The Prevalence and Risk Factors Influencing the Occurrence of Intra Uterine Fetal Death and Nursing Implication

Faten Ibrahim Elsebeiy [1] & Nabila Salim Mohammed [2]

[1&2] lecturers of Obstetrics & Gynecological Nursing, Faculty of Nursing, Zagazig University.

Abstract

Background: The death of a formed fetus is one of the most emotionally devastating events for parents and clinicians. It is defined as death at a gestational age of 20 completed weeks or greater, or if fetal weight is 300 gm. or more. **Aims of study:** were to determine the prevalence, find out risk factors of intrauterine fetal death and design a brochure to counsel IUFD mothers about definition, risk factors, and prevention of it. **Subjects and Methods: Research Design:** descriptive cross sectional study was used. **Setting:** The study was conducted at labor and childhood hospital. **Subjects:** included the total number of IUFD cases (65) who were admitted to the study setting within a period of one year from January to December, 2015.**Tools of data collection:** the first tool was the total number of births at the study setting within the study year to calculate the prevalence of IUFD. The second tool included risk factors sheet which included four parts maternal, fetal, placental and cord risk factors. **Results**: the prevalence rate of IUFD were 9.3/1000 total births. There was a significant relation between rural residence far from medical and nursing health services and inability to hospital admission. The consanguinity risk factor was present in more than half of the studied women. Pregnancy induced hypertension complicated nearly one third of IUFD pregnancies. **Conclusion:** The risk factors of IUFD were mainly maternal. Rural residence far from medical services, low social level and increased number of pregnancies significantly interfered with attendance of antenatal visits, hospital admission for worsened obstetric complications and taking prescribed medications. **Recommendations:** Great interest should be given to rural areas that are far from medical services and those who live in low social class through increasing the number of rural hospitals that provide high quality of care with low cost in these areas.

Key words: Prevalence, risk factors, intrauterine fetal death, nursing intervention

Introduction:

Intrauterine fetal death is a tragic event for the parents and a great cause of stress for the caregiver. It is defined as the death of fetus more than 24 weeks of gestation and weighing more than 500 grams. The gestational age at which intrauterine fetal death varies from county to country. An early fetal death is death of a fetus weighing at least 500g (or after 22 weeks gestation or with a crown-heel length of 25cm or more). A late fetal death is defined as the death of a fetus weighing at least 1000g (or a gestational age of 28 weeks or a crown heel length of 35 cm or more). [1]

The prevalence of IUFD has been reduced to a minimum unavoidable rate in developed countries; however it is still very high in underdeveloped and developing countries. The range of prevalence varies in different countries, ranging from five in 1000 births in high income countries and 36 in 1000 births in developing countries. The developing countries in Asia and sub Saharan Africa together constitute 70% of the world's IUFD burden.[2] The study of [3] in Saudi Arabia revealed that , there were 157 cases of singleton IUFD during the study period of 2-years (2001-2002) and the intra-uterine fetal death prevalence rate was 10.1 per 1000 deliveries.

The risk factors of IUFD are classified into maternal risk factors which include (pregnancy induced hypertension which was the most

common risk factor and accounted for 28.75% of the study sample, severe anemia, infections and labor complications), fetal risk factors which included (congenital anomalies, Rh isoimmunization, none immune hydrops, multiple pregnancy and premature rupture of membrane), placental risk factors which included placenta previa, accidental hemorrhage, intra uterine growth retardation, cord accidents and post datism) , road traffic accidents is another risk factor. Meanwhile IUFD may have no risk factor (unexplained) in 19.05% of IUFD cases.[4]

Consistent socio-demographic risk factors of intrauterine fetal death include race, low socioeconomic status, consanguinity, inadequate prenatal care, inaccessible or limited health care facility, less education, and advanced maternal age. Numerous studies have shown a consistent doubling in the risk for fetal death in cases of maternal obesity (body mass index of 30 or more [5]

