24.6	75 57.7	23 17.6	89 68.4	28 21.5	13 10	-5.686	P=0.000
Should HIV (+) hospital workers be prevented to work?	77 59.2	28 21.5	25 19.2	38 29.2	72 55.3	20 15.3	-3.342	P=0.000
Is having a social contact with the HIV/AIDS patients dangerous?	92 70.7	22 16.9	16 12.3	34 26.1	93 71.5	3 2.3	-4.939	P=0.000
Do you feel uncomfortable about caring of HIV (+) persons?	74 56.9	31 23.8	25 19.2	35 26.9	88 67.6	7 5.3	-2.316	P=0.021
Do you feel anxiety about getting HIV from the AIDS patients?	99 76.1	25 19.2	6 4.6	86 66.1	32 24.6	12 9.2	-2.962	P=0.003

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# WHAT DO NURSES KNOW ABOUT NARCOTICS AND THE ADDICTION POTENTIAL OF OPIATES WHEN USED FOR PAIN MANAGEMENT?

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**Key Words:** narcotics, addiction, pain.

## ABSTRACT

**Objective:** The study was conducted to understand the perception and knowledge of nurses about narcotics.

**Patients and Methods:** A questionnaire was distributed to nurses in the hospitals of the royal medical services and it consisted of two sections. The first section assessed the knowledge of drug classification and the second section assessed the knowledge of narcotic addiction.

**Results:** Only morphine (95%), heroin (74%) and codeine (73%) were correctly identified as narcotics by the majority of participants. Imipramine (30%), diazepam (22%) and phenobarbitone (35%) were wrongly classified as narcotics by many nurses. Dextropropoxyphene (11%), pentazocine (21%), buprenorphine (15%) were correctly classified as narcotics by fewer than half the participants. Only 12% knew that the frequency of psychological dependence due to use of morphine for cancer pain was less than 1%.

**Conclusion:** The present study indicates that nurses had a poor knowledge about the classification of narcotic drugs and about the low potential of addiction in patients using

## Introduction:

The treatment of pain is an important part of every nurse's job. Whether the treatment is for patients with end-stage cancer or for patients suffering from severe headaches or muscle pain, nurses all too often misunderstand and, consequently, undertreat pain. Pain treatment is based on patients' individual needs. Factors that are important in treatment selection include the patient's threshold of pain, the patient's history, the type and location of pain, the patient's history with analgesics, and concomitant illnesses. (1) For example, opioid analgesics are appropriate for the control of moderate to severe pain. (2) Opioid analgesics and other controlled substances commonly are used to treat pain and other symptoms of cancer. (3)

A lack of knowledge about common pharmacological agents used in pain control, and exaggerated fears about the likelihood of psychological dependence lead to poor pain management in clinical practice. Studies have demonstrated that many health professionals have a poor understanding about pain assessment and treatment.

Because nurses are largely responsible for pain and symptom management, they must be alert to the possibility of legal liability resulting from the under-treatment of pain. "Nursing care has long been described as the cornerstone of multidisciplinary efforts to control pain. Certainly, nurses are the professionals who spend the most time with patients and their caregivers; therefore, nurses take the lead in making pain a treatment priority". (4)

Misconceptions about tolerance, dependence, and addiction can cause nurses and physicians to withhold adequate narcotic doses unnecessarily. (5) This misunderstanding can have serious consequences and result in ineffective prescribing, administering, or dispensing of opioids for cancer pain. The result is undertreatment of pain. Nurses must be aware of their

own attitudes and beliefs about pain, which may include concerns about addiction and tolerance. (6) With proper supervision and close monitoring, addiction is unlikely in most patients.

The present study was conducted to understand the perception and knowledge of nurses about narcotics.

## Method:

The data in this study was collected using a survey in the hospitals of the royal medical services which are distributed all over Jordan and provide medical services for military people and their families, as well as for civilians.

The participants in this study were nurses of varying years of experience. A questionnaire was distributed and it consisted of two sections.

The first section assessed knowledge of drug classification by asking the subjects to identify ten drugs as narcotic or non-narcotic. Subjects were given choices of "narcotic", "non-narcotic", and "don't know".

The drugs listed were cocaine, codeine, heroin, morphine, pentazocine, dextropropoxyphene, buprenorphine, imipramine, diazepam, and phenobarbitone.

The second section was a single item assessing knowledge of narcotic addiction. Subjects were asked to identify the frequency (by percent) of addiction in patients treated with narcotic drugs for pain. Ten possible choices were given ranging from <1% to 100%. A definition of the term "narcotic addiction" was included. It was defined as the behavioral pattern of drug use, characterized by overwhelming involvement with the use of the drug, the securing of its supply, and a high tendency to relapse after withdrawal. Data was analyzed using the statistical package SPSS.

## Results:

The total number of participants in this study was 129 nurses with a

median number of years of experience in nursing at 5.2 years.

Regarding the results of the first section of the questionnaire in which nurses' knowledge of narcotic classification was assessed, correct answers for individual drugs ranged from 95% for morphine to 73% for cocaine. The majority of participants correctly identified only morphine (95%), heroin (74%) and codeine (73%) as narcotics. Imipramine, phenobarbitone and diazepam were wrongly judged as narcotic by 30%, 35% and 22% of nurses respectively. Fewer than half the participants correctly classified dextropropoxyphene, pentazocine, and buprenorphine as narcotics.

None of the participants could give all correct responses. Ten nurses gave 8 or 9 correct answers and 76 gave four to six correct responses. 27 had fewer than four correct answers. An attempt was made to examine the association between the correct scorers and years of experience in nursing. It was found that nurses who had fewer years of experience had better knowledge about narcotic substances, as compared to those who had more than ten years of experience.

This difference was found to be statistically significant ( $p < 0.05$ ).

Regarding the second section of the questionnaire in which knowledge of narcotic addiction was assessed, only 12% of nurses correctly identified the frequency of addiction among cancer patients on opiates as <1%. 46% of the nurses thought the frequency of addiction was more than 50%.

## Discussion:

Nurses are integral to palliative care delivery and it is important that they have a clear understanding of the nature of the drugs prescribed. In our study nurses had a poor knowledge about the classification of narcotic drugs and about the low potential of addiction in patients using opiates for pain relief. Similarly, McCaffrey et al (1990) (7) found in pain management workshops that many nurses had inadequate knowledge about the pharmacological management of pain. When asked to classify analgesics, the percentage of correct responses

for seven drugs ranged from 17% for cocaine 95% for morphine. Cohen's (1980) (8) questionnaire survey of 121 nurses also revealed that nurses had inadequate knowledge about use of opioid analgesic drugs and were overly concerned about the possibility of opioid addiction. When asked to estimate the number of persons with pain who become addicted as a result of being treated with narcotic drugs in the hospital, only 31.5% of the nurses correctly thought it was 1% or less. 13% of this sample estimated the chance of addiction at 26% or greater.

Also a survey was carried out by Weis et al (1983) (9) among house staff and nurses involved with post-operative care to assess their knowledge of analgesics and their attitudes toward postoperative analgesic care. Only one-fifth of the respondents prescribed adequate analgesics for complete pain relief. There were some misconceptions about adding other drugs to narcotic analgesics, as well as fear of the addictive properties of these narcotics. The incidence of addiction after use of opioid drugs for pain relief was correctly identified as <1% by only 15.8% of physicians and 11.4% of nurses.

On examining the association between the knowledge about narcotics and years of experience in nursing, it was found that nurses who had fewer years of experience had better knowledge, as compared to those who had more than ten years of experience. This implies that those trained recently have a better knowledge about narcotic drugs rather than those trained more than ten years back. This trend is positive, and it is hoped that present nursing training would give more attention to cancer pain and use of morphine for pain relief.

Confusion regarding opioid analgesics probably results from multiple factors. The term narcotic has been used to refer to morphine related strong analgesics. The media often refer to all substances of abuse as 'narcotic' drugs and some health professionals also use the term loosely.

Less than a quarter of the nurses in McCaffery's study correctly identified the frequency of psychological

dependence. Marks and Sachar (1973) (10) reported that only 60% of physicians correctly identified the chance of addiction from use of narcotic drugs for pain relief as <1%. 16% thought that addiction occurred in between 1 and 5% of patients; and 22% thought the incidence of addiction was greater than 6%. Chart review of 37 patients in their hospital showed that physicians under prescribed analgesics and nurses compounded the problem by administering less opioid medication than was prescribed. Concern about iatrogenic addiction was probably a significant factor in the under use of analgesics.

## Conclusion:

The present study indicates that nurses had a poor knowledge about the classification of narcotic drugs and about the low potential of addiction in patients using opiates for pain relief.

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# CORONAL FRACTURE OF ANTERIOR TEETH AMONG SCHOOL CHILDREN AGED 10-12 YEARS OLD IN THE CITY OF ZARKA, JORDAN

## ABSTRACT

**Objective:** To find the prevalence of coronal fracture for the anterior teeth and the percentage of treatment of those fractured among schoolchildren 10-12 years of age, and to determine if there is any difference between males and females in both fractured and treated anterior teeth.

**Methods:** This study involved 2719 schoolchildren 10-12 years of age attending 6 public schools in Zarka-Jordan. A total of 1370 males and 1349 females were examined at school by a single examiner. Traumatic injuries affecting the coronal part of the teeth were clinically recorded and classified according to the amount of tooth structure being lost.

**Results:** The overall prevalence of fractured anterior teeth was 13.8 %, with males having higher prevalence 19.5 % than females 8 %. About 97.4% of fractured teeth among males were untreated. Whilst the prevalence of untreated fractured anterior teeth in females was 92.6%. No difference between left and right side fractures in males were founded, it was 51.1% of the fractured teeth were on the right while 48.9.% were on the left. However, in females left side fractures show higher percentage than right side with 64.3% and 35.7 respectively.

**Conclusion:** Fractured anterior teeth were more common among males than females, the prevalence of enamel fracture only showed higher percentage than enamel and dentine fracture. The percentage of treated fractured anterior teeth in females were much higher than in males taking into consideration that females had less prevalence in fracture anterior teeth than males

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**Key Words:** prevalence; coronal fractured; permanent anterior teeth; school children; treatment.

## Introduction:

Traumatic injuries to the permanent incisors are very common among children, and may result in a partial or total loss of dental hard tissue (1), most of the trauma cases occur in the maxillary incisor teeth, creating not only physical, but also esthetic and psychological effect on children and their parents (2). The nature of incisal trauma, its substantial impact on quality of life and the availability of knowledge on its etiology and treatment, makes incisal trauma a potential dental public health problem (3).

Sports and accidents that happen at home or school are common etiological factors(4), therefore it is essential that the dental team should educate parents, teachers and patients to the correct emergency care after trauma. In this study only crown fractures were looked at since root fractures can't be detected without a radiograph.

Socioeconomic class was not significant in the traumatic injuries to the permanent anterior teeth among schoolchildren in Jordan (5). Even though, all the students examined were from the same city and the same area.

Parents don't send their children who suffer from fractured crowns, especially those involved enamel and dentin for immediate restoration, unless for esthetic purposes. On the other hand, the prognosis of the traumatized teeth depends on accurate diagnosis and treatment procedures, since the rapid development of the adhesive material needs the dentist's

awareness of this and the new material coming onto the market.

In Jordan, there is a lack of information regarding the epidemiology of dental trauma in children. Few studies have been carried out to find the prevalence of traumatized permanent incisors. (5,6,7)

The aim of this study was to determine the prevalence of fractured anterior teeth (treated and untreated) among schoolchildren 10, 12 years of age and to find out if there is any gender difference associated with fractured anterior teeth among the study population.

## Method:

The target population in this study was 10- 12 years old schoolchildren studying in 6 government schools in the same part of Zarka city, Jordan to avoid the socio-economic class differences if there iare any, each school has all age groups needed for the study, after examining the anterior teeth of all students whohad been categorized according to the age and the amount of tooth structure lost.

A total of 2719 students (1370 males and 1349 females ) were examined on site by the same examiner using mirror and probe under daylight. Fracture of the crowns of teeth ranging from chipped enamel, to fractured crown involving the pulp was observed. Trauma history was recorded for all students especially for those with restoration, to differentiate the reason behind the restoration, whether it was caries or trauma, even

though, at this age it is difficult to have an incisal restoration due to caries.

Fractures affecting the anterior teeth were clinically recorded based on clinical signs according to the following classification:

**Class 1:** Fracture involving the enamel only,

**Class 2:** Fracture of enamel and dentine, without pulp involvement.

**Class 3:** Fracture of enamel and dentine with pulp involvement.

**Class 4:** Tooth restored with composite or crown following fracture.

The chi square test was used for testing the statistical differences between males and females according to the prevalence of fractured anterior teeth compared to non-fractured teeth in both age groups (10-12 years).

Because of the small sample size of the treated teeth in both males and females, Fisher Exact test was used to determine if there were any statistical differences in the prevalence of the treated teeth among the different age groups (10-12) in males and females.

