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Research Article

A questionnaire based survey on knowledge, attitude and practices of medical practitioners regarding the prescribing of medications during pregnancy

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ABSTRACT

Background: Prescribing during pregnancy requires careful estimation of risk/benefit ratio for the mother and her baby. Both, underestimation and overestimation can produce undesirable maternal and fetal outcomes hence the present study was undertaken to assess the knowledge, attitude and practices (KAP) of medical practitioners related to the prescribing of medications during pregnancy.
Methods: A preformed structured questionnaire was administered to 41 medical practitioners. Multiple choice questions (MCQs) and yes/no type questions were used to assess their knowledge. Likert type questions studied their attitude and practices. Their perception of teratogenic risk of medications was evaluated using a visual analogue scale. The data so obtained was analyzed using descriptive statistics.
Results: Completed questionnaires were returned by 76% of the survey participants. Among whom only 24% felt highly confident while others were less confident or unsure regarding their prescribing ability during pregnancy. 90% of the respondents reported that a disease should not be untreated or undertreated due to fear of teratogenicity. 81% exhibited good knowledge of the FDA pregnancy categorization of drugs and more than 80% were aware of the teratogenic risk associated with valproic acid, lithium, isotretinoin, warfarin & thalidomide. The perceived risk of teratogenicity (mean) suggested for them was 33, 52, 52, 43 & 62 percentage respectively.
Conclusions: Most respondents exhibited a healthy attitude and a fairly sound knowledge, except for their perception of risk associated with individual drugs which was much higher than what is mentioned in the literature. Educational interventions may help to increase the awareness leading to better and confident prescribing.

Keywords: Prescribing, Medication, Pregnancy, Medical practitioners

INTRODUCTION

Pregnancy is a symptom-producing event during which it may be necessary to treat a variety of illnesses.[1] Treatment instituted to the pregnant mother not only helps in the recovery from maternal illness but also ensures the optimum development of the fetus by preventing embryopathy, preterm births and abortions significantly.[2]

Thankfully most of the available medications are safe to use during pregnancy and at present only around 30-40 drugs are suspected or proven to be human teratogens.[3] Lack of clear information and incomplete pregnancy risk data in humans makes the clinicians ill equipped to take correct prescribing decisions in this group of patients. As a result the disease is left untreated or undertreated during pregnancy due to the false perception and overestimation of teratogenic risk of medications. Overestimated teratogenic risk is also responsible for unnecessary termination of pregnancies as well.[4]

Low adherence to medication is often found in pregnant women due to the perceived safety risks of the prescribed medication and medical practitioners will usually need to carefully explain the important and substantial benefits and small risks of medication not only to ensure patient compliance and good illness control during pregnancy but also to allay the excessive fear of drug teratogenecity.[5]

Hence it is paramount that the medical practitioners understand the principles of teratology and be aware of which medications are safe to use during pregnancy.[1]

The aim of the present study was to assess the medical practitioners' perception of teratogenic risk associated a group of commonly known medications. This study also aimed to assess their knowledge, attitudes and practices (KAP) regarding medication use in pregnancy. The information so obtained will be useful to identify and address the existing gaps and deficiencies in the KAP of the target group and for undertaking future educational interventions for them.

METHODS

A preformed questionnaire was distributed to 41 medical practitioners having their private practice in a semi urban area within a radius of 20 kilometres from our hospital. Sample was collected by means of convenience sampling. Consent was obtained and anonymity of the respondents was maintained.

The questionnaire we used was adapted from many different sources including Damase-Michel (2007)[6] and amended to better suit the target group. The reliability of the questionnaire we tested was found to be acceptably good (Chronbach's alpha=0.88). Expert opinion was obtained and the questionnaire was pilot tested in a small sample to confirm its validity.

The questionnaire was divided into three sections: A) Demographic data; B) Knowledge and attitudes towards prescribing medications during pregnancy and C) Risk perception.

The first 4 questions of the questionnaire dealt with demographics, such as age, gender, speciality and length of practice. Knowledge was assessed by five Multiple choice questions (MCQs). Respondents' knowledge was considered "good" if they correctly answered four or more of the five knowledge questions, answering two-three questions correctly was considered "fair" and less than 2 was considered "poor."