Fetal death may be associated with cessation of previously perceived fetal movements or decrease in pregnancy-related symptoms such as nausea. Real-time ultrasonography is essential for an accurate diagnosis of IUFD; this allows direct visualisation of the fetal heart, and views can be supplemented with colour doppler of the heart and umbilical cord. The use of ultrasound also facilitates visualisation of other secondary features such as fetal hydrops, polyhydramnios, anhydramnios, overlapping skull bones and skin oedema. Auscultation of the fetal heart by Pinard Stethoscope or Doppler is inaccurate and this together with cardiotocography should not be used to investigate suspected IUFD.[6]

The nursing role in counseling the pregnant women about IUFD is imperative through encouraging her to seek the antenatal care services in which screening for blood group and viral infection, fetal monitoring for high risk cases, evaluation of the placental condition by ultrasound, proper control of diseases as diabetes, hypertension and atiphospholopid syndrome are allowed. Intrauterine fetal death secondary to Rh isoimmunization can be prevented with correct administration of anti D immunoglobulin. Counseling on avoidance of consanguineous marriages, early marriage and early pregnancy are also recommended.[7]

Intrauterine fetal death management may involve awaiting spontaneous labor or planned induction. More than 85% of women with an IUFD were exposed to spontaneous labor within three weeks of diagnosis. The nurse plays an important role in caring of women undergoing expectant management. Examples include serial assessment of maternal temperature, abdominal pain, bleeding, leaking fluid, foul discharge and uterine contractions. Regular office visits (eg, weekly) may be useful for emotional support, medical surveillance and determination of complete blood count, platelet count, and fibrinogen level. These measures may reduce the risks of expectant management including intrauterine infection and maternal coagulopathy.[8]

Vaginal birth is the recommended mode of delivery for most women. Vaginal birth can be achieved within 24 hours of induction of labour for IUFD in about 90% of women. A combination of mifepristone and a prostaglandin is recommended as the first line intervention for induction of labour. Caesarean birth is indicated in placenta previa of major degree, severe cephalopelvic disproportion, previous classical caesarian delivery, transverse

lie and shoulder presentation near term.[9]

Significance of the study:

Although three million IUFDs occur annually worldwide, they haven't been addressed as much[2]and Unfortunately, there is a great scarcity of data about the prevalence, risk factors or consequences of IUFD in Zagazig. So this study was done; as the optimal management of IUFD and prevention of its recurrence in future pregnancies depend on accurate identification of the risk factors. This would enable nursing staff to improve prevention strategies for this major cause of pregnancy wastage.

Aim of the study:

The aims of the current study were to:

- Determine the prevalence of intrauterine fetal death.
- Find out the risk factors of intrauterine fetal death (IUFD).
- Design a brochure to counsel IUFD mothers about definition, risk factors and prevention of IUFD.

Research question:

- What is the prevalence intra uterine fetal death?
- What are the risk factors of intra uterine fetal death?

Subjects and Methods

Research Design:

Descriptive cross sectional design was adopted in this study to determine the prevalence and risk factors of IUFD.

Study Setting:

The current study was conducted at labor hospital, Zagazig university hospitals.

Study Subjects:

The study population consisted of all pregnant women diagnosed with IUFD who attended the study setting within a period of one year from January to December, 2015. A total of 65 pregnant women diagnosed with IUFD were recruited for this study.

Inclusion criteria:

- All pregnant women diagnosed with IUFD through absent fetal heart sounds and ultrasonographic confirmation.
- Gestational age ≥ 20 weeks.
- Fetal weight ≥ 500 gm.

Tools of Data Collection: The total number of births during the study period was obtained from the hospital records to calculate the prevalence of IUFD through the following formula:

The total number of IUFD cases (65) **/** The total number of births (7036) = 9.3/1000 total births.

I) Risk factors sheet: which is divided into four parts:
1- Maternal risk factors sheet which included data about:
- Socio-demographic risk factors as age, occupation, type of work, residence, education, social level and consanguinity.
- Obstetric risk factors as number of gravida, para, abortion, history of IUFD in previous pregnancy, gestational age at the onset of IUFD, present pregnancy complications (as severe preeclampsia, eclampsia, chronic hypertension, severe anemia, uncontrolled diabetes and maternal infection as malaria and pneumonia) and present labor

complications (as uterine hyper stimulation, uterine rupture and obstructed labor).