## Results:

The percentage of males to females in the sample was 50.4%:49.6%. The overall prevalence of anterior teeth fracture for both males and females was 13.8%, with males having higher prevalence 19.5% than female 8%, which was statistically significant (Table 1). However, the prevalence of treated fractures among females was 7.4% and in males 2.6%, the difference was statistically significant (Table 1).

The age group 12-year-old males had the highest fracture percentage of 20% with 4.6% receiving treatment followed by the age 10 years males with 18.6 % fractured percentage and the lowest treatment percentage 0%. Meanwhile the female age group 12 had the lowest fracture percentage 7% with the highest treatment percentage 9.6%, followed by the female age 10 group with 9.3% fractures and 5.4% treatment.

The percentage of fractured anterior teeth according to the amount of

tooth structure loss classification in different age groups in males and females are presented in Table 2.

Enamel fracture only (class 1) in both males and females showed the highest percentage 46.8% and 63.9% respectively, among the other types of fracture. Meanwhile, class 3 showed the lowest percentage in both males and females, 17.2 and 7.4 respectively.

There was not any difference between left and right side fractures in males; 50.6% of the fractured teeth were on the right while 49.4% were on the left. However, in females, left side fractures showed a higher percentage than right side with 61.6% and 38.4 respectively.

## Discussion:

The present study represents the population of children enrolled at schools in one city in Jordan which is Zarka.

Traumatic injuries to the anterior teeth occur fairly frequently and they are usually accidental in nature rather than due to contact sport (8,9,10). These injuries may result in teeth fracture or in soft tissue injuries, which may heal without leaving any signs of the injury. Predisposing factors were suggested as socio-economic class and increase in incisal overjet. However, Hamdan and Rajab (5) 2003 found no significant differences between different socioeconomic classes regarding traumatic injuries to the anterior teeth among 12-year-old schoolchildren in Jordan but children with incisal overjet of greater than 5 mm had more tendency toward fracture.

Most of the fractured anterior teeth involved the maxillary central incisors due to the prominent position of the teeth in the arch (11) with no any difference in prevalence of injuries between left and right (12). In this study, females' left side fractures showed higher percentage than right side with 63.3% and 36.7 respectively with no difference in males.

The comparison of one dental trauma study with another is a difficult task, as few epidemiological surveys are similar. They may have different methodologies, different populations and different diagnostic criteria.

The prevalence of dental trauma to the anterior teeth in this study was 19.5% for males, and 8% for females. The prevalence of fractured anterior teeth in 10 and 12 years old males were 18.6 % and 20 % respectively which is lower than the study of O'Brien in the UK(14) who found a prevalence of 25% for 12-year-old-males. On the other hand, the result of other studies (10,14), Todd & Dodd in UK and Al-Majed et al in Saudi Arabia was much higher than this study. They found the prevalence of 29% for 12 years old males in the 1983 UK national survey and 34% in Saudi Arabia.

This study has confirmed the major finding of previous epidemiological studies namely that traumatic injury is more common among males than females (9,13), whereas the prevalence of enamel fracture was much higher than the enamel and dentine fracture (Table 2) which agreed with the results of other studies (6, 10,13-16).

The proportion of fractured anterior teeth that required treatment in this study was 97.4% in males and 92.6% in females, which were almost the same findings in the studies carried out in Malaysia by Nik-Hussein (11) and by Esa & Razak (17) especially in male's results.

These results were really disappointing; one of the possible reasons could be due to the low occurrence of problems that arise as a result of traumatized teeth.

Finally, one can say that the results of this study were almost the same as the results of many studies carried out in different countries all over the world with few differences in parts of it.

## Conclusion:

Fractured anterior teeth were more common among males than females, and the prevalence of enamel fracture only showed higher percentage than enamel and dentine fracture. The percentage of treated fractured anterior teeth in females was much higher than in males, taking into consideration that females had less prevalence in fractured anterior teeth than males.

Table 1: Number and percentage of fractured anterior teeth and treatment percentage among both age groups in males and females.

Age group	MALES				FEMALES			
	No. of students examined	No. of students with fractures	Fractured teeth Prevalence %	Treatment Prevalence %	No. of students examined	No. of students with fractures	Fracture teeth Prevalence %	Treatment Prevalence %
10	612	114	18.6	0	605	56	9.3	5.4
12	758	153	20	4.6	744	52	7	9.6
Total	1370	267	19.5	2.6	1349	108	8	7.4

Table 2: The percentage of fractured anterior teeth according to the classification within the different age groups in males and females.

Age	No. of fractured teeth		Class 1 %		Class 2 %		Class 3 %		Class 4 %	
	M	F	M	F	M	F	M	F	M	F
10	114	56	46.5	64.3	34.2	25.0	19.3	10.7	0	5.4
12	133	52	47	63.5	37.3	32.7	15.7	3.8	4.6	9.6
Total	267	108	46.8	63.9	36	28.7	17.2	7.4	2.6	7.4

M: Males F: Females

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## ABSTRACT

**Objective:** To study the role of various factors that could influence the type of feeding among infants at Aqaba region, South of Jordan.

**Setting:** Princess Haya Hospital Outpatient Department, Aqaba, Jordan.

**Patients and methods:** Prospective interviews with mothers of infants up to the age of one year seen consecutively during outpatient clinic visits at Princess Haya Hospital in Aqaba-Jordan were conducted between December 2005 and August 2006 using a structured 12 item questionnaire.

**Results:** 260 interviews were conducted, 119 infants (45.7%) were exclusively breastfed, the rate was 47.5% for infants in the first 6 months of life, and dropped to 41% during the next 6 months. 141/260 (54.2%) of infants used formula, of these 88.6% belong to non-working housewives, 79% belong to low income families <300 Jordanian Dinars per month. 13% of mothers used unsuitable formula. Only 61% of working mothers used formula whereas the figure was 53.4% for housewives. The reasons given for switching to formula feeding in order of frequency were: inadequate milk supply 81/141 (57.4%), working mothers 8/141 (5.6%), pregnancy 8/141 (5.6%) and other reasons 44/141 (31%). The exclusive breastfeeding, mixed feeding and exclusive formula feeding rates were 45.7%, 36% and 18% respectively.

**Conclusion:** The misconception of mothers regarding breast milk insufficiency was the most common reason for using formula. Illiterate, non-working and less educated mothers frequently used formula. These findings suggest a need for mass educational campaigns at the various levels aimed at explaining the benefits of breastfeeding and outlining the possible disadvantages of unnecessary use of formula.

**Key Words:** Pattern Of Feeding, Formula, Breast Milk. treatment.

## FACTORS AFFECTING INFANT FEEDING PRACTICES AT AQABA, SOUTH OF JORDAN

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### Introduction:

**B**reastfeeding is the ideal and most natural way of nurturing infants, and as human milk is species-specific, all substitute feeding preparations differ markedly from it, making human milk uniquely superior for infant feeding (1). Breastfeeding confers significant health, nutritional, immunologic, developmental, psychological, social, economic and environmental benefits to infants, mothers, families, and society(2).

However, breastfeeding is said to be on the decline(3), and there is a trend toward bottle feeding both in urban and rural areas(4). This probably is affected not only by knowledge on breastfeeding but also by factors such as education, occupation and socioeconomic status of the parents(5,6).

The World Health Organization and the American Academy of Pediatrics recommend exclusive breastfeeding for the first 6 months of life (1,7), which is the infant's consumption of human milk with no supplements of any type except for vitamins, minerals and medications.

We aimed in this present study to analyse the feeding patterns in the South of Jordan and to evaluate the role of different factors contributing to bottle feeding.

### Patients and Methods:

This is a prospective study conducted at Princess Haya Hospital at Aqaba-Jordan between December 2005 and August 2006.

We carried out a prospective analysis on feeding patterns of infants up to the age of one year. 260 interviews with mothers of infants below 12 months of age attending outpatient clinics using a

designed questionnaire including infant's name, record number, age in months, sex, patterns of feeding, type of formula used, reason for formula feeding, family income, dwelling, maternal education and occupation.

Infants attending the clinic without any of their parents were excluded from the study to ensure reliability of information collected.

### Results:

Total number of cases reviewed was 260. The exclusive breastfeeding, mixed feeding and exclusive formula feeding were 46%, 36% and 18% respectively. Breast feeding rate was 47.5% in the first 6 months of life and dropped to 41% in the next 6 months of life. The feeling of insufficient breast milk was the most common reason for switching to formula use followed by, work, pregnancy and other reasons as shown in table (1).

141/260 (54.2%) infants were formula users. Of formula users 125/141 (88.6%) were infants of nonworking housewives, whereas 10/26 (38%) of working mothers' infants were breast feeders. Level of education had minimal role on the type of feeding, table (2), although 22/56 (39%) of highly educated mothers were working mothers. 112/141 (79%) of formula users belong to low income families <300 Jordanian Dinars (US \$400) per month.

19/141 (13%) were using unsuitable formula i.e.: Nido, Halibna, cow, goat and camel's milk.

### Discussion:

Although breastfeeding is said to be on the decline(3), the alarming thing in this issue is the significant drop in the breast feeding rate figures in Jordan since 1981 as different studies showed

the rate of breast feeding to be between 80% and 90.5% (8, 9) whereas the rate for exclusive breast feeding in our study was 47.5% in the first 6 months of life and dropped to 41% in the next 6 months which is approaching the rates in developed countries as seen in table(3).

Success in breastfeeding involves success in 3 stages: success in initiation, success in establishment, and success in sustaining the process. Each stage is affected by a number of factors. Health education and counselling on the benefits and practicality of breastfeeding during antenatal visits and on subsequent hospital visits in the immediate post-partum period and on well baby check ups have an important role in this success.

The feeling by mothers of insufficient breast milk was the most common reason for switching to formula use in our study which is similar to findings in other studies in the region (10-12). On further evaluation by the paediatricians interviewing the mothers it was felt that in most of the cases this was a misconception. As these infants were having adequate weight gain and appropriate number of wet nappies per day. Contrary to what could be expected, employment status didn't have a big role in the choice to either breast or formula feed as only 5.6% of formula users used it because of working status (P=0.5).

Education had minimal effect on the pattern of feeding in the present study, however, highly educated nonworking mothers breast fed their babies more frequently which is in keeping with the findings in a study done in 1999 by Najdawi F et al in south of Jordan which showed that education was related positively to continued breastfeeding(13),

which along with our present study contrasts with the findings by Akin JS et al in 1986 who found that women's level of education in Jordan had a negative impact on the decision to ever breast feed the child or not (14).

Dwelling didn't have a statistically significant role in the choice of feeding (P=0.3), which contrasts with findings in previous studies in Jordan which showed that being an urban dweller had a negative impact on breast feeding (8,14) .

### Conclusions & Recommendations:

Formula feeding is a common practice in this part of the country and breast feeding seems to be on the decline. The misconception of mothers regarding breast milk insufficiency was the most common reason for using formula. Illiterate, nonworking, less educated and low income group mothers frequently used formula.

A number of recommendations are suggested which hopefully could reverse the current trend:

- The need for mass educational campaigns at the various levels aimed at explaining the benefits of breastfeeding and outlining the possible disadvantages of unnecessary use of formula is an urgent necessity.
- The workplace needs to be more accommodating to breastfeeding mothers, so that they can continue breastfeeding after returning to work.
- Infant formula promotional literature should not be displayed in the hospital's clinics, and clinic personnel should not distribute the companies'

literature to patients who inquire about infant feeding.

- Passing legislation making infant feeding bottles and teats available only through prescription by an authorized health professional.

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Table 1. Reasons for formula use

Insufficient milk	81/141 (57%)
Pregnancy	8/141 (5.6%)
Work	8/141 (5.6%)
Other reasons	44/141 (31%)

Table 2. Formula use and mother's education

Illiterate mothers	20/36 (55.5%)
Primary education	40/72 (55.5%)
Secondary education	49/96 (51%)
Higher education	32/56 (57%)

Table 3. Breast feeding rates in different studies

Breast feeding rate	Country	Study
> 80%	Jordan	Jain AK . Stud Fam Plann. 1981 Mar;12(3):79-99.
90.5%	Jordan	McDivitt JA, Stud Fam Plann. 1993 ;24(5):295-309.
90% at 6 months	Saudi	Fida NM, Saudi Med J. 2003 Jul;24(7):725-9.
43% at 6 months	Rural muslims in Israel	Azaiza F, Isr J Med Sci. 1995 Jul;31(7):411-7.
42% at 3 months	New Zealand	Heath AL, J Am Diet Assoc. 2002 Jul;102(7):937-43.
50.8% at one month	Taiwan	Chen CH, Acta Paediatr Taiwan. 2003 May-Jun;44(3):140-4.

## 6TH UAE NURSING INITIATIVES CONFERENCE AND 7TH GCC NURSING SYMPOSIUM

Under the patronage of His Excellency the Minister of Health Humaid Mohamed Al Qatami, the Executive Board of the Health Ministers' Council for GCC States, the GCC Technical Nursing Committee and the Ministry of Health, the Federal Department of Nursing held the 6th UAE Nursing Initiatives Conference & 7th GCC Nursing Symposium, from the 9th till 11th of January 2007, at Al Bustan Rotana Hotel- Dubai, UAE. The theme of this event was "Patient Safety.. Nursing Responsibility".

