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Risk perception by healthcare professionals related to drug use during pregnancy: a Swiss survey

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Summary

PRINCIPLE: Healthcare professionals' (HCPs') perception of risk associated with drug use in pregnancy may have an impact on the pharmacological treatment of some women. The aim of this study was to examine this risk perception in a sample of Swiss HCPs with a special focus on their knowledge and use of available specialised information sources.

METHOD: An online, French and German, questionnaire was e-mailed to 7,136 members of four Swiss professional societies (gynaecologists, paediatricians, midwives and pharmacists). The questionnaire was designed (a) to collect demographic characteristics, (b) to evaluate the frequency of use of several specialised sources of information on drugs in pregnancy in their daily practice, and (c) to examine the perception of risk associated with drug use during pregnancy.

RESULTS: A total of 1,310 questionnaires were collected (response rate of 18.4%). More than 80% of the respondent HCPs use the Swiss Drug Reference Book (Compendium) to assess the risk associated with drugs during pregnancy and are not aware of available specialised information sources (books, websites or information centres). Despite some disparities between HPCs, the risk related to drug intake was overall highly misperceived. Blinded reading of three product monographs in the Compendium was associated with an overestimated perception of risk (e.g., after reading the "paracetamol" monograph, 38% of the participants stated they would probably not advise the use of this drug to a pregnant patient).

CONCLUSION: Overall, an overestimation of the risk associated with drug use during pregnancy has been observed in our sample of HCPs, which might be related to the underuse of specialised information source among other factors. These findings evidenced the need for increased training for HCPs in order to optimise medication use during pregnancy. Further studies are needed to confirm these results and identify causes.

Key words: *risk perception; drugs; pregnancy; healthcare professionals*

Introduction

The general view that every drug has a teratogenic potential has persisted since the thalidomide tragedy of the 1960s. Although women are often advised not to take any drugs during pregnancy, exposure may be inadvertent, as half of all pregnancies are unplanned, or may be unavoidable in women requiring treatment for chronic diseases, acute illnesses or pregnancy-related conditions [1].

Although only a very small number of drugs have been proved to be human teratogens [2], most are not recommended by their manufacturers to be used in pregnancy [3]. For most drugs, the current knowledge of their teratogenic potential is only partial, based on animal research or epidemiological studies of relatively small cohorts of pregnant women. In addition, even if large studies have been conducted, this information is not always included in the product monographs of the Swiss Drug Reference Book (Compendium), which is often the first source used by healthcare professionals (HCPs) to seek information [3]. Moreover, owing to ethical limitations, randomised clinical trials in such populations are not performed and information on drug safety is mostly based on observational studies with methodological challenges, such as underlying contributing maternal disease effects, recall bias and numerous other confounding factors [4, 5]. In addition, such observational studies require large sample sizes to identify moderate teratogenic risk, as most birth defects rarely occur above the overall 2%–3% baseline risk.

Although only a few drugs have been evaluated in large-scale observational studies, the advent of computer databases now allows an increasing body of evidence documenting foetal safety for a growing number of medications [6, 7]. The disclaimers by drug manufacturers and regulatory authorities, although understandable from the medicolegal perspective, are not applicable to guide drug choice in pregnancy. Pregnant women and their HCPs have

to make difficult decisions, based on little or sometimes alarming information, and women frequently interpret the standard information "not recommended in pregnancy" as "not safe" to use during pregnancy. However, in many cases, the potential benefit of using a required drug will outweigh any potential risks of teratogenicity or toxicity to the foetus. If the patient has an unrealistic perception of the teratogenic risk, this may lead to poor adherence to the treatment, discontinuation of treatments – even for life-threatening medical conditions – and termination of a wanted pregnancy, as well as unnecessary anxiety [2].

A large body of research exists in risk perception, as well as in communication processes between patients and medical providers, yet very little of this research has been focused on the perceptions of teratogenic risk [8]. A few studies have shown the unrealistically high perceptions of teratogenic risk by pregnant women [9–20]. The few existing studies that focused on HCPs revealed that the erroneous perception of teratogenic risk also seems to be shared by HCPs who prescribe, and recommend to women the safety of their medications [13, 20–23].

The lack of definitive safety data for a large majority of drugs makes it difficult to interpret the available information in daily practice and to decide whether the potential benefits for the mother outweigh the risks to the foetus. However, some specialised information sources are available that provide available evidence-based information (see "Materials and methods").

The objectives of this study were two-fold: (1.) to examine the risk perception associated with drug use during pregnancy in a sample of Swiss HCPs and (2.) to examine the knowledge and use of the available tools allowing a realistic estimation of risk associated with drug use during pregnancy.

Materials and methods

Data

A cross-sectional prospective observational study was conducted at a Swiss-wide level. Data were collected in February 2010 using an online, anonymous self-completed, bilingual French and German, questionnaire (www.surveymonkey.com) that was sent out by e-mail to each member (with an e-mail address) of four Swiss professional societies (gynaecologists, paediatricians, midwives and pharmacists; 7,136 e-mails in total). A reminder was e-mailed 5 weeks after the first contact. As no published standardised instruments were available, a new self-administered questionnaire was developed and validated on the basis of a small pilot survey (n = 6 selected HCPs, 2 German-speaking, 1 bilingual and 3 French-speaking) that tested the length and the understanding of the tool. All data were collected anonymously (without name and Internet Protocol address). The review board of the four Swiss professional societies reviewed and approved the study. Consent was considered as implicit by participation to the survey.