- Maternal attendance of scheduled antenatal visits, hospital admission for worsened obstetric conditions and taking prescribed medications in time.

2- Fetal risk factors sheet: which included data about congenital anomalies, Rh isoimmunization, non immunehydropsfetalis, multiple pregnancy, PROM,chorioamnionitis, fetal Sex and IUGR.

3- Placental risk factors sheet which included data about placenta previa, accidental Hge, post date, polyhydramnios and oligohydramnios.

4- Umbalical cord risk factors sheet which included data about vasa previa, cord prolapsed, true knots and cord entanglement around the fetal neck.

Content Validity:

Tools were submitted to a panel of five experts in the field of maternity nursing and obstetrics medicine to test the content validity. Modifications were carried out according to the panel judgment.

Field Work:

Data collection took a period of one year from January to December 2015. After getting the official permission, the pilot testing of the study tools was done and analyzed. The initial assessment was done by the on duty physician with the assistance of the researchers. The researchers interviewed the pregnant women diagnosed with IUFD and explained the purpose of the study, and obtained their verbal consent. The researchers started to collect data through the following phases:

- **Interviewing phase:** The researcher attended the labor unit at the studied setting three days per week for twelve months. All pregnant women diagnosed with IUFD were interviewed and the researcher collected data related to woman's socio-demographic characteristics, Obstetric data as number of gravida, para, abortion, history of IUFD in previous pregnancy, gestational age at the onset of IUFD, present pregnancy complications. Data related to maternal attendance of scheduled antenatal visits, hospital admission for worsened obstetric conditions and taking prescribed medications in time were also obtained.

- **Assessment phase:** In this phase, immediately after admission to labor unit, the researchers together with the on-duty physician started regular assessment of the maternal and fetal risk factors which contributed to IUFD. They carried out general, abdominal and pelvic examinations. Vital signs were measured. Ultrasound was performed for confirmation of IUFD and for detection of the fetal, placental and cord risk factors of IUFD.

Pilot Study:

A pilot study was conducted on 10 pregnant women diagnosed with IUFD and they weren't included in the total sample size to assess the applicability of data collection tools, arrangements of items, the feasibility of the study and acceptance to be involved in the study and necessary modifications were done.

Administrative and Ethical Considerations:

An official permission was obtained by submission of an official letter from the Faculty of Nursing to the

responsible authorities of the study setting to obtain the permission for data collection. Nursing and medical staff responsible for the patients were approached to gain their cooperation. All ethical issues were taken into consideration during all phases of the study. The aim of the study was explained to every woman before participation, which was totally voluntary. Women were assured that the study maneuver will cause no actual or potential harm on them and professional help was provided whenever needed. Women were notified that they can withdraw at any stage of the research; also they assured that the information obtained during the study will be confidential and used for the research purpose only.

Statistical analysis:

After collection of data, it was revised, coded and fed to statistical software SPSS version 16. T test was used in the statistical analysis with alpha error of 0.05. P value less than or equal to 0.05 was considered to be significant. Microsoft office excel software was used to construct the needed graphs. After data coding the following data manipulations were done. After data manipulation all numeric data were expressed in the form of range (minimum to maximum), mean and standard deviation (SD). Categorical data were expressed in the form of frequencies and percentages.

Results:

Figure 1 illustrates that the prevalence of IUFD was 0.9% or (9.3:1000 total births); as the total number of IUFD cases was 65 cases out of 7036 total births at labor hospital, Zagazig university hospital during the study period.

Table 1 presents the number and percent distribution of the studied women according to their socio demographic data. It is obvious that IUFD was common among the different age groups with a mean age of 28.4±8.3. As regards maternal work and residence, it is observed that the vast majority (93.8%) of the IUFD mothers were housewives and the majority (87.7%) were living in rural areas far from medical and nursing health services. Meanwhile, more than two fifth (44.6%) of the IUFD mothers were either illiterate or essentially educated and nearly three fifth (61.5%) were low social class. Moreover, the consanguinity risk factor was present in 53.8% of the studied women.