In his opening speech, H.E. Humaid Mohamed Al Qatami welcomed the distinguished guests, the Director General of the Executive Board of the Health Ministers' Council for GCC States, the WHO representatives, the GCC Technical Nursing Committee, the Emirates Nursing Association representatives, the organizers of the event and all the audience. H.E. highlighted the importance of the event's theme globally and emphasized the nurses' role in promoting Patient Safety as a highest priority in the international Health Care Systems and particularly in the GCC. His Excellency was looking forward to the recommendations and strategies that will stem from this important event, to guide the Health Care Services in facing the future challenges and raising the quality of the Health Services provided in the regional community.

The launching of the initiative 'Patient Safety Friendly Hospitals' by H.E. the Minister of Health took place during this event. This initiative came as an affirmation of the theme adopted by the Health Ministers Board for the GCC "Safety and Security of Patients a major component of Quality Health Care" in the 57th Conference (Geneva, May, 2005).

The opening ceremony included acknowledging distinguished nurses from the GCC, the guest speakers and the organizers of the event. In addition, selected nurses from the GCC were given the 2006 'Nusaiba Bint Kaab' Nursing Award for their contributions and dedication to their profession.

The event was attended by more than 500 delegates including GCC nurses, Ministry of Health officials and nurse delegates from all over the Emirates.

The objectives of this event focused on:

- Enhancing the nurses' awareness of the concept and scope of Patients' Safety.
- Sharing GCC nurses' research and initiatives that foster Patients' Safety.
- Identifying barriers to safe practice in the health care settings in GCC countries.
- Developing unified goals and strategies that highlight and guide the role of the nurses toward improving Patients' Safety in the GCC countries.
- Discussing WHO and GCC Patient Safety strategies.

*“...To enhance the nurses role and the importance of team work among the health care professionals, in Patient Safety programs for the purpose of reducing errors and health care associated risks in the Ministry of Health facilities, and other Health Care Authorities in the GCC countries...”*

The valued Guest speakers of the event included Dr. Tawfik Khoja Director General of the Executive Board of the Health Ministers' Council for GCC States, Dr. Fariba Al Darazi Regional Advisor for Nursing and Allied Health Personnel at the EMRO office in the WHO, Dr. Ahmed Abdellatif WHO Coordinator of Health Systems and Regional Advisor for Health Care Delivery, Mrs. Dee May Clinical and Managing Director of Infection Control Solution Ltd, Mrs. Fatima Abdulwahed Nursing Consultant of the Minister of Health in the Kingdom of Bahrain, Mrs. Ghada Al Barakati Consultant of the Minister of Health of the UAE for Strategic Issues, and Mrs. Fatima Al Rifai Director of the Federal Department of Nursing. They captured the audience with a number of inspiring presentations emphasizing Patient Safety from different perspectives.

Furthermore twenty five nurses presented remarkable scientific papers during the first two days of the event and each country of the GCC reported on their initiatives and activities in relation

to Patient Safety.

This event embraced as well a graduation ceremony for the participants of the 2nd phase of the 'Leadership For Change Program'. The participants and their mentors were acknowledged by H.E. Dr. Ali Ahmed Bin Shaker the Undersecretary of the Ministry Of Health. The graduates of the program presented their final teams' projects.

On the third day a successful workshop was conducted for all GCC delegates. The workshop captured the essence of the topics presented during the first two days by setting the basis for a comprehensive strategy for Patients' Safety in GCC.

The following recommendations came out from this important event:

1. To enhance the nurses role and the importance of team work among the health care professionals, in Patient Safety programs for the purpose of reducing errors and health care associated risks in the Ministry of Health facilities, and other Health Care Authorities in the GCC countries.
2. To conduct nursing research and evidence based studies on Patient Safety, and utilize the findings in strategic plans to meet the future health care need requirements in the GCC countries.
3. To include in the nursing curricula, continuing education and orientation programs the concept and principles of Patient Safety.
4. To develop a nursing plan for increasing awareness among clients, nursing workforce and society as a whole, on the importance and concept of Patient Safety. This shall be done in cooperation with the concerned media bodies, and shall be included in the strategic plan of every GCC country.
5. To cooperate effectively with the WHO and the World Alliance for Patient Safety, and communicate with the regional and global centers to benefit from their expertise.
6. To prepare a strategic nursing plan for Patient Safety by the GCC technical nursing committee, based on the workshop's outcomes and in line with the GCC executive plan that aims at adopting & implementing the Regional Strategy for Patient Safety [Decree (#1) conference (#61) for the Health Ministers Board for the GCC countries].

## ABSTRACT

**Background:** This study was carried out in an attempt to demonstrate the epidemiology of safe pregnancy outcome in Iraq. Safe pregnancy is defined as the period encompassing pregnancy, childbirth and the postpartum, which is experienced without complications for both the mother and the fetus/baby.

**Methodology:** The current work represents an observational longitudinal study, which included (2080) cases of all pregnant women who terminated their pregnancy by delivery, abortion or ectopic pregnancy, or within (42) days after termination of pregnancy, who attended gynecological, obstetrical wards, outpatient clinic and the reproductive health center (family planning clinic) in Tikrit Teaching hospital for the period between the first of November to the end of April (2006). A direct interview was done with every woman; special questionnaire and a physical examination was conducted only for women and their babies included in our study, and investigations done when needed.

**Results:** It had been found that of the total (2080) women, (1060, 51%) had a safe pregnancy outcome for both mother and her fetus/newborn, and (1020, 49%) had unsafe outcomes either for mother or her fetus/newborn. The total sample was also classified into four groups according to safety of mothers and babies, to make results more accurate. These groups included safe pregnancy outcome for both mother and her fetus/newborn, unsafe outcome for both, safe mother outcome and unsafe fetus/newborn outcome, and unsafe mothers with safe fetus/newborn outcome. The total number of each group of previous groups of mothers and fetuses/newborns, differed from table to table, or figure to another according to their relationship with other variables. The study also determined the rate of perinatal, and maternal mortality, and its causes.

The results showed that, there were many maternal related factors affecting pregnancy outcome that included adolescent mothers, uneducated (not able to read and write) women, grandmultiparas, and women who had broken marital relations (mostly separated) associated with unsafe pregnancy outcome.

Rural residence had been associated with unsafe pregnancy outcomes. The study found that, consanguineous marriage (second degree relative) was associated with unsafe pregnancy outcomes.

Fetal related factors had an effect on pregnancy safety. Single fetus pregnancy, normal newborn birth weight (2500-4000) gm was associated more with safe pregnancy outcome.

Good antenatal care of mothers was associated with safe pregnancy outcome, particularly in those women who attended both private doctor's clinic and primary health care center.

Women who received tetanus toxoid immunization completely, and who spaced their pregnancies more than two years apart, had safer pregnancy outcomes.

The women who completed (37-42) weeks of gestation, with hospital delivery, beside intrapartum regular fetal heart monitoring, and labor within normal duration had been associated with safe pregnancy outcomes.

Rh incompatibility problems between mother and fetus/newborn, bad obstetrical history, positive medical and gynecological and obstetrical surgical problems of mothers had been associated with maternal and fetal/newborn complications.

### Conclusion and Recommendations:

We concluded from this study that, maternal complications are more frequent in the ante partum period, while fetal complications happened more in the post partum period.

Regarding the perinatal morbidity and mortality, predisposing factors had been related mostly to maternal causes.

About maternal deaths, the study found that most of deaths occurred in the first 42 postpartum days due to direct causes related to pregnancy. The critical issue of maternal mortality encourages us to compare our results with other corresponding studies in the world, and then ratios and the major causes of maternal mortality were determined.

We recommended improvement of maternal health, and neonatal health. This could be achieved by serious cooperation between community (general population), health institutions and their staff.

## TOWARD MAKING PREGNANCY SAFER

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## Introduction:

Every year about (210) million become pregnant in the world (1). Every minute of every day, somewhere in the world and most often in a developing country, a woman dies from complications related to pregnancy or childbirth. That is (515,000) women, at the minimum, die every year. Nearly all maternal deaths (99%) occur in the developing world (2).

For every woman who dies, 30 to 50 women suffer injury, infection, or disease. Pregnancy related complications are among the leading causes of death and disability for women aged 15-49 in developing countries. When a mother dies, children lose their primary caregiver, communities are denied her paid and unpaid labor, and countries forego her contributions to economic and social development. A woman's death is more than personal tragedy; it represents an enormous cost to her nation, her community, and her family. Any social and economic investment that has been made in her life is lost. Her family loses her love, her nurturing, and her productivity inside and outside the home (2).

In developing countries, women's risk of dying, from pregnancy related disorders is on average about 250 times greater than women in most developed countries(1).

In the world more than 70% of maternal deaths are caused by just five conditions: bleeding after delivery - 25% of deaths, infection after delivery - 15%, unsafe abortion

- 13%, hypertensive disorders  
- 12%, obstructed labor - 8%. In addition, about 20% of maternal deaths are due to diseases that are aggravated by pregnancy such as cardiovascular diseases, chronic anemia, gynecological infections, pyelonephritis, chronic renal diseases, malaria, fistulas, uterine prolapse, chronic pelvic pain, and depression also affect large numbers of women(1).

More than a decade of research has shown that small and affordable measures can significantly reduce the health risks that women face when they become pregnant. Most maternal deaths could be prevented if women had access to appropriate health care during pregnancy, childbirth, and immediately afterwards (2).

In Iraq health statistics, the population of Iraq during 2002 was estimated to be 5,565,000 with an urban: rural ratio of 67:33. The childbearing age women (6.064.000). The health indicators for Iraq are as follows: Maternal mortality ratio is 294/100,000 live births. The percentage of pregnancies at risk is 37.8%. The total fertility rate for Iraqi women is 6% and contraceptive use is 32%. The estimated lifetime risk of maternal death of women in Iraq is 1 in 57. The literacy rate for Iraqi women is 74%. The proportion of maternal deaths taking place during the puerperium is 49%. The main causes of maternal deaths are bleeding (46.4%), followed by acute pulmonary embolism (11.9%), hypertension (8.3%), abortion complications (5.7%), sudden death and irreversible shock (2.3% each), sepsis and obstructed labor (1.1%) (3).

In Salah Al-Deen governorate about 292,000 women are at reproductive age, and the maternal mortality ratio in the governorate is about 29 per 100,000 live births. The most common causes of maternal death were hypertensive disorders, hemorrhage, and midwives' interference (4).

Many of the causes of maternal deaths and disabilities also jeopardize the survival and health of newborn infants (1). Every year in the world nearly 4 million newborn babies die during the first month of life, an additional 4 million are stillborn (2), and

millions more are disabled because of inadequately managed pregnancies and deliveries, and because of women's poor health and poor nutritional status. Neonatal infection accounts for 33% of deaths in newborn babies; asphyxia and trauma at birth account for 28%, premature delivery and low birth weight account for 24%, and congenital anomalies around 10% (1), while about 40%-80% of cases of newborn death were due to low birth weight (2).

Newborn health and survival are closely linked to the health of the mother before and during pregnancy, as well as during labor, childbirth, and the postpartum period. Key interventions or improving mother and newborn health include ensuring that all women receive effective, affordable, accessible, and acceptable maternity care (2).

In Iraq, health statistics record that neonatal mortality rate is 67/1000 live births, and the prevalence of low birth weight is 23.1% (3).

In Salah Al-Deen governorate the prenatal mortality ratio was 257 per 100 000 live births(4).

In Tikrit General Teaching Hospital, the statistical records were incorrect and not accurate because of insufficient records supplied by the health office. Regarding 2005, recorded maternal mortality number was only 3, while the perinatal mortality is not recorded and neonatal death is recorded as infant mortality (5).

## Aim of the study:

The aim of this study is to contribute to achieving of safe pregnancy outcomes among Iraqi childbearing women.

## Objectives of the study:

The study is conducted to:

1. Identify effective practices that could improve maternal and neonatal health.
2. To recognize the extent and major determinants of maternal mortality and morbidity.
3. To assess the effect of abortion, delivery site, duration of labor and

maternal RH on mothers safety.

4. To estimate fetal monitoring during pregnancy and labor.
5. To describe causes of maternal death.

## Subjects and methods:

### Design of the study:

The current work represents an observational longitudinal study, which was conducted from 1st November 2005 to April 2006, and within regular working hours. The study design suited the purpose of this research, and is feasible both from financial as well as technical points of view.

### Socio-demographic characteristics:

The study was conducted in Tikrit General Teaching Hospital, which represents one of the biggest centers located in the center of Tikrit city, which serves a large proportion of the community from different sectors of Salah Al Deen.

Salah Al-Deen Governorate has an estimated population of 1,162,490 persons; Tikrit city represents 159,721 of the population. About 292,000 females or 20% of Salah Al-Deen population, are females at reproduction age (15-49 years old).

