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### RESEARCH ARTICLE

## PREVALENCE AND FACTORS ASSOCIATED WITH USING OF MEDICATIONS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE (ANC)CLINIC IN AL-NAWARYAH PRIMARY HEALTH CARE CENTER IN MAKKAH AL-MUKARRAMAH, 2016.

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#### Abstract

**Background:** Pregnancy is a special physiological process where medications intake is a major concern. This study aimed to estimate the prevalence of using medications and to determine the factors associated with using medications among pregnant women attending Antenatal Care (ANC) Clinic in AL-Nawaryah Primary Health Care Center (PHCC) in Makkah, 2016.

**Subjects and Methods:** This study included 110 pregnant. A Cross-sectional study conduct among pregnant women attending ANC Clinic in AL-Nawaryah PHCC in Makkah, 2016. A self-administered questionnaire was used to collect the data.

**Result:** Out of 110 pregnant women, 84 (77.1%) were Saudi with mean age score  $28.7 \pm 6.9$ , 50% had university degree, 89 (80.9%) were housewives and 98 (89.1%) from urban, 79 (71.8%) reported average monthly income. Nine mothers had an abnormal child, 73 (66.4%) reported the first trimester as the critical time for taking medication, 30 (41.1%) reported antibiotic, and 29 (39.7%) reported analgesic as the kind of drugs need to be avoided during pregnancy. The main source of drug information was the gynecologist (76 - 69.1%). There was no significant difference in the comparison of using medication during pregnancy regarding demographic data and awareness about risk

**Conclusion:** The findings of the current study showed that the use of medications during pregnancy became common. Less than half stated using medications during pregnancy, where the common using medications were vitamins and minerals. Only about half of women reported receiving complete information about prescribed drugs from their doctors and less percentage from the pharmacist. There was a significant difference in some beliefs about medication showing that women lived in rural area had more conservative beliefs regarding use of medication

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**Introduction:** -Pregnancy is a special physiological process where medication intake is a major concern, because of drug crossing the placenta (1) and potential teratogenic effects of some drugs (2).

Drug use (DU) during pregnancy should be viewed as a public health problem (1). There are about twenty groups of drugs that are known to be teratogenic for pregnant women (3). However, there is insufficient data about drugs that are using during pregnancy and their safety profile because clinical trials often don't include pregnant women for ethical reasons (1) and the data obtained from animal studies cannot always be applied to humans. (4)

Meanwhile, Drug prescribing during pregnancy is important and common for treating preexisting diseases or a condition that occurred during pregnancy (5)

In 1979, Food and Drug Administration classified drugs that used in pregnancy into five categories, categories (A, B, C, D, and X). Category A is the safest drugs while category X is contraindicated during pregnancy based on studies done on animals and human and showed evidence of teratogenic risk (2)

Exposure to any chemical either medications or herbal during pregnancy could affect the fetus (2). As a result, pregnant women may take by mistake a medication that poses a risk to their fetus; meanwhile, anxiety about the potential teratogenic effects of medications may discourage women from adhering to beneficial treatments. (6)

Several studies have been conducted worldwide to study the attitudes, knowledge, and the exposure to medication and supplement during pregnancy (7)

There are international differences in the rates of medicinal use during pregnancy. Although There are a few studies done about it in the developing countries, they widely report inappropriate use of medications. (1)

The World Health Organization (WHO) define self-medication as the utilization of drugs by individuals in quest of treating symptoms or self-diagnosed health state (8). Where pregnant are more prone to use self-medication because of a variety of complaints related to pregnancy, such as back pain, nausea, headache, heartburn, vomiting, and haemorrhoids. (1) this means that is crucial to have the knowledge of the safety of drugs that prescribed during pregnancy (5)

During pregnancy, medications use are common, According to WHO, OTC medication is taken by over 90% of pregnant women (8).

And about 8% of the pregnant worldwide need continuous drug treatment for chronic diseases such as diabetes, or for acute conditions such as influenza, or for treating complications during pregnancy such as vomiting (9) According to other studies, 84% to 99% of the pregnant women at least take one prescribed or non-prescribed drug during their pregnancy (10)

In Saudi Arabia due to easy availability of medications many people, including pregnant women, can obtain most of the medications without prescriptions which put them at risk of adverse drug reactions. Only a few studies were done in Saudi Arabia demonstrating the exposure of pregnant women to medications. (11) (5)

This study aimed to evaluate the prevalence and factors associated with using Of medications among pregnant women attending antenatal care (ANC) clinic in AL-Nawaryah PHCC in Makkah Al-Mukarramah.