Likert-scale questions were used to collect data regarding their attitude and practices. A visual-analogue scale (VAS) was used to evaluate the respondents' perception of teratogenic risk for 20 common medications, where in they were asked to put an arrow on the VAS measuring 20 cm and delimited by 2 vertical lines, from 0% to 100% to indicate the degree of teratogenic risk for each medication (0%: indicates no risk i.e. all neonates will be normal, 100%: indicates all neonates will have a birth defect). The level of the risk was quantified by measuring the distance in millimetres from the 0% to the mark indicated by the practitioners on the VAS. The mean values of the perceived risk were calculated for each drug.

Descriptive statistics in numbers and percentages were used to describe the results.

RESULTS

Demographic characteristics of the respondents, their knowledge of teratogenicity associated with medication use as well as their beliefs and practices toward prescribing during pregnancy were analysed. Their perception of degree of teratogenic risk associated with a group of commonly known medications was also measured.

Table 1: Belief and attitude of respondents regarding prescribing during pregnancy.

Questions	Ideal response	% Who gave ideal response
Drugs are the only proven teratogens	Disagree	71
Drugs increase the risk of birth defects to a very large extent	Disagree	10
Most of the presently available drugs are unsafe during pregnancy	Disagree	48
Teratogenicity associated with drug use is being over exaggerated	Agree	43
An extra caution is required while prescribing during pregnancy	Agree	91
I am confident about prescribing drugs during pregnancy	Agree	24
I do not take a chance in prescribing drugs to a pregnant patient, So I refer the patient to another colleague	Disagree	80
A disease should not be un treated or under treated due to the fear of Teratogenicity	Agree	76

The median age of the medical practitioners was 38 years (range 28-55) and 31% were females. The mean duration of practice was 9.3 years (range 1-26).

Of the respondents 77% of them had the correct knowledge regarding the incidence of birth defects which are known to occur in 2-3% of all pregnancies, 54% of them were aware of the fact that 2-3% of these birth defects are due to drugs. The number proven teratogens are about 30 in number was known to only 60% of the respondents. 81% of them exhibited good knowledge of the FDA pregnancy categorization of drugs but only 38% of them knew that a medication proven as a teratogen in animal studies may not be a confirmed teratogen in humans and that it can be used with caution during pregnancy.

Over all the knowledge was found to be good in 51% of the respondents, 30% were fairly knowledgeable and the remaining 19% exhibited a poor knowledge regarding teratogenecity.

Regarding their beliefs and attitude, see Table 1.

Table 2: Respondents' knowledge of teratogenicity associated with a given list of Drugs.

Drugs	Yes (%)	No (%)	No idea (%)
Aspirin	8	92	0
Acetaminophen (Paracetamol)	0	92	8
Ibuprofen	58	34	8
Corticosteroids	63	37	0
Erythromycin	25	67	8
Gentamycin	75	17	8
Amoxicillin	0	92	8
Norfloxacin	58	34	8
Diazepam	62	38	0
Ranitidine	8	92	0
Metoclopramide	33	67	0
Domperidone	33	67	0
LS COC*	50	25	25
SS COC**	77	8	15
Carbamazepine	73	14	13
Sodium valproate	87	0	13
Lithium	88	6	6
Iso tretinion	93	7	0
Warfarin	81	13	6
Thalidomide	88	12	0

With respect to their knowledge and perception of teratogenic risk of 20 commonly known medications, Most of the respondents (92%) do not associate any teratogenic risk with the use of aspirin, acetaminophen, amoxicillin and ranitidine; similarly 67% of the respondents do not associate any teratogenic risk with erythromycin, metoclopramide and domperidone. Around 35% of them believe that corticosteroids, ibuprofen, norfloxacin and diazepam are safe to prescribe during the first trimester. More than 80% were aware of the teratogenic risk associated with valproic acid, lithium, isotretinoin, warfarin & thalidomide. The perceived risk of teratogenicity (mean) suggested for these drugs was 33, 52, 52, 43 & 62 percentage respectively. For details refer to Tables 2 and 3.

Table 3: Respondents' perception of teratogenic risk associated with a given list of drugs (A value of 2% does not differ from the rate of malformation in general population).[6]

Drugs	Perceived (mean)	Literature
Aspirin	7.5	2
Acetaminophen	0	2
Ibuprofen	16.5	2
Corticosteroids	14.33	2
Erythromycin	3.5	2
Gentamycin	27.75	2
Amoxicillin	0	2
Norfloxacin	22.25	2
Diazepam	15.5	2
Ranitidine	7.5	2
Metoclopramide	8.5	2
Domperidone	12.66	2
LS COC*	15	2
SS COC**	17.5	2
Carbamazepine	27	6
Sodium valproate	34	10
Lithium	51.25	12
Isotretinion	62.2	25
Warfarin	44.6	30
Thalidomide	67.83	50

DISCUSSION

Prescribing in pregnancy has remained a problem to practising physicians over the years.[7]

Our study aimed at assessing the medical practitioners' knowledge of teratogenicity associated with medication use as well as their beliefs and practices regarding drug prescribing during pregnancy.