### The study groups:

#### Sampling population:

Our sample included all females who attended Tikrit General Teaching Hospital for delivery (pre term, term or post term), abortion, ectopic, or attending for contraceptive advice, check up, or for treatment of any complications, within 42 days of termination of pregnancy, and who attended from the first of November 2005 to the end of April 2006. This includes 2080 pregnant women. Those females were followed in the gynecological and obstetrical wards, outpatient clinic of gynecology and obstetrics, and family planning clinic.

The total sample was classified into four groups which includes the following:

Safe mother and fetus outcome (newborn), unsafe outcome for both

mother and fetus, safe mother outcome with unsafe outcome regarding fetus/newborn and the last group is safe fetal/newborn outcome with unsafe outcome regarding the pregnant women. This classification was introduced for the sake of more accurate results.

Our results were compared with three major studies dealing with same concerns. A meta analytic approach was used to study some common variables mainly the maternal mortality ratio (women who died within 42 days postpartum due to direct and indirect causes related to pregnancy).

The total sample size chosen is considered to be suitable in this design study for showing the expected degree of differences regarding different variables. It is known that the sample size had an inverse relationship with alpha error.

As regards the power of the study it is acceptable to use 0.8(80%), as this will guarantee, as we believe that B error will have a limited effect at this level (accepting the null hypothesis when it is false) .

#### *Pilot study and preset:*

The real benefit of a pilot study in this research is its usefulness as a pretest measure, done on small scale, to identify any area of ambiguity or weakness related to the research design and tools, besides the acceptability of the community and subjects of the study sample to the research. A small scale pilot study was carried out on a sample of 30 cases and included women pregnant, delivered, and aborted. This pilot study was run for 3 weeks before the study was launched. The consent of those participating in the study was also tested to ensure the clarity of the language and to give an indirect idea about the acceptability of the sampling population.

We did look for any possibility of error and tried to correct it from the beginning as part of quality control measures. Thus quality checks will be set at each state of data collection.

Another seminar was made in the Community Medicine Department in Tikrit College of Medicine, in the presence of the chairman of the department and postgraduate students of the college.

Discussion was made, and comments, notes and suggestions were given by the audience, which were very worthy, and helped much in conducting the final study in a more perfect and practical way.

#### *Development of Questionnaire and Data Collection:*

The questionnaire was developed to collect all the data relevant to socio-economic class, and all variables listed below using structured interviewing and simple questionnaire. The interviewing here has the advantages of both the questionnaire and the observation. The response of the study sample was high and was suitable even for illiterates. The possibility of a skewing effect is not high since the required data are not critical to the interviewee, and ethical issues relating to the questions were considered. All questions were to be part of the interview. Issues of confidentiality were foremost and checking on data entry is done on a regular basis.

- Age - It included five age groups (<16, 16-25, 26-35, 36-45, >45) years old.
- Occupation.
- Marital status.
- Residency.
- Rh of both parents and baby, which is very important when the mother is Rh negative and the father is Rh positive.
- Degree of consanguinity between parents.
- Points related to ANC at antenatal period of women include:
- Parity: (Zero), (1-4), (≥5) babies delivered after 24th weeks of gestation.
- Gravida.
- Abortion.
- Last menstrual period to determine gestational age, and expected delivery date.
- ANC was performed with adequate visits or not, and where (private, PHCC, or both).
- Immunization: Tetanus toxoid if received by pregnant women completed, or not.
- Risky mothers determined with level of risk and its causes.
- Any complication during this period.
- Termination of pregnancy, abortion

and its type, ectopic pregnancy, or stillbirth at which gestational age, causes, and complications.

- Intra-partum period
- Labor: Full term, preterm, post term.
- Site of delivery: Hospital, home.
- Duration of labor.
- Type of fetal monitoring in the intrapartum period.
- Type of delivery: Spontaneous vaginal delivery, normal vaginal delivery with induction, C/S, or instrumental.
- Complication during this period (mother, baby).
- Number of babies, gender and weight of baby.
- Postpartum complications (early, late).

#### **Subjects and methods:**

##### *Past obstetrical history:*

- Past obstetrical history:
- Number of previous pregnancies.
- Outcome of previous pregnancies.
- Type of delivery.
- Effect of ANC and PNC.
- Spacing: It calculated average birth spacing among all pregnancies. Birth spacing less than 2 years, or more than 2 years.
- Contraception use and type .
- Drug history for:
- Preconception preventive drugs.
- Specific diseases.
- Regarding pregnancy.
- Medical history: Cardiovascular diseases, diabetes mellitus, blood diseases, renal diseases and others.
- Surgical history: Pelvic (gynecological, obstetrical, or non gynecological), and others.
- Social history: Smoking, alcohol, illicit drugs.
- Family history: Chronic diseases, multiple pregnancy, hereditary diseases, congenital anomalies.

##### **Examination:**

- Clinical assessment for every woman who was at ante-partum, intra-partum, and post-partum period, and her neonates.
- Blood pressure.
- Abdominal examination (fundal level at ante-partum, and post-partum periods).
- Mother weight and height.
- Fetal heart rate monitoring.

- Weight of baby.
- APGAR score of baby at first 5 minutes.
- Per vaginal examination.

#### Statistical analysis:

Our study is a cross sectional study, and we will describe the characteristics of the sample choosing the methods of analysis depending on the type of data, whether qualitative or quantitative.

Most of our results are of a qualitative nature and so using chi square to test any significance, will be of benefit.

Several descriptions to explore our analysis were used and were not restricted to table presentation, whether percentages or frequency distribution but also including graphic presentation as a 'Bar chart' as we are dealing here with qualitative data.

The data collected on 2080 women were included in the study to assess the association of many risk factors with safe outcome (for the mother and the baby).

So conventional statistical techniques were applied to the data in the study of distribution by frequency percentage, tables, and graph presentations. Considering the level of significance for this study is 0.05 for the sake of minimizing alpha error (rejecting the null hypothesis when it is true).

Statistical analysis was done using the new version of Minitab package/2006.

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## Discussion

Making pregnancy safer for both mothers and fetuses/babies is important because for every woman who dies, 30 to 50 women suffer injury, infection, or disease. Pregnancy related complications are among the leading causes of death, and disability for women age 15-49 in developing countries. In addition, newborn health and survival are closely linked to the health of the mother before pregnancy, during pregnancy, during labor, and in the postpartum period (125).

The study showed that the predominant childbearing age group was from 16-25 years, while Mahoney R. observed that the predominant childbearing age group was from 25-34 years (126). Also our study showed that age <16, >45 years was associated with unsafe pregnancy outcomes. This agrees with Wasunna A., and Mohammed K. who observed that adolescent mothers were more likely to have increased morbidity, and adverse outcomes particularly low birth weight problems of newborns <2500 grams (127), but this rejected by Kirchengast S., and Hartman B. who observed that adolescent mothers showed no increased incidence of low birth weight problems (128).

Also Kirchengast S., and Hartman B. and Donoso E., and Villarroel L. observed that the women older

than 40 years had a higher rate of cesarean section, maternal death, late fetal death, and neonatal death. This is interpreted as an increase in the mother's age is associated with an increase in mother and newborn body dimensions (128,129).

Regarding the maternal educational level, the results showed an association between uneducated mothers (illiterate) and unsafe pregnancy outcomes. This agreed with Wasunna A., and Mohammed K. in Nairobi, the study observed women who had less formal education, and who were unemployed had obstetrical risks for poor pregnancy outcomes (127).

The results showed an association between the parity group of  $\geq 5$  and unsafe pregnancy outcome. This was in agreement with Olatunji A.O., and Sule-odue A.O. in Nigeria, and Williams K.P. and Wilson S. that the primiparous and the grandmultiparous women had a high risk of poor pregnancy outcome particularly small for gestational age, HELLP syndrome, operative delivery, and maternal death (130,131).

Marital state showed an association between broken marital states, especially separated women and poor pregnancy outcomes.

Conditions in Iraq, and in Tikrit city particularly, mean that pregnant women suffer from stressful events, either psychological, economical, or social effects. Additionally there are large numbers of their husbands in American Prisons that affect negatively on pregnancy outcomes. This agrees with data from Perren S., Von-Wyl A., et al, (US Conferences of Mayors), and (National Coalition for the Homelessness -NCH-). Homeless women who are pregnant usually with inadequate prenatal care, limited access to general health care, poor nutrition and inadequate housing leads to poor birth outcomes (132,133,134). The complications of homelessness include an increased incidence of low birth weight newborn, and a higher rate of infant mortality, in addition to risk of many illnesses that could negatively affect their pregnancies, or substance abuse (134).

Considering the number of fetuses, and intra-partum and post-partum complications, the results found that the mother and fetal/baby complications associated with multiple gestation, but safe pregnancy outcome associated with singleton pregnancy. This agrees with Senat M.V., et al who also determined the most common complications associated with multiple pregnancy which includes maternal anemia due to increased demand of multiple gestation, hypertension, polyhydramnios or may be due to increased renal perfusion, premature rupture of membranes, incompetent cervix, intrauterine growth restriction, and other rare complications as conjoined (Siamese) twins, and other labor complications which include preterm labor, uterine dysfunction, abnormal fetal presentation, instrumental or cesarean birth and post-partum hemorrhage (135). But Jacquelyn Y., Martens G., et al found that the perinatal mortality was significantly lower in twins because of early fetal death, and not early neonatal mortality (136). Francois K., Johnson J.M., and Harries C. observed that the occurrence and complications of placenta previa do not differ between singleton and multiple pregnancy (137).

Regarding gender of babies the results showed no differences between both males and females with safety of pregnancy outcome. Neville F., Moore G. stated that newborn gender may provide insight into patient and family expectation and may indicate certain genetic risk factors, also fetal and neonatal complications (11).

The results found that all babies who had extreme low birth weight (<1000) grams, and very low birth weight (<1500) grams usually were

unsafe babies, but in very low birth weight babies <2500 grams, the highest number had unsafe fetus/baby outcomes., This agrees with Lynch A., McDuffie R., et al (138). The results show that normal weight of babies (2500-4000 grams) had safe fetus/baby and mother, and the predominant weight (86.3%) was normal birth weight (2500-4000 grams). This agrees with Misisic Z., Krezo S., et al who observed that the predominant newborn weight

(93.5%) was 2500-3000 grams (139). Macrosomic babies (>4000) grams had unsafe fetus/newborn and mother outcomes. This agrees with Boulet S.L., Alexander G.R., et al (140).

Considering area of residence, whether rural or urban, there was an association between rural areas and unsafe pregnancy outcomes, and urban areas with safe pregnancy outcomes. These results interpreted as, that the rural area has limited health services. In addition there are recent circumstances of night curfews, and sometimes even during the day, as well as insufficient fuel and high prices may prevent pregnant women from reaching the central hospital in Tikrit city. This made pregnant women experience traditional birthing practices such as home delivery by unregistered midwives, or unaided delivery, due to delay in arrival to hospital. This result agreed with Kyomuhendo G.B. in Uganda, and Safdar S., Ahmed S.T. in Pakistan who observed that poor pregnancy outcome was more common in rural areas (141,142).

The results also showed that there is an association between the parental consanguinity and fetal/baby outcomes in that unrelated parents had safe fetal/baby outcomes, but second degree relative parents had unsafe fetus/baby outcomes according to our study results. This agrees with Sogaard M., Vedsted-Jakobsen A. who found that consanguineous couples have a higher risk of having children with congenital malformations (143). But our results disagree with Saad F.A., Jauniaux E. in Qatar, and Al-Bustan S.A., El-Zawahri M.M., Ghunaim I. et al who didn't find any relationship between consanguineous marriage and poor fetal outcome (144,145).

Our study shows a positive relationship between prolonged spacing of >2 years as average spacing between pregnancies and good fetal/baby and maternal health, but too close pregnancies are associated with poor pregnancy outcomes. These findings agreed with the result found by (Anonymous) that the couples who space their birth (3-5) years apart increase their children's chance of survival, and mothers are more likely to survive (146).

Also our study agreed with King J.C. who found that women with early or closely spaced pregnancies have increased risk of fetal-maternal morbidity and mortality due to maternal nutrient depletion (125). Other studies done by Rachel A., and Royce, and Agudelo A.C., et al showed that close pregnancies, less than 18 months, had poor pregnancy outcomes. This result was due to maternal nutritional depletion, while the same study showed no statistically significant differences in risk between women with pregnancy interval 18-24 months, and those with intervals of 24-59 months. Regarding intervals longer than 59 months, it is observed that there are more maternal and fetal/baby problems, due to that the woman's physiologic reproductive capacity decline and thus becoming similar to those of primigravida women. (19,147)

Considering abortion, the results showed that the abortion rate was 5.7% from the total sample (2080). Safe mother outcomes in cases of abortion were more than unsafe mothers. These results were due to increased maternal health education about the consequent complications of unsafe abortion, and availability of medical services such as medical staff, specialist doctors in obstetrics, trained sub staff, and ultrasonography. Finer L.B., Henshaw S.K. found abortion rate in (2000), in United State was (5%) (148). Our study did not determine the causes of abortion accurately, even maternal or fetal factors, because that needs some investigations which are not available in our hospital or even in Salah Al-Deen governorate, or it may be expensive and need a long time, but the results determined the risk factors of unsafe pregnancy outcome and abortion is part of it. There are different studies about risk factors of abortion, Talukder S.I., and Haque A. and Qublan H.S., Jumaian N., et al observed variation in the frequency of abortion found to be highest in the hot seasons, rural areas, old age women, and high parity (149,150).