#### **Methodology:-**

A cross-sectional study design was implemented and included all pregnant women attending ANC in al-Nawaryah PHCC in makkah al-mukarrammh, KSA during the study period (1 month), which is equal to 115 participants.

A self-administered questionnaire was used to collect data, it consists of 3 parts:

1. **First part:** socio-demographic and personal characteristics that include age, nationality, educational level, occupation, residence, number of pregnancies and number of abortions.
2. **Second part:** it assesses pregnant' awareness about risk (5 questions); medication use during pregnancy (4 questions); source of information (6 questions)
3. **Third part:** asses beliefs of pregnant women about medication either general beliefs or specific.

Statistical package for the social sciences (spss, version 21) was used to analyze the data. Categorical data were presented as frequencies and percentages. Chi-square was applied to detect the significance. p-values less than 0.05 were considered as statistically significant.

**Results:-****Response rate:-**

Out of 115 pregnant women invited to participate by filling in the study questionnaire, 110 completed(i.e., response rate= 110/115=95.6%).

**Personal characteristics of study sample:-**

Table (1) shows that out of 110 pregnant women,77.1% (84) were Saudi with mean age score  $28.7\pm 6.9$ , 50% had university degree. The majority 80.9% (89) were housewives and 89.1% (98) from urban. More than two third 71.8% (79)reported average monthly income. (table 1)

**Awareness about risk:-**

The result shows that only 9 (8.2%) mothers reported having an abnormal child, two handicaps, and three cerebral palsy. And only 2 of them considered this related to drug use during pregnancy but did not specify the name of drug. Two third 66.4% (73) reported the first trimester as the critical time for taking medication, 41.1%( 30)reported antibiotic and 39.7% (29) reported analgesic as the kind of drugs need to be avoided during pregnancy. (figure 1)

**Medication use:-**

The results show that about 40% (44) of the pregnant women reported having used medications during pregnancy.16.4% (16)received iron, 13.6% (15) received folic acid,10% (11) received calcium, 7.3% (8) received multivitamins and 10.8% (10) received different kinds. Regarding the reason for receiving drugs 8.2% (9)because of pregnancy itself, 6.4% (7) prevention of fetal malformation, 2.7% (3) anemia and 9.0% (10) for different reasons. Only 5.5% (6) reported taking medication without a prescription. Surprisingly, more than half of the of pregnant women 60%(66)does not use any medication during pregnancy.

**Sources of information:-**

The results show that the main source of drug information was the gynecologist 76(69.1%).Then pharmacist 23(20.9%) and general practitioner 6.4% (7) . Media and internet were the source of information for 2.7% (3) of pregnant women . One women (.9%) reported that her relatives and friends were the source of information. More than half 58.2% (64) reported checking the accompanied leaflet content in a normal state,and 61.8% (68) reported reading the leaflet of the prescribed drugs during pregnancy. Almost third quarter 74.5%(82) meet doctor regularly. 49.1% (54) reported receiving complete information from doctors and 38.2 % (42) sometimes they receive information from doctors, while only 28.1% (31) reported receiving complete information from pharmacists during dispensing of the drugs and 44.5% (49) said sometime they give information. (figure 2)

**General beliefs about medications:-**

The results show that more than the half 59.1%(65) believed that "natural remedies are safer than medicines", followed by 44.5% (49) " doctors place too much trust on medicines ", 37.3% (41) "medicines do more harm than good ", 27.3% (30) "most medicines are addictive " and 14.5% (16) "all medicines are poisons ". 40.0% (44) believed that if the doctor spends more time with the patient, he will prescribe fewer medication,and 38.2% (42)of pregnant agreed that " doctors prescribe too many medications."

**Specific beliefs about medication:-**

The results show that most of the pregnant women 75.5%(83) agreed that " better for the fetus to refrain medicine," followed by 67.3%(74) of pregnant women believed that even the natural remedies shouldn't be used without the doctor's agreement.More than half of pregnant women 51.8%(57) have higher threshold during pregnancy toward use of medication. Then 43.6%(48) agreed with the statement" better to receive drugs than being ill ", 38.2% (42) " treatment with medicines saved unborn ", 31.8% (35) " pregnant women should preferable use natural remedies ", 29.1% (32) " natural remedies can generally be used by pregnant women ", 23.6% (26)" doctors prescribe too many medicines to pregnant women" and only 19.1% (21)" all medicines can be harmful to the fetus".