Concerning the studied women's obstetric history, **table 2** shows that more than two fifth (43.1%) of the IUFD mothers were multigravida. It also shows that almost one fourth of the studied women had previous abortion and history of IUFD in previous pregnancy (24.6% and 26.2% respectively).

Figure 2 reveals that the studied women poorly followed the medical instructions regarding attendance of scheduled antenatal visits (ANV), admission to hospital for worsened pregnancy conditions and taking prescribed medications in time (61.5%, 70.8% and 64.6% respectively).

Table 3 shows that in total there was insignificant relation between the decreased maternal (ANV attendance, hospital admission and taking medication)and their different age groups. While it shows that almost three fourth (75.4%) of rural women weren't admitted to the hospital for worsened pregnancy conditions and the relation was statistically significant (P= 0.027). In addition, there were significant and

highly significant relations between the decreased maternal (ANV attendance, hospital admission and taking medication) and low social level (P=0.000, 0.009 and 0.001 respectively).

Table 4 demonstrates that the total percentage of illiterate IUFD mothers neither attended ANV nor took medication in time. In addition, high percentage of IUFD mothers with other educational categories also show decreased maternal (ANV attendance, hospital admission and taking medication), but the relation was insignificant. On the other hand, this table shows significant decrease in taking prescribed medications in multi gravida and grand multi gravida IUFD mothers (P=0.040).

Table 5 illustrates that almost three fourth (76.9%) of the studied women experienced late onset of IUFD after 30 weeks with a mean gestational age 33.2 ± 3.9. This table also reveals that, pregnancy induced hypertension (severe preeclampsia and eclampsia) was the most common pregnancy complication that resulted in IUFD followed by uncontrolled diabetes (32.3%& 9.2% respectively). As for labor complications, they were so rare as only 3.1 % of IUFD mothers experienced uterine hyper stimulation.

It is obvious from table 6 that intrauterine growth retardation (IUGR) was the commonest fetal risk factor for IUFD as it accounts for 9.2% of IUFD cases. Meanwhile, the female sex of the fetus was higher than male sex among IUFD cases 55.4% versus 44.6% respectively. As regards placental risk factors, almost one third (33.8%) of IUFD mothers were diagnosed with oligohydramnios. While cord risk factors were rare incidents as cord prolapsed complicated only 3.1% of IUFD mothers.

Discussion:

Death of a viable fetus is a distress to family and health care team. Despite advances in medical and nursing science, diagnostic and therapeutic modalities, pregnancy wastage still occur at an unacceptably high rate. Although the perinatal mortality has reduced over the last few decades, the intrauterine fetal deaths are still high Lajya & Rajori [10]

The present study revealed that there were a total of 7036 births with 65 fetal deaths at labor and childhood hospital, Zagazig university hospital, during one year period with fetal death rate of 9.3/1000 total births for the study period. This finding was in agreement with the study " associated risk factors with ante partum intrauterine fetal death" conducted in Saudi Arabia by Shaaban et al.,[3]who reported that there were a total of 16562 births with 157 fetal deaths at the maternity and children's hospital, Jeddah, Kingdom of Saudi Arabia during two year period, with fetal death rate of 10.1/1000 total births for the study period.

Among the risk factors that may be associated with IUFD were the maternal risk factors such as maternal age, GA at the onset of IUFD, parity, history of abortion and IUFD in previous pregnancy. In the present study, the mean age of IUFD mothers was 28.4 ± 8.3 and the advanced maternal age ≥ 35 years was representing nearly one fourth of the studied women. The mean GA at which IUFD occurred was 33.2 ± 3.9 weeks. As regards parity, slightly less than one third of IUFD mothers were nullipara while 10.8% of them were grandmultipara. The present study also revealed a significant relation between increased gravidity (multigravida and grand multigravida) and decreased maternal taking of prescribed

medications (P= 0.040). Nearly one fourth of the IUFD mothers were having previous abortion and previous IUFD.