Diejomaoh M.F., Al-Azemi M., et al in Kuwait determined the main etiological factors of recurrent pregnancy loss were uterine anomaly, chromosome anomaly, polycystic

ovarian syndrome, infections, and other miscellaneous factors. Positive phospholipids antibodies are a most frequently associated cause of recurrent pregnancy loss in Kuwait (151).

Considering antenatal care 65.5% of the sample had good antenatal care, and 29.5% had poor antenatal care, and 5% had no care at all. There was an association between good antenatal care and safe mother and fetus/baby outcomes because frequent visits and checking can determine the risky groups, and follow up during pregnancy can determine the appropriate mode of delivery; while there are increased complications in women who had poor antenatal care. This is documented by Chang J., Elam-Evans L.D., et al in the United States, and Olatunji A.O., and Sule-Odu A.O. in Nigeria who observed that unbooked patients were associated with poor pregnancy outcomes and even pregnancy related death (152,130).

Regarding the antenatal care site, whether private clinics or primary health care centers or both, our study showed that the women who attended both private doctor's clinics and primary health care centers were associated with better pregnancy outcomes. This disagrees with Harvey S., Rach D., et al in Canada who observed the significantly higher satisfaction of the women with care provided by the midwives together with better clinical outcomes, than doctors' care (153).

Immunization with tetanus toxoid for pregnant women: There is a known schedule used in Iraq which includes four doses. The first dose is given in the first 6 weeks of pregnancy which gives no protection, the second dose is given 4-6 weeks later which gives protection for 3 years. The third dose is given 6 months later which gives protection for the next 5 years, and the fourth dose is given one year later which gives protection through the reproductive life. The result showed that, there were positive associations between those women who completed their tetanus toxoid immunization and good pregnancy outcomes. This result, is documented by Nasheit N.A. in Iraq, - that the tetanus toxoid played a role in decreasing perinatal mortality in Iraq (154).

Considering risk factors of mothers which determined the level of risk according to special risk scoring system, the previous results demonstrated in the discussion covered most of the risk factors and their effects, in regards to the maternal weight affecting pregnancy outcomes, most of the women with extreme weight had complications according to our results, that agree with Neggers Y., and Goldenberg R.L. and Edmonds D.K. (155, 28). Regarding maternal height, most of the women shorter than 150 cm were associated with mother and fetal/baby complications, but it may be due to the contribution of other risk factors. Edmonds D.K. observed that except in extreme cases (such as kyphoscoliosis or rickets) short stature has only a weak association with pelvic contraction, and is not usually an indication for extra care (28).

Regarding the duration of pregnancy, the baby delivered either preterm (before 37 completed weeks of gestation), or term at period 37-42 completed weeks of gestation, or post term (after 42) completed weeks of gestation) in our study, showed that there are variations in the mother and fetus/baby complications that depend on the cause of preterm, and post term delivery, type of management of labor, and neonatal care facilities which are insufficient in Tikrit Teaching General Hospital. All of these factors decided the fate of pregnancy. The study showed that full term, and post term delivery associated with better outcome than preterm delivery.

Regarding preterm delivery, our results agree with Garland S.M., Ni-Chuileannain F. et al who observed that premature or preterm delivery increased fetal susceptibility to cerebral palsy and neonatal sepsis that increases mortality, particularly extreme prematurity (156).

Ananth C.V., Smulian J.C., and Vintzileos A.M. in United States showed that the effect of placenta previa and neonatal mortality rate is according to duration of pregnancy. The risk of death from placenta previa was lower among preterm babies and higher in women without placenta previa, while mortality rates for term

births were higher among babies born to women with placenta previa than among babies born to women without placenta previa (157)

Regarding the post term delivery Treger M., Hallak M., et al had a study that showed that the main problems associated with post term pregnancy are stage I, II, meconium stained amniotic fluid, macrosomia, and cesarean section were significantly higher with increasing gestational age and to decrease these problem, labor induction should be indicated at appropriate gestational age (158). This was opposite to our study results.

Regarding the duration of labor, maximum duration in multipara is 14 hours, and in primipara is 20 hours from commencement of true labor (10). The results showed that prolonged labor is associated with increased labor complications for both primiparous and multiparous women and their babies. This result agrees with Maghoma J., and Buchmann E.J. (159).

The results showed that the hospital delivery rate is more than the home delivery rate. This may be due to the type of study which was a hospital based study, and women who have home delivery usually to not attend the hospital, unless severe complications occur. In addition, recent conditions that include difficulty in transport from home to hospital due to fuel deficiency and night curfews, that make women prefer to attend the nearest PHCC or private doctor's clinic, and home delivery than coming to hospital. This agrees with Kaufman J., and Jing F. in China who observed that hospital delivery had more safe pregnancy outcomes (160). But Janssen P.A., et al in British Columbia disagreed with our result when they observed that planned home birth was not associated with an increase in mothers' and fetuses/babies' complications. They interpreted their results as due to labor managed by well trained midwives (161). Conversely our results showed that where labor was managed by registered midwives, it ewith better outcomes than non registered midwives. This disagrees with the result of Goldman N., and Gleit D.A. in Guatemala who observed similar results between trained and untrained midwives (162).

Considering mode of delivery and feto-maternal complications at intra-partum and post-partum periods, the results showed that labor induction was associated with mothers, and fetuses/babies complications more than complications from spontaneous vaginal delivery. This disagrees with Sanchez-Ramos L., and Hsieh E. who observed that labor induction provided the surveillance for maternal and fetal safety (163).

Regarding instrument delivery, the results showed that forceps delivery had safe outcomes higher than unsafe outcomes, but vacuum delivery was not in use due to instrumental defect. Ben-Aissia N., Gara M., et al observed that the major indication of forceps use was fetal suffering, and the maternal and fetal prognosis depended on accurate indication of the use of forceps (164). Shihadeh A. and Al-Najdawi W. observed that maternal birth canal and genital tract lacerations were significantly more common in forceps delivery and there was significantly increased morbidity in infants delivered by vacuum extraction (caput, jaundice, cephal hematoma), and serious neonatal morbidity was rare for both groups (165). Considering cesarean section, the results showed that emergency cesarean section was associated with higher rate of mothers and fetuses/babies complications than elective. This result agreed with Bergholt T., Stenderup J.K., et al in Denmark (166).

The objective of intra-partum fetal heart monitoring is to prevent fetal asphyxia, and fetal death during labor. The results showed that regular fetal heart monitoring ended with good fetal/baby outcome because the clinician can manage labor according to fetal monitoring results. This agreed with Freeman R.K., Williams K.P., and Galerneau F., and Carbonne B., Gougeal V., and Fekih K.M. (167,168,169).

The use of partogram was limited in Tikrit Teaching General Hospital because of insufficient or unavailable papers of partogram that need economic solutions. Our results showed that the use of partogram in labor ended with safe mothers and fetuses/babies, this agreed with

Pattinson R.C., Howarth G.R., et al who found that the partogram played an important role in labor outcomes (170).

Regarding the Rh of mothers and babies, a large number (84.7%) of mothers were Rh positive. These results compared with Weiner C.P. who found that approximately 85% of white Americans, 92%-93% of African Americans, and 99% of the Asian population are Rh positive (171). The mother with Rh negative, and baby Rh positive had unsafe fetal/baby outcomes, either due to the problem of incompatibility or other problems, Rh incompatibility happened when the mother was previously sensitized, but iso-immunization can be prevented if the mother receives Anti-D in the first (72) hours post termination of each pregnancy according to our results. (American College of Obstetricians and Gynecology) observed the highest risk of Rh incompatibility if mothers were previously sensitized (172).

The results showed a high rate of maternal complications in the antenatal period, particularly at third trimester. This agrees with Chakraorty N., Islam M.A., et al in Bangladesh who observed a high rate of complications in the antenatal period (173). This large number of complications interpreted that, the women recall the problems because of the seriousness of these problems, or the same women had multiple problems in the antenatal period. These problems include ante-partum hemorrhage, premature rupture of membrane, or leaking fluid, threatened preterm labor and its causes, gestational hypertension and other problems.

The results showed the highest rate of fetus/baby complications occurred in the post-partum period. This disagrees with Buchmann E.J., and Pattenson R.S. who observed the highest frequency of fetal complications in the intra-partum period, especially birth asphyxia (174).

Regarding maternal use of drugs taken in preconception, ante-partum, and intra-partum periods, and fetomaternal

**Outcomes:** The results showed that the preconceptional drugs with

harmless effects were associated with safe pregnancy outcomes, such as using of folic acid in the prevention of birth defects and neural tube defects. This agrees with French M.R., Barr S.I., and Levy Milne R. and Barash J.H., and Weinstein L.C. (175,176).

Regarding ante-partum drugs, the results showed that tonics used during pregnancy were associated with safe mother and fetus/baby outcomes. This result agrees with Correa A., Botto L., et al (177).

Other drugs used in the ante-partum period to treat specific diseases such as anti-hypertensive drugs, depends on the type of drugs used and their side effects. This agreed with Duley L., and Henderson-Smart D.J. (178).

Other drugs used in the ante-partum period were corticosteroids to decrease respiratory distress syndrome. It is given in three doses as 12 mg for three consecutive days to induce fetal lung maturation in threatened preterm labor to decrease perinatal morbidity and mortality. The results showed the positive role of corticosteroid, but Cran J., Armson A., et al observed that a single course of corticosteroids reduces perinatal mortality, respiratory distress syndrome, and intra-ventricular hemorrhage, while repeated courses of corticosteroids decrease respiratory distress syndrome, but increase rates of neonatal and maternal infection, fetal, neonatal, and maternal adrenal suppression, decreased fetal or neonatal somatic and brain growth and increased perinatal mortality (179).

Regarding drugs used in the intra-partum period, the results showed that the hypertensive women who needed intra-partum antihypertensive drugs had high blood pressure during labor, and this hypertension did not respond to usual ante-partum antihypertensive drugs, or women had no antenatal care of diagnosed hypertension; therefore doctors try other drugs to save mothers and fetuses/babies life if possible, and according to our results both maternal and fetal/baby outcomes are affected negatively in this group of pregnant women.

Also the results showed that the women exposed to oxytocic drugs in

the intra-partum period are associated with safe pregnancy outcomes. This result agrees with Pattinson R.C., Howarth G.R., et al (170).

Regarding anticonvulsant drugs: (Valium, Phenobarbital, and sometimes general anesthesia) used during labor, and they were given when convulsion occurs due to hypertensive disorders that are associated with unsafe mothers and fetuses/ babies. But Alberta by Foong S.C., and Pollard J.K. observed that use of seizure prophylaxis for all women with gestational hypertension from time of diagnosis through to (24) hours postpartum, may have been able to prevent as many as 53% of eclamptic episodes (180).

Many factors such as maternal history of medical diseases (acute and chronic infectious diseases, hypertension, diabetes mellitus, anemia, cardiovascular diseases, renal diseases, epilepsy, psychological illnesses, and others), maternal gynecological and obstetrical surgery (ovarian, tubal surgery, uterine fibroid, cesarean section, cervical, and others), and family history of inherited disorders (bleeding disorders, chromosomal abnormality, congenital anomalies, and others) all affect negatively on pregnancy outcomes. Most common medical diseases of mothers that affect fate of pregnancy were anemia, particularly severe anemia were associated with increased mother and newborn morbidity. This agrees with Malhorta M., Sharma J.B., et al in a tropical African setting (181). The other common disease was eclampsia which was a major cause of maternal and fetus/baby morbidity and mortality. This agrees with Beye M.D., Diaouf E., et al (182). Other disease was diabetes mellitus and epilepsy, which are closely linked to an increased risk of fetal malformation, and this agree with Steel et al (183).

The high rate of perinatal mortality in our study is mainly related to maternal causes. This agreed with Aisien A.O., Lawson J.O., et al in Nigeria (184). The perinatal mortality rate related to fetal causes, agrees with Kinzler W.L., Ananth C.V., et al who found that small size of gestational age, if exposed to labor stress, increases the risk of early neonatal death (185). According to our results

obstetrical complications had the least effect on perinatal mortality. This was interpreted that most fetuses at risk of labor complications were planned for appropriate management or due to contribution of maternal and fetal causes. This agrees with Bari W., et al) who observed that perinatal death associated with obstetrical complications as assisted delivery (186), but Sheiner E. et al) who disagree with our study, observed that obstetrical problems had independent associations with perinatal mortality (187).

The study results showed the high rate of maternal mortality due to direct causes during pregnancy, and in the (first 42 days) post partum. The common causes were hypertensive disorders, postpartum hemorrhage, and thromboembolic problems. These results are explained as, early death at first 42 days may be at labor or after a short time when the mother is still in hospital, and is recorded as pregnancy related death. But the lower rate of maternal mortality was in the period (after 42 days - 1 year) of pregnancy termination. Berg C.J., et al in the United States showed that the pregnancy related mortality ratio increased, probably because of improved identification of pregnancy related death, and common causes were embolism, hemorrhage, and other medical conditions (188).