**Comparing using of medication during pregnancy regarding demographic data and awareness about risk:-**

The results in table (2) showed that there was no significant difference in the comparison of using medication during pregnancy regarding demographic data and awareness about risk. Even that the rate of women in older age (more than 35) , those who had university degree, those who were employee, those who lived in urban areas, those who don't have abnormal child and those who believe that the first trimester is the critical time for using drugs are higher in the use of medication than others. (table 2)

**Comparing of using medication during pregnancy regarding sources of information:-**

The results in table (3) showed that there was no significant difference in the comparison of using medication during pregnancy regarding sources of information. Meanwhile, the rate of women who check the accompanied leaflet in the normal state is lower in the use of medication than who don't read.(table 3)

**Comparing using of medication during pregnancy regarding beliefs about medication:-**

The results showed that there was a significant difference in the comparison of using medication during pregnancy regarding beliefs about medication in two statements , where the rate of women who believed that "better to receive drugs than being ill" and who have higher threshold during pregnancy, are higher in the use of medication than don't ( 59.1% (26) vs 33.3% (22),  $p=0.007$ ) and (63.6% (28) vs 43.9% (29) ,  $p= 0.038$ ) respectively .

**The comparison of the beliefs about medication regarding demographic data:-**

The results showed that there was no significant difference regarding educational level, monthly income, and occupation.there was a significant difference regarding nationality in the following beliefs: " treatment with medicines saved unborn " and "natural remedies can generally be used by pregnant women ". In the first belief non saudi was more agreed with it (32.1% (27) saudi vs. 56.0%(14) non-saudi  $p=0.019$ ), for the second belief non saudi was more disagreed with it (48.8%(41) saudi, 52.0%(13) non-saudi ,  $p=0.11$ ), while the rest beliefs didn't show significant difference.

A significant difference was found regarding residence in the following beliefs: "all medicines are poisons " and "most medicines are addictive ". In the first belief more urban women disagreed with it (65.3% (64) urban vs. 25.0% (3) rural  $p=0.038$ ), for the second belief rural women was more agreed with it (24.5%(24) urban vs. 50.0% (6) rural,  $p=0.22$ ), while the rest beliefs didn't show significant difference .

**Comparing the beliefs about medication regarding having abnormal child:-**

The results showed that there was a significant difference regarding having abnormal children in the following belief: "doctors prescribe too many medicines to pregnant women ". Where women with abnormal child agreed more (66.7%(6) women with abnormal child vs. 19.4% (19)women with normal child  $p=0.012$ ), while the rest beliefs didn't show any significant difference.

**Comparing the beliefs about medication regarding the most critical time of pregnancy:-**

Regarding the critical time, there was a significant difference in four beliefs. The first two showed that women who reported the first trimester to be the critical time were more agreed with these beliefs, followed by women reported the second trimester than women reported third trimester ( $p=0.003$  and  $p =0.003$ ) for "better for the fetus to refrain medicine " and "pregnant women should not use natural remedies without doctors " respectively, while for the other two beliefs the women who reported the third trimester to be the critical time were more agreed with these beliefs, followed by women reported second semester than women reported first semester ( $p=0.003$  and  $p =0.004$ ) for "doctors prescribe too many medications " and "medicines do more harm than good " respectively, while the rest beliefs didn't show significant difference.

**Table (1):-**personal characteristics of study sample.

Variables	N	%
Nationality		
Saudi	84	77.1
Non_ saudi	26	22.9
Education level		
Primary	9	8.2
Middle	17	15.5
Secondary	29	26.4
University	55	50.0
Occupation		
House wife	89	80.9
Employee	20	18.2
Unknown	1	.9
Monthly income		
Little	27	24.5

Average	79	71.8
High	2	1.8
Unknown	2	1.8
Residence		
Rural	12	10.9
Urban	98	89.1
Variables	Mean ± sd	Rang (min-max)
Age	28.7±6.9	(16-47)
Variables	Median	Quartile (25-75)
Number of pregnancies	3	(1-4)