The study of Patel[11] on "profile of fetal deaths in Dhahira region, Oman" was in agreement with these findings as it revealed that the mean age of IUFD mothers was 29.5 ± 7.3 and the advanced maternal age ≥ 35 years was representing 28.6% of them. Moreover, the mean gestational age at which IUFD occurred was 34.5 ± 5.3 weeks. As regards parity, 20.8% of IUFD mothers were nullipara while 20.1% of them were grandmultipara. Meanwhile, nearly one third (32.0%) of the IUFD mothers were having previous abortion and previous IUFD.

Concerning other maternal risk factors, the present study demonstrated that consanguinity was present in more than half of IUFD mothers and the vast majority of them were housewives, This is consistent with the results of Jahanfar et al.,[12] who conducted a case-control study on the risk factors related to intrauterine fetal death in Iran and revealed that the vast majority (97.3%) of IUFD mothers were housewives and family relation was representing nearly half (47.3%) of IUFD mothers. This may be explained that consanguinity is more confined to muslim communities.

According to the present study findings, the majority of IUFD mothers were rural residents and there were a significant relation between rural residence and decreased maternal hospital admission for severe pregnancy conditions (P= 0.027). Moreover, almost three fifth of IUFD mothers weren't attending scheduled antenatal visits. The present study also revealed that 12.3% of them were illiterate while nearly one third of them were having primary and preparatory education which were associated with higher

percentages of decreased maternal (ANV attendance, hospital admission and taking medications) than those who had secondary and university education, but the relation wasn't statistically significant.

These findings were in contrary with the study of Jahanfar et al.,[12] which found that nearly half (53.3%) of IUFD mothers were rural residents, It also showed lower percentage of deficient prenatal care as 41.3% of IUFD cases weren't attending scheduled antenatal visits. Moreover, a higher percentage of illiteracy (40.7%) among IUFD mothers were illustrated, and this emphasize the importance of female education.

According to the present study results, almost four fifth of the low social level IUFD mothers were associated with decreased (ANV attendance, hospital admission for worsened pregnancy complications, and taking prescribed medication), and the relation was statistically significant (P= 0.000, 0.009 and 0.001 respectively). Similarly, the Brazilian study "Risk factors for inadequate prenatal care use in the metropolitan area of Aracaju, Northeast, Brazil" conducted by Ribeiro et al.,[13]revealed that three fifth (60.0%) of the low social class pregnant women had inadequate prenatal visits and resulted in adverse pregnancy outcomes.

As regards pregnancy complications, the present study revealed that pregnancy induced hypertension (PIH) in the form of (severe preeclampsia and eclampsia) was the most common pregnancy complication that resulted in IUFD followed by uncontrolled diabetes mellitus. While maternal infection in the form of malaria and pneumonia complicated only 1 and 3 cases

respectively. While severe anemia complicated 4.6% of IUFD pregnancies.

These findings were in partial agreement with Choudhary & Gupta[4] in their study "epidemiology of intrauterine fetal deaths: a study in tertiary referral centre in Uttarakhand" in India who found that PIH and severe anemia were the most common pregnancy complications that resulted in IUFD (28.7% and 15.2% respectively). Malaria and pneumonia complicated 5 and 1 case respectively.

In the present study, the maternal labor complications were rare incidents which included uterine hyperstimulation which accounted for 3.1% of IUFD mothers. In the same line Ribeiroet al.,[13] mentioned that 6.7% of IUFD mothers experienced complicated labor.

The present study findings revealed a variety of fetal risk factors of IUFD as congenital anomalies, Rh isoimmunization, none immune hydrops fetalis, multiple pregnancy, premature rupture of membrane. Meanwhile, intrauterine growth retardation was the most common fetal risk factor. Moreover, IUFD occured in female fetuses in a slightly higher percentage than male.

This corresponds well with the findings of Choudhary & Gupta[4]whose results showed that congenital anomalies, Rh isoimmunization, none immune hydrops fetalis, multiple pregnancy, premature rupture of membrane and intrauterine growth retardation complicated (10.5%, 1.0%, 1.9%, 1.9%, 2.9% and 7.6% respectively) of IUFD mothers. On the contrary, IUFD complicated male fetuses more than female 55.2% compared to 44.8% respectively.