Meta-analysis provides an opportunity to examine consistency of the results across studies, in relation to quality of studies, and we can provide a plot of results with only the best studies included and then with successive inclusion of varying levels of quality, of the studies (115).

Our study showed that the common maternal mortality causes were hypertensive disorders, and hemorrhagic complications of pregnancy, in addition to embolism, sepsis, and cerebrovascular accidents which were less frequent than the first two causes.

Maternal mortality ratio and causes of our study compared with other studies: Gaym A), Sloan N.L., Langer A., Hernandez B., Romero M., and Winikoff B., and Berg C., Chang J., Callaghan W.M., and Whitehead S.J. agreed with our results that hemorrhage problems of pregnancy,

hypertensive disorders of pregnancy, and sepsis were mutual leading causes of maternal mortality (188,189,190). But Berg C.J., Chang J., Callaghan W.M., and Whitehead S.J. agreed with our results that embolism and cerebrovascular accidents form the leading causes of maternal mortality (188).

## Conclusions and Recommendations

### 6.1. Conclusions:

- 6.1.1. Safe fetus/baby and mother outcomes in relation to maternal factors were found in married women, parity group of (1-4), pregnancy spacing >2 years, good antenatal care, mothers who attended both private clinics and primary health care centers, low risk level, women received tonics during pregnancy, and those who received tetanus immunization.
- 6.1.2. During labor, complications decreased with hospital site of delivery, normal duration of labor for both primiparous and multiparous women, and elective cesarean section and forceps delivery were associated with no complications.
- 6.1.3. Safe fetus/baby and mother, in relation to fetal factors associated with full term babies with normal birth weight, Rh +ve for both mother and baby, regular fetal heart monitoring during labor, and single fetuses pregnancy.
- 6.1.4. Male and female gender of baby had nearly equal effect on safety of mothers and fetuses/ babies.
- 6.1.5. Maternal and fetal/baby complications mostly associated with maternal age group <16, >45 years, illiterate mothers, rural living mothers, and these complications mostly happened in ante partum period during recent pregnancy.
- 6.1.6. Perinatal mortality is most common due to maternal causes.
- 6.1.7. Maternal mortality is most

common in the first (42) postpartum days due to direct causes.

- 6.1.8. Most common risk factors were family history of medical diseases, previous cesarean section, low birth weight babies, ante partum hemorrhage, and toxemia in that order.
- 6.1.9. Maternal mortality happened due to hypertensive disorders, and hemorrhagic problems of pregnancy.

**6.2. Recommendations:**

- 6.2.1. Improve maternal health by:
  - a. Clean and safe delivery by skilled attendant at birth of all mothers.
  - b. Community awareness of maternal health needs.
  - c. Improvement of health status of women.
  - d. Improve health professional performance.
  - e. Integrate referral hospital services into the existing primary health care services.
  - f. Develop appropriate strategic polices for referral hospital including antenatal, postnatal, family planning, and emergency obstetric care.
  - g. Reporting system for domestic and other violence against women.
  - h. Community awareness of family planning and advantage of child spacing.
  - i. Laws and legislation for midwifery.
  - j. Continuing pre services and in services health education.
  - k. Strengthening monitoring system for maternal mortality.
- 6.2.2. Improve neonatal health by:
  - a. Quality care of the newborn babies by introduction of modern/new technologies and, skilled staff.
  - b. Action oriented newborn death surveillance system.
  - c. Introducing early detection and management of hereditary diseases.
  - d. Introduce genetic counseling services.

Table 1. Effect of maternal factors on the mother, and on the fetus/newborn outcome.

Factors	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
<b>*Maternal age</b>						
<16 years	2	4.8	40	95.2	42	0.5
16-25year	518	56.4	400	43.6	918	11
26-35years	446	51.5	420	48.5	866	10.4
36-45years	90	38.3	145	61.7	235	2.8
>45years	4	21.1	15	78.9	19	0.2
<b>*Education- nal level</b>						
Read and write	728	76	230	24	958	11.5
Not read and not write	332	29.6	790	70.4	1122	13.5
<b>*Parity</b>						
Zero	439	49.4	449	50.6	888	10.7
1-4	523	56.4	405	43.6	928	11.2
≥5	98	37.1	166	62.9	264	3.2
<b>*Marital state</b>						
Married	1054	54.1	896	45.9	1950	23.4
Divorced	1	7.7	12	92.3	13	0.2
Widowed	2	5.3	36	94.7	38	0.5
Separated	3	3.8	76	96.2	79	0.9
Subjects	4240	3.8	76	96.2	79	0.9

P value less than 0.001D.F=14

Table 2. Effect of fetal factors on the mother, and on the fetus/newborn outcome.

Fetal factors	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
<b>*No. of fetuses</b>						
Single	1068	54.5	892	45.5	1960	32
Multiple	13	16.2	67	83.8	80	1.3
<b>*Gender</b>						
Male	540	53	478	47	1018	16.6
Female	541	53	481	47	1022	16.7
<b>*Weight</b>						
Extreme LBW<1000gm	0	0	3	100	3	0.1
Very LBW<1500gm	0	0	74	100	74	1.2
LBW<2500gm	0	0	134	100	134	2.2
Normal (2500-4000)gm	1080	61.3	681	38.7	1761	28.8
Macrosomia >4000gm	1	1.5	67	98.5	68	1.1
Subjects	3243	53	2877	47	6120	100

P value less than 0.001D.f= 8

Figure 1. Relation of Residency with mother, and fetus/newborn outcome.

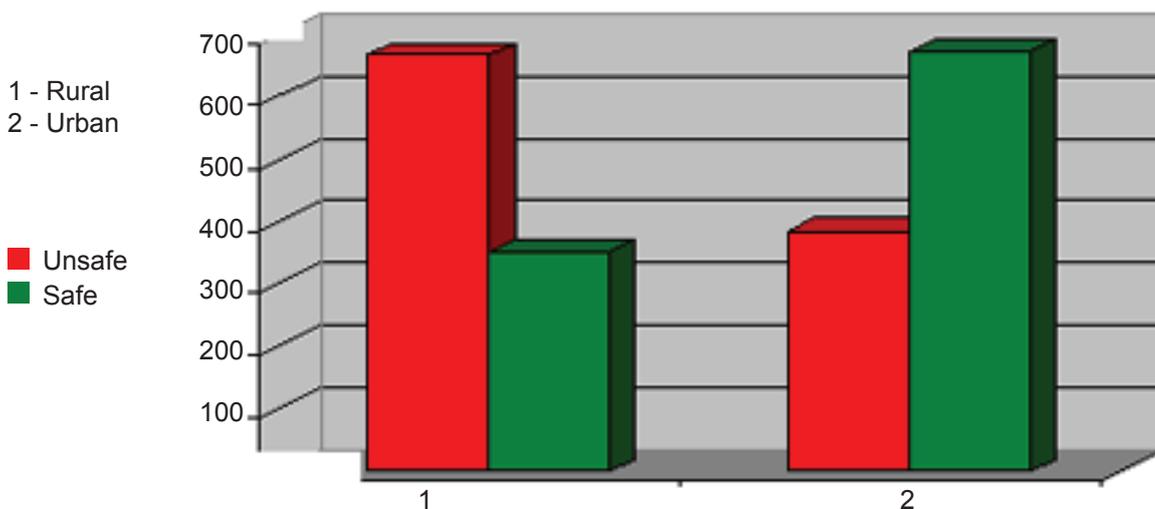


Figure 2. Effect of parental consanguinity on fetus/newborn outcome.

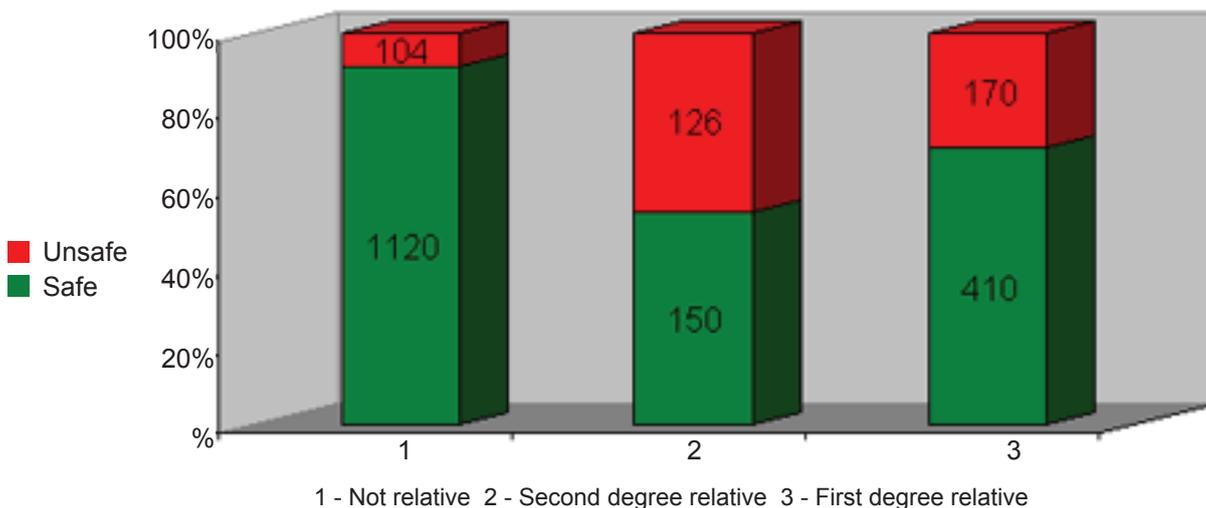


Table 3. Effect of antenatal care (ANC) on the mother, and on the fetus/newborn outcome.

ANC	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
Good (>5 visits)	939	68.9	424	31.1	1363	65.5
Poor (<5 visits)	108	17.6	506	82.4	614	29.5
None	13	12.6	90	87.4	103	5
Subjects	1060	51	1020	49	2080	100
Chi square=509.6 Degree of freedom=2						

Table 4. Effect of ANC site on the mother and on the fetus/newborn outcome.

Site of ANC	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
Private	548	57.6	403	42.4	951	48.1
PHCC	185	33.3	371	66.7	556	28.1
Both	314	66.8	156	33.2	470	23.8
Subjects	1047	53	930	47	1977	100
Chi square=89.8 Degree of freedom=2						

Figure 3. Risky women levels and outcome of the mother, and the fetus/newborn.

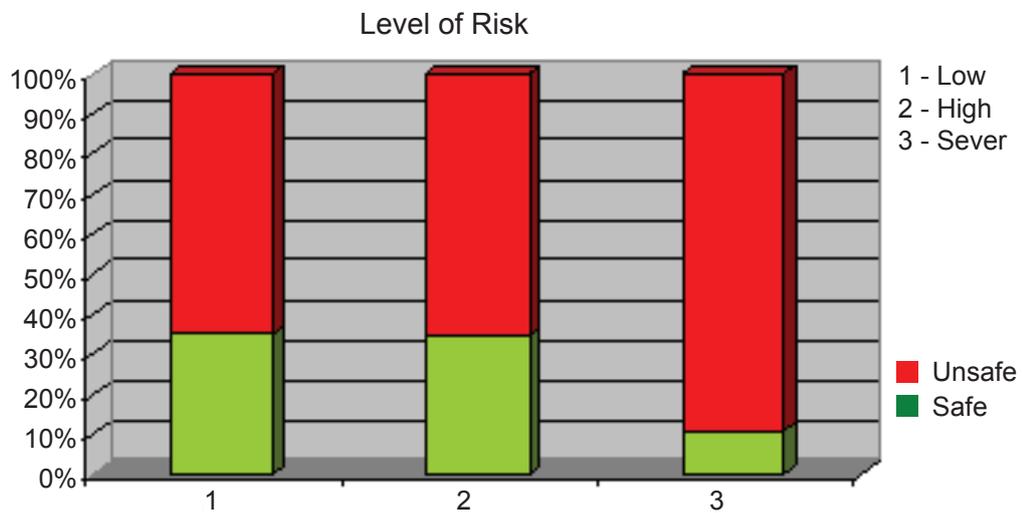


Table 5. Effect of maternal immunization with tetanus toxoid on the mother and the fetus/newborn outcome.

Immunization	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
*Received						
-Complete	422	86.5	66	13.5	488	23.5
-Partial	500	58.7	352	41.3	852	41
*Not recieved	138	18.6	602	81.4	740	35.5
Subjects	1060	51	1020	49	2080	100
Chi square= 576 Degree of freedom= 2						

Table 6. Effect of birth spacing (average spacing period among all pregnancies) on the mother and the fetal/newborn outcome.

Complications	Period of spacing				Subjects	
	<2years		>2years			
	No.	%	No.	%	No.	%
Both safe	340	35.2	720	64.6	1060	51
Both unsafe	135	14	68	6.1	230	9.7
SmUb	123	12.7	74	6.7	197	9.5
UmSb	368	38.1	252	22.6	620	29.8
Total	966	46.4	1114	53.6	2080	100

Chi square= 182.5 Degree of freedom= 3

SmUb=Safe mother and unsafe baby.  
UmSb=Unsafe mother and safe baby.