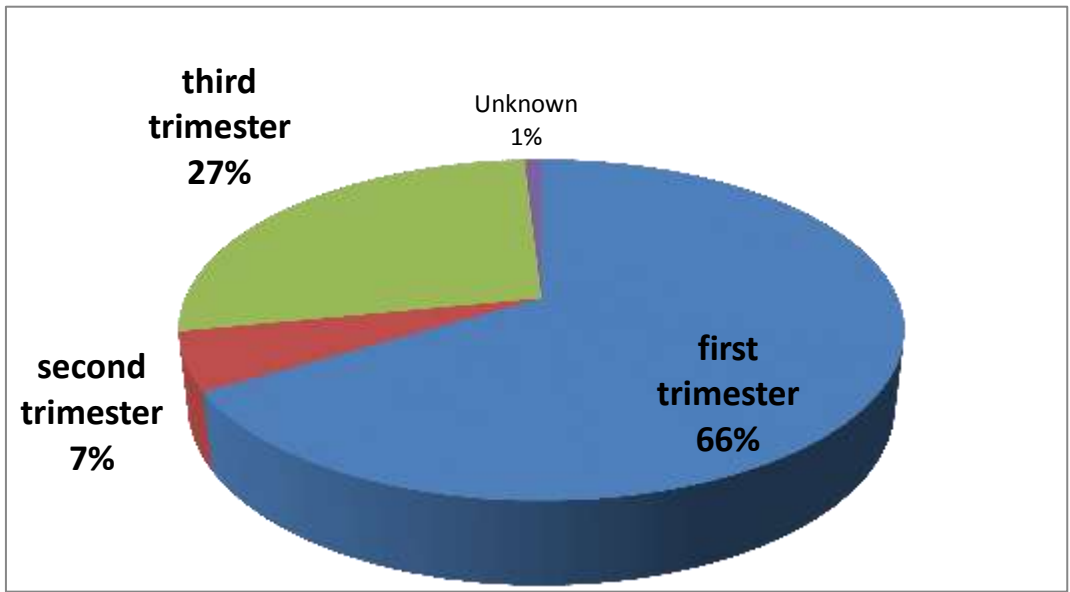
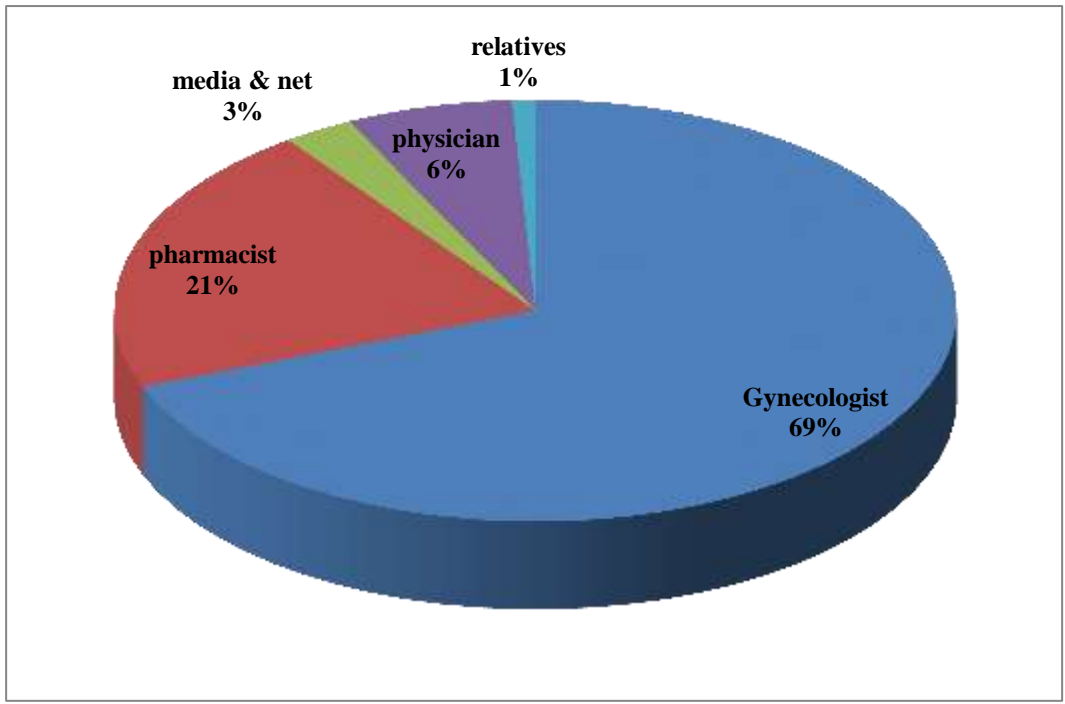


Figure (1):-The critical time for taking medication.