In contrast to the present study findings, the study of Patel[11] revealed a higher percentage of congenital anomalies (18.2%) as a fetal risk factor of IUFD. Moreover, the study of Shaaban et al.,[3] showed that almost one fourth (24.8%) of IUFD pregnancies were complicated with intrauterine growth retardation.

As regards placental factors, the present study findings showed that oligohydramnios complicated nearly one third of IUFD pregnancies. Meanwhile, accidental hemorrhage complicated nearly one fifth of IUFD pregnancies. Furthermore placenta previa, postdatism and polyhydramnios complicated 3.1%, 4.6% and 1.5% respectively.

In the same line Choudhary& Gupta[4] found that placenta previa and postdatism, each of them complicated 3.8% of IUFD mothers. On contrast to the present study findings, the study of Patel[11] revealed a higher percentage of polyhydramnios (13.6%) and low percentage of accidental hemorrhage (7.8%). Moreover, Jahanfar et al.,[12] showed the lowest percentage of third trimester bleeding (2.0%).

Lastly, the present study findings illustrated that cord prolapse complicated only 3.1% of IUFD mothers. Similarly Jahanfar et al.,[12] reported that cord prolapse was responsible for5.3% of IUFD cases. However, Patel [11] mentioned that cord abnormalities accounted for 16.9% of IUFD mothers.

Conclusion

Based on the present study findings, it can be concluded that the risk factors of IUFD were mainly maternal. Rural residence far from medical and nursing health services, low social level and increased number of pregnancies significantly interfered with the maternal attendance of antenatal

visits, hospital admission for worsened obstetric complications and taking prescribed medications. Consanguinity, IUFD in previous pregnancy were considerable risk factors of IUFD. Pregnancy induced hypertension and its adverse consequences, oligohydramnios, accidental hemorrhage and intrauterine growth retardation were important risk factors of IUFD. Fetal and umbilical cord risk factors were rare incidents.

Recommendations

On the basis of the most important findings of the study, the following recommendations are suggested:

- Attention should be paid to rural areas that are far from medical and nursing health services and those who live in low social class through

increasing the number of rural hospitals that provide high quality of care with low cost in these areas.

- Nurses should counsel the pregnant women about IUFD in the form of booklets and brochures with emphasis on antenatal care and the benefits of regular attendance on early detection and management of deteriorated pregnancy conditions.

- The pregnant women with a history of fetal death should be managed under high risk category with close antepartum surveillance, especially in the last trimester, so as to reduce intrauterine fetal deaths which are mostly attributable to preventable causes.

- If couples are still interested in family marriage, genetic consultation before pregnancy should be provided
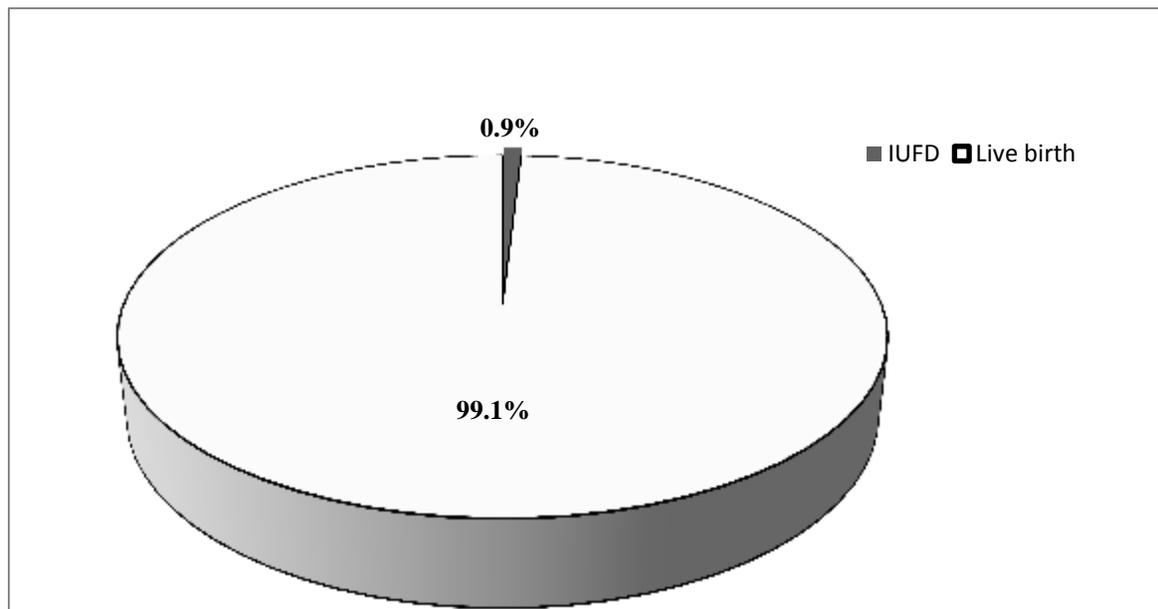