The knowledge was found to be fairly good in 81% of study participants. The concept of teratogenicity was well understood and the practitioners were well informed about the risk in the general population. However 50% of the practitioners wrongly implicated the drugs to be responsible for most cases of teratogenicity. Product labelling or package inserts provided by the manufacturers give a wrong impression that most medications have an associated teratogenic risk as many medications are labelled "not to be used in pregnancy unless potential benefits outweigh the risks," due to their scarcity of sufficient evidence in pregnant women to pronounce them "safe," may be responsible for such misinformation.[8] Moreover the drug risk classification in many countries tend to convey a high risk for most drugs[9] like the US Food and Drug Administration (FDA) which categorizes drugs as A, B, C, D or X based on the level of

animal and human evidence limits the number of drugs that are rated as Category A, due to the lack of well-controlled studies in pregnant women, which may not always be ethically or financially feasible gives the impression that only very few drugs have no risk.[10]

In order to overcome the limitations of the existing pregnancy labelling system, the FDA has been developing a new regulation since 1997. The proposed regulation would replace the letter categories with more detailed, narrative descriptions. Information on fertility, pregnancy and breastfeeding would be included.[11]

In the present study, 80% of the practitioners were aware of the FDA pregnancy categorization of drugs but only 38% of them knew the practical significance of correlating teratogenic data from animal studies to humans. Even though animal experiments have provided considerable information concerning the teratogenic effects of drugs, unfortunately these experimental findings cannot be extrapolated to humans because of interspecies variability.[12]

Prescribing medications during pregnancy requires the practitioners to be confident which can have a positive influence on the patient's trust and compliance. Confidence was expressed by only 24% of our respondents. 20% of the study participants did not want to take any chances and hence their usual practice was to refer the patient to another colleague. The lack of confidence and not taking the responsibility to prescribe to pregnant mothers may be due to insufficient initial training as students or residents about drug use in pregnancy. Fear of litigation or law suits may also be another reason.[4,6]

The individual teratogenic risk of the given list of drugs is usually low or negligible, except for thalidomide, retinoids, warfarin, carbamazepine and valproic acid. Most of the practitioners over perceived the teratogenic risk, at the same time a small number were unaware of teratogenicity associated with these proven teratogens.

Underestimation of teratogenic risk can increase the fetal defects at the same time misinformed treatment providers who overestimate the teratogenic risk associated with medications may provide wrong counselling to women who mainly depend on the physicians for their information leading to decreased compliance to treatment, inadequate treatment of maternal disease or termination of otherwise wanted pregnancy.[13]

Our results concur with that of Damase-Michel, et al who had reported a very high teratogenic risk perception of health care professionals in Midi-Pyrenees area in France for similar drugs and whose questionnaire and list of drugs, we adapted to suit our study requirement.[6] When compared to their study subjects which comprised of both general practitioners and community pharmacists the perception of teratogenic risk was much lower in our study participants. This may be due very high teratogenic risk perception exhibited by the community pharmacists.

Our study has some limitations. Our survey sample was a convenience, purposely selected cluster sample and possibly was under representative and small. Nevertheless our study participants exhibited similar higher perception of teratogenic risk as previous studies.[6,14]

Teratogen information service (TIS) is an important component for assisting the physicians.[15] Unfortunately, physicians in developing countries, do not have access to such information.

Establishing TIS, imparting adequate training to medical students and educating the practicing physicians through continuing medical education programs may be undertaken to address the issue of lack of confidence. Simple hand-outs which provide unambiguous information may be useful for time constrained medical practitioners.

Obtaining adequate information on drug safety during pregnancy is very essential and pregnancy registries are doing the same by undertaking follow up studies to learn what exposures occur during the course of pregnancy and about the health of new-born.

Until reliable and sufficient data is acquired and new guidelines released, the health care practitioners have to do the best they can in evaluating all the existing options in regards to medication use during pregnancy.

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