**Table 2:-**comparing using of medication during pregnancy regarding demographic data and awareness about risk:

Variables		Using drug		P value
		Yes	No	
Age	< 24 years	14(31.8%)	24(36.4%)	0.349
	24-35 years	22(50.0%)	35(53.0%)	
	> 35 years	8 (18.2%)	7 (10.6%)	
Nationality	Saudi	34(77.3%)	50(76.9%)	0.578
	Non saudi	10(22.7%)	15(23.1%)	
Education level	Primary	2(4.5%)	7(10.6%)	0.112
	Middle	5(11.4%)	12(18.2%)	
	Secondary	12(27.3%)	17(25.8%)	
	University	25(56.8%)	30(45.5%)	
Occupation	House wife	33(75.0%)	56(86.2%)	0.111
	Employee	11(25.0%)	9(13.8%)	
Monthly income	Little	11(25.6%)	16(24.6%)	0.984
	Average	31(72.1%)	48(73.8%)	
	High	1(2.3%)	1(1.5%)	
Residence	Rural	2(4.5%)	10(15.2%)	0.072
	Urban	42(95.5%)	56(84.8%)	
Abnormal child	Yes	3(7.0%)	6(9.2%)	0.485
	No	40(93.0%)	59(90.8%)	
Critical time of using	First semester	32(72.7%)	41(63.1%)	0.217
	Second semester	3(6.8%)	3(4.6%)	
	Third semester	9(20.5%)	21(32.3%)	

**Table 3:-**comparing of using medication during pregnancy regarding sources of information.

Variables		Using drug		P value
		Yes	No	
Check the accompanied leaflet content in normal state	Yes	25(56.8%)	39(59.1%)	0.668
	No	4(9.1%)	8(12.1%)	
	Sometimes	15(34.1%)	19(28.8%)	
Read the leaflet of prescribed drugs during pregnancy	Yes	28(63.6%)	40(61.5%)	0.974
	No	4(9.1%)	9(13.8%)	
	Sometimes	12(27.3%)	16(24.6%)	
Meet doctor regularly	Yes	37(84.1%)	45(71.4%)	0.097
	No	7(15.9%)	18(28.6%)	
Doctors give complete information	Yes	26(59.1%)	28(42.4%)	0.195
	No	3(6.8%)	11(16.7%)	
	Sometimes	15(34.1%)	27(40.9%)	
Pharmacists give complete information	Yes	10(22.7%)	21(31.8%)	0.267
	No	12(27.3%)	18(27.3%)	
	Sometimes	22(50.0%)	27(40.9%)	

### Discussion:-

Since the 1960s with the tragedy of thalidomide, there was an increasing in the level of awareness about the safety of drugs consumption during pregnancy among physicians and community.(5,9,10,12)

This issue becomes a public health problem around the world, where drugs could cross the placenta and pose teratogenic effects and congenital malformations on the fetus.(9,10)Although it couldn't be avoided totally, where there are pregnant women have chronic illness and necessitate using medications(9).The rate of using drugs during pregnancy ranges from 40% to 93%, where consuming drugs include prescription,OTC medications, herbal products, and dietary supplements (10,12).and the majority of pregnant women using more than one drugs, as half of the women using drugs without clear evidence of their safety or the worst with evidence of unsafety on fetus in animals or humans(5,12).

This study aimed to estimate the prevalence of using the medications and to determine the factors associated with using medications among pregnant women attending ANC clinic in al-Nawaryah PHCC in Makkah, 2016.

The results showed that the most of the participants were younger than thirty, had university degree, were housewives with average monthly income.

In Pakistan study 2016, two-thirds (68.2%) were less than 50 years, more than half (57.3%) were from low socioeconomic status, the majority (95.2%) were housewives, only 20.5% attend secondary or high school(1). Similar results were found in Taif study, 78.9% were younger than 40 years, 70.1% had university degree, 81.6% were housewives (11).