Figure 1: Prevalence of IUFD 0.9% (9.3:1000 total births)

Table 1: Distribution of the studied women according to the maternal Socio demographic risk factors (n= 65).

Maternal risk factors	No (65)	%
Socio demographic risk factors		
Age (years)		
▪ <25	24	36.9
▪ 25-	24	36.9
▪ 35+	17	26.2
Mean ± SD	28.4 ± 8.3	
Occupation		
▪ House wife	61	93.8
▪ Working	4	6.2
Type of work		
▪ Light	27	41.5
▪ Heavy	38	58.5
Residence		
▪ Urban	8	12.3
▪ Rural	57	87.7
Education		
▪ Illiterate	8	12.3
▪ Primary/ Preparatory	21	32.3
▪ Secondary	31	47.7
▪ University	5	7.7
Social level		
▪ Low	40	61.5
▪ High	25	38.5
Consanguinity		
▪ Yes	35	53.8
▪ No	30	46.2

Table 2: Distribution of pregnant women with IUFD according to maternal obstetric risk factors (n= 65).

Maternal risk factors	No (65)	%
Obstetric risk factors		
Gravida		
▪ Primigravida	21	32.3
▪ 2-4	28	43.1
▪ 5+	16	24.6
Para		
▪ Nullipara	22	33.8
▪ Primipara	14	21.5
▪ 2-4	22	33.9
▪ 5+	7	10.8
Abortion		
▪ Yes	16	24.6
▪ No	49	75.4
IUFD in previous pregnancy		
▪ Yes	17	26.2
▪ No	48	73.8
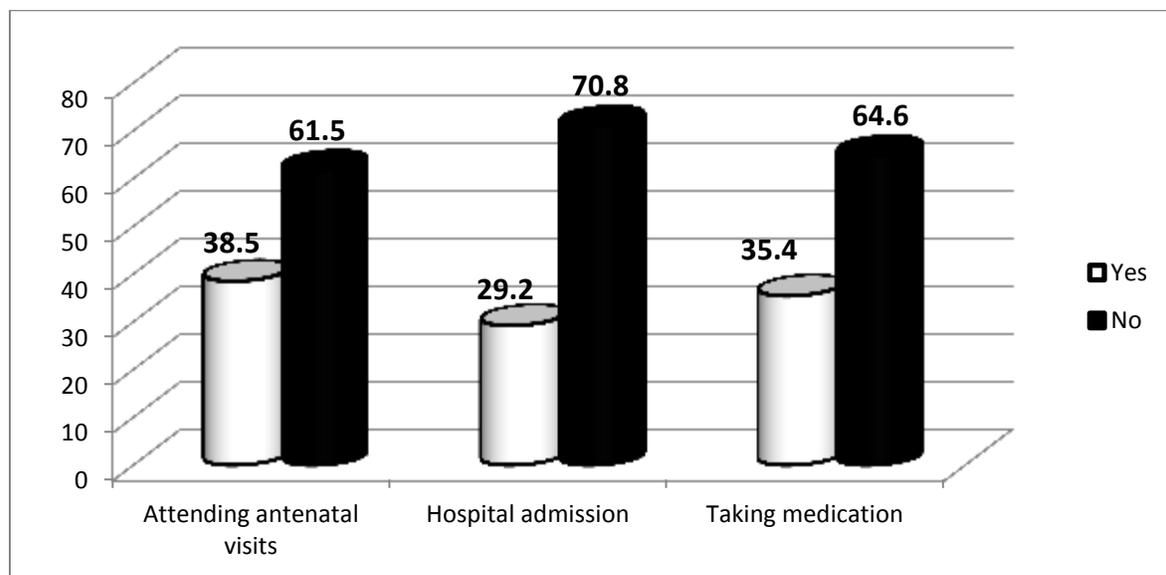
Figure 2: Distribution of the studied women according to maternal following of medical instructions (n= 65)