Figure 4. Duration of pregnancy and outcome of the mother, and the fetus/newborn.

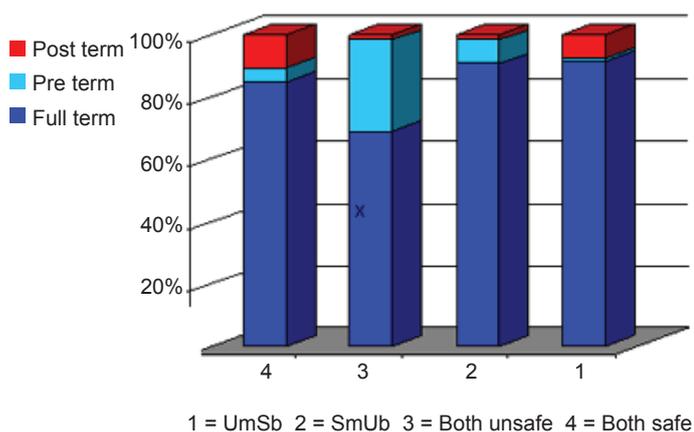


Table 7. Effect of abortion types (11, 31) on maternal safety.

Types	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
*Spontaneous						
-Threatened	24	92.3	2	7.7	26	22
-Inevitable	6	100	0	0	6	5.1
-Incomplete	20	80	5	20	25	21.2
-Complete	12	66.7	6	33.3	18	15.3
-Missed	2	25	6	75	8	6.8
-Habitual	4	28.6	10	71.4	14	11.8
-Septic	1	10	9	90	10	8.5
*Therapeutic	8	72.7	3	27.3	11	9.3
Subjects	77	65.3	41	34.7	118	100

Chi square=41.4 Degree of freedom=7

Table 8. Effect of delivery site on the mother and on the fetus/newborn outcome.

Site of delivery	Outcome									
	Both safe		Both unsafe		UmSb		SmUb		Subjects	
	No.	%	No.	%	No.	%	No.	%	No.	%
*Hospital	1017	55.8	125	6.9	586	32.2	94	5.1	1822	93
**Home By:-										
Registered midwife	43	62.3	0	0	0	0	26	37.7	69	3.5
Non registered midwife	0	0	30	46.9	34	53.1	0	0	64	3.3
Not aided at all	0	0	5	100	0	0	0	0	5	0.2
Total	1060	54.1	160	8.2	620	31.6	120	6.1	1960	100

Chi square= 455.5 Degree of freedom= 9

Table 9. Relation of mode of delivery and (intra-partum - postpartum) on the mother and the fetus/newborn complications.

Mode of delivery	Complications					
	+ve		-ve		Total	
	No.	%	No.	%	No.	%
*Spontaneous vaginal delivery	461	53.5	400	46.5	861	42.2
*Induced vaginal delivery	289	61.8	179	38.2	468	22.9
<b>*C/S</b>						
-Emergency	145	81	34	19	179	8.8
-Elective	30	9.1	300	90.9	330	16.2
<b>*Instrumental</b>						
-Forceps	34	16.8	168	83.2	202	9.9
-Vacuum	0	0	0	0	0	0
Subjects	959	47	1081	53	2040	100
Chi square= 403.2 Degree of freedom= 5						

Table 10. Effect of labor duration (11) on the mother and the fetus/newborn outcome.

Outcome	Primigravida				Multigravida				Subjects	
	<20 hours		>20 hours		<14 hours		>14 hours		No.	%
	No.	%	No.	%	No.	%	No.	%		
Safe	377	79.9	91	39.6	433	73	40	13.8	941	59.4
Unsafe	95	20.1	139	60.4	160	27	250	86.2	644	40.6
<b>Total</b>	<b>472</b>	<b>29.8</b>	<b>230</b>	<b>14.5</b>	<b>593</b>	<b>37.4</b>	<b>290</b>	<b>18.3</b>	<b>1585</b>	<b>100</b>
Chi square= 415.4 Degree of freedom= 3										

Table 11. Type of fetal monitoring during labor and perinatal complications.

Fetal monitoring	Perinatal complications					
	+ve		-ve		Total	
	No.	%	No.	%	No.	%
*Regular fetal heart monitoring	223	20.9	844	79.1	1067	78.5
*Partogram	20	6.8	273	93.2	293	21.5
*Fetal PH estimation	0	0	0	0	0	0
Subjects	243	17.9	1117	82.1	1360	100
Chi square= 31.1 Degree of freedom= 2						

Table 12. Effect of maternal Rh on the fetus/newborn outcome.

Rh of mother	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
Rh +ve	1480	89.2	180	10.8	1660	84.7
Rh -ve mother (Rh+ve baby)	78	48.4	83	51.6	161	8.2
Rh-ve mother (Rh-ve baby)	122	87.8	17	12.2	139	7.1
Subjects	1680	85.7	280	14.3	1960	100
Chi square= 199.2 Degree of freedom=2						

Table 13. Maternal death and its causes

Causes	Maternal death		Subjects	
	No.	%	No.	%
<b>* First 42 days</b>				
-Direct	5	45.4	5	45.4
-Indirect	2	18.2	2	18.2
<b>*After 42 days-1 year</b>				
-Direct	1	9.1	1	9.1
-Indirect	1	9.1	1	9.1
*Coincidental	2	18.2	2	18.2
<b>Total</b>	<b>11</b>	<b>100</b>	<b>11</b>	<b>100</b>

Table 14. complications outcome

Time	Complications					
	Mother		Fetal/newborn		Subjects	
	No.	%	No.	%	No.	%
<b>*Ante partum</b>						
-1st trimester	280	24.3	93	20.9	373	23.4
-2nd trimester	231	20.1	15	3.4	246	15.4
-3rd trimester	369	32.1	25	4.9	391	24.5
*Intrapartum	129	11.2	150	33.6	279	17.5
<b>*Postpartum</b>						
<b>-Early:</b>						
-1st 24 hour	56	4.9	142	31.8	198	12.4
-After 24 hour	34	2.9	8	1.8	42	2.6
<b>-Late:</b>						
-Before end of 42 day	48	4.2	16	3.6	64	4
-After 42 days-1st year	30	0.3	0	0	3	0.2
<b>Total</b>	<b>1150</b>	<b>72.1</b>	<b>446</b>	<b>27.9</b>	<b>1596</b>	<b>100</b>
Chi square= 440.9 Degree of freedom= 7						

Table 15. Effect of maternal drug history on the mother and the fetus/newborn outcome.

Drug history	Outcome									
	Both safe		Both unsafe		SmUb		UmSb		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>*Preconceptional preventive drugs</b>										
-Harmful	0	0	0	0	7	100	0	0	7	0.4
-Harmless	60	84.5	11	15.5	0	0	0	0	71	2.9
<b>*Antepartum</b>										
-Tonics	948	64.9	0	0	20	1.4	492	33.7	1460	60.5
-Drug for specific disease	305	59	36	6.9	64	12.4	112	21.7	517	21.4
<b>*Intraparum</b>										
-Antihypertensive	2	2.9	43	61.4	19	27.1	6	8.6	70	2.9
-Oxytocic drugs	182	70.3	56	21.6	18	6.9	3	1.2	259	10.7
-Anticonvulscent	1	3.3	17	56.7	0	0	12	40	30	1.2
Subjects	1498	62	163	6.8	128	5.3	625	25.9	2414	100
Chi square= 787.1 Degree of freedom=21										

Drug history	Outcome									
	Both safe		Both unsafe		SmUb		UmSb		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>*Medical diseases</b>										
-Acute illnesses	51	38.6	35	26.5	18	13.7	28	21.2	132	5.3
-Chronic illnesses	80	20.4	165	42	43	10.9	105	26.7	393	15.7
<b>*Surgical operations</b>										
-Gynecological & obstetrical	115	28.5	46	11.4	2	0.5	240	59.6	403	16
-Non gynecological	86	52.1	8	4.8	11	6.7	60	36.4	165	6.6
<b>* Family history</b>										
-Inherited disorders	14	19.2	9	12.3	43	58.9	7	9.6	73	2.9
-Multiple pregnancy	190	78.2	18	7.4	4	1.6	31	12.8	243	9.7
-Medical diseases	648	59	65	5.9	36	3.3	350	31.8	1099	43.8
Subjects	1184	47.2	346	13.8	127	6.3	821	32.7	2508	100
Chi square= 907.3 Degree of freedom=18										

Table 16. Comparison among risk factors of pregnant women and outcome of mother and fetus/newborn.

Risk Factors	Outcome					
	Safe		Unsafe		Total	
	No.	%	No.	%	No.	%
*Age<16, >45years	6	9.8	55	90.2	61	1.2
*Parity >5	98	37.1	166	62.9	264	5.3
*>=2 abortion or history of infertility or PPH	112	38.4	180	61.6	292	5.9
*Toxemia or hypertension	154	44.6	191	55.4	345	7
*Previous C\ S	40	9.4	386	90.6	426	8.6
*Abnormal or difficult labor	7	17.9	32	82.1	39	0.8
*Child <5 lb, >9 lb	8	2.7	292	97.3	300	6.1
*Gestational diabetes	5	20	20	80	25	0.5
*Chronic renal diseases	1	8.3	11	91.7	12	0.2
*Cardiac diseases	0	0	18	100	18	0.4
*Previous gynecological surgery	26	37.7	43	62.3	69	1.4
*Other significant medical diseases	10	12.2	72	87.8	82	1.7
<b>**For present pregnancy</b>						
**Bleeding >20 wk, <20wk of gestation	91	31.6	197	68.4	288	5.8
Anemia <10 g/l	199	58.9	139	41.1	338	6.8
**Postmaturity	80	53	71	47	151	3.1
**Hypertension	176	55.3	142	44.7	318	6.4
**PROM	28	37.8	46	62.2	74	1.5
**I.U.G.R.	0	0	168	100	168	3.4
**Polyhydramnios	22	26.5	61	73.5	83	1.8
**Multiple pregnancy	10	25	30	75	40	0.8
**Breech or malpresentation	25	23.8	80	76.2	105	2.1
**Isoimmunization	78	48.4	83	51.6	161	3.2
<b>***Others</b>						
***Weight <45kg,>90kg	12	22.2	42	77.8	54	1.15
***Height<150 cm	18	34.6	34	65.4	52	1.05
***Family history of Inherited disorders	14	18.2	63	81.8	77	1.6
***Family history of medical diseases	648	59	451	41	1099	22.2
Subjects	1868	37.4	3073	62.6	4941	100

Table 17. The characteristics of included studies.

Study	Method	Population	Outcome
1. Asheber Gaym,2000	A retrospective study of hospital maternal death at Jima hospital, Southwestern Ethiopia for 9 years (September 1990-May 1999)	Both direct and indirect maternal death during pregnancy, or delivery or within 42 days of pregnancy termination according to WHO definition.	Maternal mortality ratio=1965 per 100 000 live births. Common causes of maternal deaths: 1. Obstructed labor=45.5%. 2. Sepsis=40%. 3. Ruptured uterus=33.2%. 4. Haemorrhagic complications of pregnancy=11.1%. 5. Hypertensive disorders =3.8%.
2. Sloan N.L., Langer A., Hernandez B., Romero M., and Winikoff B., 2001.	Retrospective study on maternal deaths on autopsy in Mexico, at 1995.	Autopsy of died mothers due to direct and indirect maternal death according to WHO definition.	Maternal mortality ratio=53 per 100 000 live births. 1. Hypertensive disorders= 64.6%. 2. Hemorrhagic complications of pregnancy=51.9%. 3. Sepsis= 18.5%. 4. Obstructed labor=9.7%. 5. Abortion= 5.5%.
3. Berg C.J., Chang J., Callaghan W.M., Whitehead S.J., 2001.	A retrospective study in United State, 1991-1997.	Both direct and indirect maternal deaths according to WHO definition.	Maternal mortality ratio=12 per 100 000 live birth. 1. Thromboembolic complications=19%. 2. Hemorrhagic complications of pregnancy=18%. 3. Hypertensive disorders of pregnancy=16%. 4. Sepsis= 13%. 5. Cardiomyopathy= 7%..
4. Our study.	A retro prospective study in Tikrit General Teaching Hospital, at 2005-2006 (November 2005-April 2006).	Both direct and indirect maternal deaths according to WHO definition.	Maternal mortality ratio=161 per 100 000 live birth. 1. Hypertensive disorder=28.6%. 2. Haemorrhagic disorder of pregnancy=28.6%. 3. Embolism=14.3%. 4. Sepsis=14.3%. 5. Cerebrovascular accident=14.3%.