Regarding the awareness of risk, the majority reported the first trimester as the critical time to take medication. Antibiotics and analgesics were the main drugs that the participants reported avoiding them. Only 9 cases had an abnormal child, while 37 (33.6%) cases reported previous abortion.

In Taif study, 6.6% reported having an abnormal child. <sup>(8)</sup>while in Pakistan study the authors reported that 35.4% cases reported previous abortion(11).

Similar results were found in Riyadh study, where the authors reported that the rate of taking medications during pregnancy increase from first trimester (16%) through second trimesters (26%) to third trimester(58%). This consistent with the fact that first trimester considers as the critical time to take medication.(5)

In respect to the use of medication, less than half (40%) stated using medication in the current pregnancy, where 17 (38.6%) of them received more than one drugs, the most kind of drugs were vitamins and minerals such as iron, folic acid, calcium, and multivitamins. where the main reasons for use were fetal malformation and anemia. only 6(5.5%) reported taking medications without prescription.

In Pakistan study 2016, 37.9% reported using drugs during pregnancy, where the most common drugs were acetaminophen, followed by aspirin, then ibuprofen and the main reason was headache and back pain(1). In Riyadh study 2006, the authors reported that 69% of the participants received drugs with average number 3 drugs, where hematopoietic, particularly folic acid (66.9%) and iron (66.6%) were the most common prescribed drugs for all pregnancy duration. Followed by anti-infectives, particularly systemic anti-biotics (30%) where penicillin (60%) was the common antibiotic and amoxicillin (51%), 18% received analgesics, particularly acetaminophen(5). Similar results were found in taif study 2014, where only 40% stated using medications during pregnancy, the most common medications were acetaminophen and vitamins, followed by herbal remedies then antibiotics and medications (11).

In British Columbia study, Smolina K et al. Reported an increasing in the rate of drugs prescription during pregnancy by 10% from 200-2011, wherefrom every ten one, one used at least four drugs by 28% increasing rate from 2002 (13).

Wyszynski D and Shields K reported in their study that the majority (81.2%) reported using at least one medication during pregnancy, with variety in using rate regarding country of the study, where analgesics particularly acetaminophen was the main using medications followed by acid related disorders drugs, and the main indications of use were headache, heartburn, pain, nausea, and urinary tract infections. also, they notice that the use of OTC drugs was common during the first trimester before the woman knows that she is pregnant, these OTC drugs were evaluated by the FDA, and most of them didn't show any risky concern on pregnancy(14).

In Iceland study 2014, Axelsdottir T et al reported that the majority of the participants (88%) used vitamins and minerals, followed by analgesics (46%)(12).

This is indicating that it becomes common for pregnant women to receive multiple drugs to treat multiple diseases. The main source of information was gynecologist, more than half stated reading the leaflet. most of the participants had regular meeting with their doctors. Less than half of the pregnant women reported receiving enough information about the drugs from the doctors and less than third reported receiving enough information about the drugs from the

pharmacist, which indicating low level of awareness about drugs using during pregnancy, and lack of communication between doctors and patients.

In Pakistan study 2016, only 11.3% stated taking drugs based on pharmacist's recommendation, while three-quarters stated that by themselves as the source of recommendations even they don't have knowledge about drugs (1).

In Taif study, more than half ( 58.1%) stated that their gynecologists were the main source of information, then general physicians (13.0%) and pharmacists (11.0%). Almost two thirds stated that they didn't receive enough information from their doctors or pharmacists, which explain their statements about reading the leaflet in general and especially during pregnancy (11).

The most common general beliefs about drugs were "natural remedies are safer than medicines," " doctors place too much trust on medicines and prescribe too many medications," " spend more time prescribe fewer medicines," "medicines do more harm than good " and " all medicines are poisons ."while the most common specific beliefs about drugs were " better for the fetus to refrain medicine". " pregnant women should not use natural remedies without doctors ", " better to receive drugs than being ill ", " treatment with medicines saved unborn ", " natural remedies can generally be used by pregnant women " .

Similar results were found in Taif study, where generally, more than half believed that physicians prescribe too many medicines ( 57.9%), doctors place too much trust in drugs (67.1%) also (52.6%) believed that by spending more time with patients, doctors would prescribe fewer drugs. More than third quarters (78.9%) believed that better for the fetus to stop using medications during pregnancy, (88.2%) being more careful in using medications during pregnancy and (75%) believed that doctor's agreement should be obtained before using natural remedies during pregnancy (11).