Table 3: Relation between the decreased maternal (antenatal visits attendance, hospital admission and taking medication) and maternal socio demographic risk factors.

		↓ ANV attendance (n= 40)		↓Hospital admission (n= 46)		↓Taking medication (n= 42)	
		No	%	No	%	No	%
Age (years)	<25	17	70.8	18	75.0	18	75.0
	25-	12	50.0	19	79.2	14	58.3
	35+	11	64.7	9	52.9	10	58.8
	P value	0.317		0.162		0.407	
Residence	Urban	4	50.0	3	37.5	3	37.5
	Rural	36	63.2	43	75.4	39	68.4
	P value	0.474		0.027(*)		0.087	
Social level	Low	33	82.5	33	82.5	32	80.0
	High	7	28.0	13	52.0	10	40.0
	P value	0.000(**)		0.009(*)		0.001(**)	

* The Chi-square statistic is significant at the 0.05 level.
** The Chi-square statistic is highly significant at the 0.001 level.

Table 4: Relation between the decreased maternal (antenatal visits attendance, hospital admission and taking medication) and maternal education and number of gravida.

		↓Attend ANV attendance (n= 40)		↓Hospital admission (n= 46)		↓Taking medication (n= 42)	
		No	**%**	**No**	**%**	**No**	**%**
Education	Illiterate	8	100.0	6	75.0	8	100.0
	Primary/ Prep	13	61.9	18	85.7	15	71.4
	Secondary	17	54.8	20	64.5	16	51.6
	University	2	40.0	2	40.0	3	60.0
	P value	0.087		0.157		0.067	
Gravida	Primigravida	10	47.6	12	57.1	9	42.9
	2-4	19	67.9	22	78.6	21	75.0
	5+	11	68.8	12	75.0	12	75.0
	P value	0.280		0.241		0.040(*)	

* The Chi-square statistic is significant at the 0.05 level.

Table 5: Distribution of the studied women according to gestational age at the onset of the present IUFD, present pregnancy and labor complications (n= 65)

Maternal risk factors	No	%
GA at the onset of the present IUFD in weeks		
▪ 23+	15	23.1
▪ 30+	36	55.4
▪ 37- 42	14	21.5
▪ Range		23 - 42
▪ (Mean ± SD)		33.2 ± 3.9
Complications during present pregnancy		
Severe PET	19	29.2
Eclampsia	2	3.1
Chronic hypertension	2	3.1
Severe anemia	3	4.6
Uncontrolled Diabetes	6	9.2
Malaria	1	1.5
Pneumonia	3	4.6
Labor Complications		
Uterine hyper stimulation	2	3.1
Uterine Rupture	0	0.0

Table 6: Distribution of the studied women according to fetal, placental and cord risk factors (n= 65).

Other factors	N (65)	%
Fetal risk Factors		
▪ Congenital anomalies	2	3.1
▪ Rh isoimmunization	4	6.2
▪ Non immune hydropsfetalis	1	1.5
▪ Multiple pregnancy	1	1.5
▪ PROM	4	6.2
▪ Fetal Sex		
Male	29	44.6
Female	36	55.4
▪ IUGR	6	9.2
Placental risk Factors		
▪ Placenta Previa	2	3.1
▪ Accidental hemorrhage	12	18.5
▪ Post date	3	4.6
▪ Polyhydramnios	1	1.5
▪ Oligohydramnios	22	33.8
Cord risk Factors		
▪ Cord prolapsed	2	3.1

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