## Appendix 1

Name:  
Age:  
Number:  
Occupation:  
Residence:  
a. Urban  
b. Rural  
Marital state:  
a. Married  
b. Divorce  
c. Widow  
d. Separated  
Educational level:  
a. Illiterate,  
b. Primary education  
c. secondary education  
d. Higher education  
Socio economic level:  
a. Low,  
b. Middle  
c. High  
Blood group and Rh:  
Husband age:  
Husband occupation:  
Husband blood group and Rh:  
Are they relative?  
a. Yes  
b. No  
Degree of relation:  
a. First degree  
b. Second degree  
**\*\*Antenatal care:**  
a. Gravida,  
b. Para,  
c. Abortion  
d. LMP  
e. EDD  
No. of current pregnancy:  
If pregnancy:  
a. Single  
b. Multiple  
Method of pregnancy diagnosis:  
a. Urine  
b. U/S  
c. Non  
Gestational age:  
Trimester:  
a. 1st  
b. 2nd

c. 3rd  
Site of ANC:  
a. Private  
b. PHCC  
c. Both  
Time of 1st visit:  
Frequency of visit:  
Type of ANC:  
a. Adequate,  
b. Not adequate  
Immunization:  
High risk group:  
a. Yes  
b. No  
Cause of risk:  
Any investigation done during pregnancy:  
Radiation exposure:  
a. Yes  
b. No  
Time of it:  
Drugs taken during pregnancy:  
Any complication:  
**\*\*Abortion & still birth:**  
gestational age:  
Trimester:  
a. 1st  
b. 2nd  
c. 3rd  
Type of abortion:  
Cause o it:  
Any complication:  
**\*\*Natal care:**  
Date of delivery:  
Labour:  
a. Full term pregnancy  
b. preterm  
c. post term  
Site of delivery:  
a. Hospital  
b. Home  
If home delivery by:  
a. Registered midwife  
b. Not registered midwife  
c. Not aided at all  
Duration of labour:  
Type of delivery:  
a. NVD,  
b. C/S,  
c. NVD with induction  
d. Instrumental  
If C/S:

a. Elective  
b. Emergency  
Why C/S?  
Complication of C/S:  
Complication of NVD:  
Type of fetal monitoring during labour:  
a. FH each 1/2h,  
b. Partogram,  
c. PH estimation  
Sex of baby:  
a. Male  
b. Female  
Weight of baby:  
If baby:  
a. Normal,  
b. Abnormal  
Abnormal due to congenital anomalies:  
a. Yes,  
b. No  
Whats the anomaly:  
Abnormality due to complication of labour:  
a. RDS,  
b. Fracture,  
c. crebral pulsy  
d. Intracranial haemorrhage  
**\*\*PNC**  
1st visit time post termination:  
Immunization:  
Prolonged lochia:  
a. Yes  
b. No  
Complication:  
a. Early  
b. Late  
Early:  
a. PPH  
b. Sudden post partum collapse  
PPH:  
a. primary  
b. Secondary  
Primary PPH:  
a. Uterine inertia  
b. Genital tract injury  
Secondary PPH:  
a. Infection  
b. Retained placental piece  
c. Sudden post partum collapse:Internal bleed-  
ing  
d. Embolism  
e. Eclamptic fit  
Late complication:

- a. Mastitis
- b. UTI
- c. Wound infection
- d. Purperial sepsis
- ##Past obstetrical history**
- No. of previous pregnancies:
- History of multiple pregnancy:
- Mode of delivery:
  - a. NVD
  - b. C/S
  - c. No. of C/S
- ANC & PNC in previous pregnancies:
  - a. Adequate
  - b. Not adequate
  - c. Non
- Complications of previous pregnancies:
  - a. Normal
  - b. Abnormal
  - c. Death
- Any admission to neonatal care unit:
  - a. Yes,

- b. No
- Purperium of preious labour:
- Spacing:
  - a. >2 years,
  - b. <2years
- Contraception use:
  - a. Yes
  - b. No
- Type of contraception:
  - a. Natural
  - b. Hormonal
  - c. IUCD
  - d. Barrier
- History of infertility:
  - a. Yes
  - b. No
- Infertility:
  - a. Primary
  - b. Secondary
- ##Mensterual history:**
- Menarche:
- Frequency:

- Dysmenorrhea:
  - a. Yes
  - b. No
- ##Drug history**
- 1-Preconceptional preventive drugs:
  - a. Folic acid
  - b. Aspirin
- 2-Specific diseases:
  - a. Hypertension
  - b. DM
  - c. Others
- 3-Regarding pregnancy:
  - a. Tonics
  - b. Others
- ##Medical history**
- ##Surgical history**
- ##Social history**
  - a. Smoking
  - b. Alcoholic
  - c. Drug addiction
- ##Family history**

## Appendix 2

High Risk Evaluation Form(15)

*Reproductive history	
Age: <16 years	1
16-35	0
>35	2
Parity: Zero	1
1-4	0
>5	2
Two or more abortion or history of infertility	1
Postpartum bleeding or manual removal of placentae.	1
Child weight (>9lb)	1
Or(<5lb)	1
Toxemia or hypertension.	2
Previous C/S.	2
Abnormal or difficult labor	2
Column Total	
*Medical or surgical associated condition	
Previous gynecological surgery.	1
Chronic renal diseases`	1
Gestational diabetes A.	1
Class B or greater diabetes.	3
Cardiac diseases.	3
Other significant medical disorder (1-3) according to severity.	1-3
Column Total	
*Present pregnancy	
Bleeding: <20 week	1
>20 week	3
Anemia (<10 g/l)	1
Postmaturity.	1
Hypertension.	2
PROM.	2
Polyhydramnios.	2
I.U.G.R.	3
Multiple pregnancy.	3
Breech or malpresentation.	3
Rh-immunization.	3
Column Total	

\*Total Score (summation of 3 columns).  
 -Low risk = 0-2, -High risk = 3-6, -Sever risk = 7 or more

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# ROLE OF MOTHER'S PREFERENCE ON TYPE OF DELIVERY

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## ABSTRACT

**Background:** The rate of caesarean section in our society is increasing every day. Most caesareans are performed in private hospitals mainly on the mother's preference and without obstetric indications. In fact, in contrast to the past, these days, it is the mothers, who decide to select the type of delivery. This study was conducted to determine the role of mother's wishes on the course of labor and the type of delivery.

**Material & Methods:** 106 women, who came for prenatal care were included in this descriptive study. Criteria for inclusion were : First pregnancy , no systemic disease , no obstetric indication for caesarean before labor pain , no history of infertility, non smoker. All women , regardless of their wish, were informed about the benefits of normal vaginal delivery, were given trial of labor and were supported through different stages of labor.

**Results:** From a total of 106 pregnant women; 65 preferred to have a normal vaginal delivery, and 41 of them preferred caesarean section.

The rate of caesarean section in the first group was 12.3% (8 from 65) and in the second group it was 34.2% (14 from 41)( $P < 0.01$ ) , (Table 1).

**Conclusion:** The results of this study shows that mother's preference has a meaningful impact to the route of her delivery.

## Introduction:

For most countries, rates of caesarean section have risen as operative vaginal rates has fallen.

As disturbances in psychological condition like stress and fear of delivery, may cause disturbances in normal physiologic mechanisms, fear of normal vaginal delivery or a preference of caesarean section can cause disturbances in the pattern of normal vaginal delivery (1).

14.5% of women in the U.K. opted for an elective caesarean section on maternal request. The main reasons being to avoid prolonged labor and for fetal well being (2).

In contrast Asian women seem to largely prefer vaginal deliveries with only 3.7% preferring an elective caesarean section on maternal request. The reason for the request was pretty similar to that of U.K. mothers (3).

We did a study on 106 women who were referred to Mahdih and Taleghani hospitals for delivery from January to December 2000.

## Materials and methods:

In this descriptive study 106 mothers came to these hospitals for delivery. They were primigravida ,with no systemic disease , no obstetric cause for caesarean section, no history of infertility , and non smokers. They were divided into two groups according to their preference for type of delivery. Group 1: vaginal delivery. Group 2: caesarean section. Course of labor was observed when they were admitted with labor pain. If date for delivery was delayed, oxytocin was started for induction of labor. Mother's choice as to the type of delivery, that was recorded previously on medical sheet, age, level of education, and her occupation was recorded on form A. Type of delivery, course of labor, gestational age , how labor pain started - spontaneously or by induction of syntocinun, use of vacuum or forceps was recorded

on form B. Comparison between the two groups was done and data processing done with chi - square.

## Results:

The subject's mean age was 21.5  $\pm$  1.1 years. Mother's preference for caesarean section in highly educated women (i.e with at least a Bachelor's degree ) was 54.5 % , and in women with lesser education was 22.2%.

Preference for caesarean delivery was 52 % in working ladies and 38 % in house wives .

The rate of caesarean section in the group 1 was 12.3 % and its rate in the group 2 was 34.2 % (Table 1),  $p < 0.01$ . The mean duration of second stage of delivery in group 1 was 35.5  $\pm$  10.38 minutes and its duration in group 2 was 44.74  $\pm$  13.9 minutes.

Use of oxytocin for induction of labor and delivery in group 1 was 18.4%, and in group 2 was 36.5 % , ( $P < 0.05$ ). Post term pregnancy in group 1 was 21.5% and in group 2 was 39 % , ( $P < 0.06$ ).

Use of forceps or vacuum in group 1 was 3% and in group 2 was 4.8 % (NS) respectively.

## Discussion:

This study shows that there is a significant relationship between mother's preference as to the type of delivery, ( $P < 0.01$ ). In a research that was done in 1998 in obstetrics and gynecological department of Central Hospital in Helsingborg in Sweden, it is mentioned that fear of delivery caused an increase in the rate of emergency caesarean delivery (4). This compares well with our study which shows increased rate of caesarean delivery in mothers who preferred it, and it may have been due to fear or stress about normal delivery. In another research that was done in Karolinska Institute in Sweden, it is mentioned that women affected by stress and those who are afraid of normal delivery, need more specific psychological support.

Finally women with fear of childbirth remembered the pregnancy as distressing, in spite of support. Also those who initially had asked for a caesarean section but eventually underwent a vaginal delivery (5). A research that was done in health school of Latrobe University in Victoria on immigrant Australian Thai women, showed that in the group of women who considered caesarean delivery as a safe method of birth, emergency caesarean delivery was higher when compared with controls (6). This corresponds with our study. In Norway a recent survey showed that 8.4% of their caesarean sections were for maternal request (7).

Mother's preference is helpful in second stage of delivery for bearing down and relaxation of perineal muscles for shorter duration of second stage. We also showed in our study that when the mother preferred a normal delivery, mean duration of second stage of delivery was  $35.5 \pm 10.38$  minutes compared with mothers who preferred caesarean delivery, in whom its duration was  $44.74 \pm 13.9$  minutes ( $P < 0.003$ ). On questioning obstetricians in the UK in 1999, 69% of consultants said they would agree to a maternal request for caesarean section with no clinical indication. Of these 60% feel that their practice has changed recently (8).

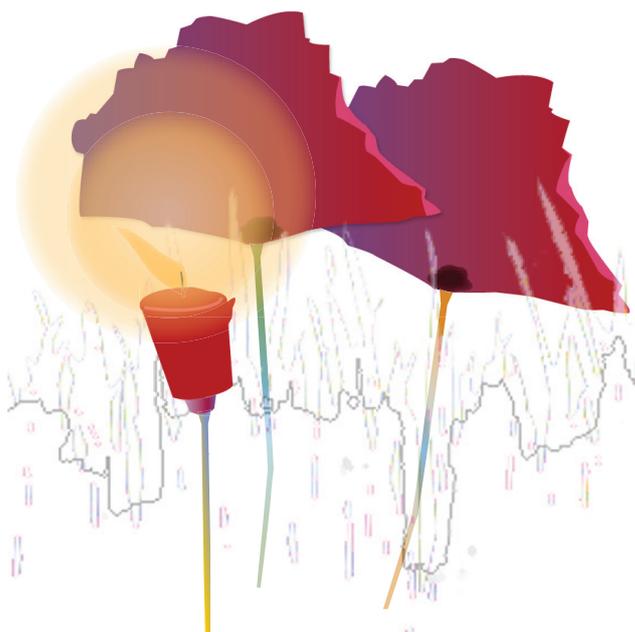
Mind and body are two different essences. One of them is liberated and metaphysical, while the world of matter and material limits the other. These two make the identity of a person, and have mutual and opposing effects on each other (9). The human mind has always been interested in acquiring voluntary control over involuntary processes like pulse, blood pressure, respiration (10). It has been suggested that hypothalamus and limbic systems and reticular systems in the brain play important roles in controlling emotion. Stimulation of the paraventricular nuclei causes secretion of oxytocin from neuronal cells and may play a role in the progress of labor and delivery of newborns (1). Since it is well known that oxytocin acts through the paracrine system, we could not find a rational explanation for the effect of fear and stress on the process of labor. Although the mechanism of labor is not known, it has been seen that oxytocin injection is needed for induction of labor in post term pregnancy. As this problem was seen more in women who had preferred caesarean section from the beginning, the possibility remains that failure to start labor in these women could have been due to the effect of limbic systems and hippocampus on the hypothalamus and hypophysis. Irvine in North Thames region of England concluded that maternal request for caesarean section is patient and not obstetrician led (11).

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