The results of the study showed that there was no significant association between using drugs and demographic data and awareness about risk. Even that the rate of using medication was higher in older age (more than 35) , higher education, employee, living urban areas, don't have abnormal child and being in the first semester .

In British Columbia study, Smolina K et al. Reported that younger (less than 25), smokers women, pregnant with triples, from low monthly income and having chronic disease had significant higher rate in filling prescriptions during pregnancy than others (13).

Dillon P et al in Ireland study 2015, reported that there was significant association between age and using medication. Where women younger than 20 and older than 40 had the higher rate of prescribing drugs than others, also women who had cards for free doctors' visits and paid low fee than private patients (15).

In Iceland study 2014, Axelsdottir T et al reported that there was significant association between using drugs in general and multipara, smoking and using drugs during the six months before being pregnant. While there was significant higher rate of using psychotropics among lower educators, having depressive mood, forcing to change job, financial problems and passing in divorce or separating experience(12).

The results of the study showed that there was no significant association between using drugs and sources of information. Even that the rate of using medication was higher among women who read the leaflet of prescribed drugs during pregnancy, in contrast, the rate using medication was lower among women who check the accompanied leaflet content in the usual state.

Also, the results of the study showed that there was a significant association between using drugs and two beliefs, where the rate of using medication was higher among women who believe in "better to receive drugs than being ill" and " higher threshold during pregnancy ."

In Finland study 2014, the authors reported that the majority of pregnant women seek the information from more than one source, particularly if there is no enough information. This lead to another problem (conflicting information), this problem increased when the source of information increased (more than two sources). They reported that there was a relation between refusing to take the medication among pregnant women and conflicting information, especially if the woman suffered from few health problems without any chronic diseases(16).



In study 2014, Nordeng et al. reported that seven from 10 women didn't use the medication due to their beliefs that it is not safe to use, or due to conflicting information problem (17).

The results of the study showed that there was significant association between the beliefs about medication and nationality, residence and having abnormal children, while there was no significant association between the beliefs about medication and educational level, monthly income and occupation.

In contrast in Taif study, the authors reported significant association between the beliefs about medication and educational level and occupation, where women with lower educational level that drugs are harmful, addictive, poisoning, too much drug prescription and there is no need to counsel doctors for using herbal remedies more than educated women. While they believed in the ability of drugs to treat dangerous situation more than educators. On the other hand, women who worked in the health fields believe in using the medications more than herbal remedies and also in using drugs to treat the dangerous situation, while housewives believed more in using herbal remedies without doctors counseling (11).

#### **Limitation:-**

There were few limitations (short time allowed for conducting the research, and noncooperation from some participant).

#### **Conclusions:-**

The findings of the current study as well as previous similar studies showed that the use of medications during pregnancy became common. Less than half stated using medications during pregnancy, where the common using medications were vitamins and minerals. Only about half of women reported receiving complete information about prescribed drugs from their doctors and less percentage from the pharmacist. Most of the pregnant women mentioned that first trimester is the critical time for taking medication, and the main source of information was gynecologist. There was no significant association between demographic data and using medications. There was a significant difference in some beliefs about medication showing that women lived in rural area had more conservative beliefs regarding use of medications.

#### **Recommendations:-**

1. Based on findings of this study, primary health care providers (physicians, pharmacists, and others) should provide the pregnant women with all the necessary information about the use of medications.
2. Health education messages (flyers, brochures, and posters) about the use of medications during pregnancy should be designed and implemented for those who are young, low educators, low monthly income, with no or few previous pregnancies.
3. Organize and conduct more health education programs on the use of medications during pregnancy in simple and familiar language among the community.
4. Organize and conduct more health education programs on the use of medications during pregnancy for health care providers to update them with the most recent information (balancing between benefits and risks, avoiding the use of teratogenic drugs if possible, etc.).
5. Use mass media to raise public awareness and knowledge regarding using medications during pregnancy.
6. Encourage the pregnant women to discuss and ask their health care provider about the using of drugs during pregnancy.
7. Further studies on the use of medications during pregnancy on big sample size and national base need to be conducted to provide more scientific evidence about it.

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