Demographic information on the participants (e.g. gender, age, profession, professional experience and, professional environment, frequency of exposure to pregnant women and parenthood) as well as previous training and education on drug use during pregnancy was retrieved. The questionnaire also focused on the professionals' own opinion regarding the level of maternal anxiety, adherence to treatment and frequency of drug use during pregnancy. All questions and available answers are listed in table 1.

Three questions assessed the participants' awareness of available specialised information sources largely known by the European Teratogen information Services or more specific to the Swiss health community (table 2). The participants were asked how frequently they used each source of a cited list. Five questions focused on general knowledge on drug safety during pregnancy. In table 1, answers marked with a star were considered as meeting current knowledge or therapeutic recommendations. Furthermore, participants were asked to read three different drug labels (pregnancy section) from the Swiss Drug Reference Book (Compendium): paracetamol (drug A), lamotrigine (drug B) and isotretinoin (drug C), with the drug name blinded (trade name and International Nonproprietary Name). After reading each drug label, the participants were asked if they would prescribe or deliver the drug to a pregnant woman needing the treatment.

Statistical analysis

Data were analysed using standard descriptive statistics (stata 10.0). Means and proportions were calculated using the total number of participants responding to a given question. Responses left blank were coded as missing data, and handled using a listwise deletion method.

Three scores were made for (a) the questions assessing the awareness about the existing specialised information sources, (b) general risk perception, and (c) risk perception after reading the three drug labels. For the score assessing the awareness about the existing specialised information sources, points were assigned according to the frequency of use for each source (i.e., I don't know it and never use it = 0 point; rarely = 1 point; often = 2 points; in priority = 3 points) and the sum was divided by the number of sources. The range for the possible score was 0–3, with 3 meaning that one of the three available formats (paper, websites and information centres) was used as a priority. For the two other scores (general risk perception and after reading of the monographs), 1 point was given to what was assumed as the correct answer by the authors, based on current evidence-based information and therapeutic recommendations. In case of ambiguity, 1 point was given for both answers. The range of points available for the score assessing general risk perception was of 0 to 5, with 5 meaning that all answers were correctly given. For the score assessing risk perception after reading the three hidden drug labels, the range of points available was of 0 to 3, with 3 meaning that each decision to deliver or prescribe the drug taken after the reading of the hidden drug labels met the current evidence-based information.

An exploratory analysis was conducted to investigate HCPs' characteristics (e.g. age, sex, profession, frequency of exposure to pregnant women, training) as potential factors impacting the score of awareness of the specialised information sources or the two risk perception scores (i.e., general risk perception, risk perception after reading the

three drug labels) using multivariate linear regression analysis (Stata 10.0). A minimum of 10 participants per predictor variable when using six or more predictors was respected [24].

Results

Of the 7,136 e-mails sent out, a total of 1,310 questionnaires were completed of which 456 (35%) were completed in French and 854 in German (65%). The overall response rate was 18.4% (gynaecologists 13%; paediatricians 14%;

Table 1: Information gathered through the questionnaire.

	Raised issues	Available answers
Participants' characteristics		
General information	Gender	Male, emale
	Age	Years
	Profession	Gynaecologist, paediatrician, midwife, pharmacist, other
	Professional experience	Years
	Professional environment	Hospital, private clinic, private practice or pharmacy, other, two different positions
	Frequency of exposure to pregnant women	Never, rarely, often, several times a day
	Parenthood	Yes, no
Education regarding drug use during pregnancy	Training within the last 5 years	Yes, no
Participants opinion regarding drug use during pregnancy	Maternal anxiety	>80%, 30%–60%, 10%–20%, <10% express anxiety
	Adherence to treatment	A few %, 20%, 50% or 80% don't take their drug, I don't know
	Frequency of drug use	>80%, 30%–60%, 10%–20% or <10% take at least one drug during pregnancy
Awareness of specialised information sources		
Compendium Suisse	Frequency of use	Never, rarely, often, in priority, I don't know
Books	Frequency of use	Never, rarely, often, in priority, I don't know
Last edition	Frequency of use	Never, rarely, often, in priority, I don't know
Older edition	Frequency of use	Never, rarely, often, in priority, I don't know
Websites	Frequency of use	Never, rarely, often, in priority, I don't know
Information centre	Frequency of use	Never, rarely, often, in priority, I don't know
Other	Frequency of use	Never, rarely, often, in priority, I don't know
General knowledge on the risk associated with drug use during pregnancy		
	Proportion of drugs known to be at risk for pregnant women	Little*, around 33%, around 50%, many, I don't know
	Total birth defect risk related to paracetamol use	<1%*, 2%–4%*, 10%, 25%, 60%, 95%, I don't know
	Phytotherapy is safer	I totally agree, I tend to agree, I tend to disagree, I totally disagree*, I don't know
	Sample size required to rule out a 2% increase in major birth defect rate	A few dozen, a few hundred, a few thousand*, a few hundred thousand, I don't know
	Level of birth defect risk considered as acceptable related to a needed antiepileptic treatment	<1%, 2%–4%, 10%*, 25%, 60%, 95%, I don't know
Perception of risk after the reading of three blinded drugs labels taken out from the Swiss Drug Reference Book		
Paracetamol	Prescribing or delivering intention	Under no circumstances, rather no, rather yes, in all circumstances*, I don't know
Lamotrigine	Prescribing or delivering intention	Under no circumstances, rather no, rather yes*, in all circumstances*, I don't know
Isotretinoin	Prescribing or delivering intention	Under no circumstances*, rather no, rather yes, in all circumstances, I don't know
* Answers considered as meeting current knowledge or therapeutic recommendations and scoring 1 point for the sum scores		

Table 2: List of specialised information sources cited in the survey.

	Format
Drugs in Pregnancy and Lactation: A Reference Guide to Fetal and Neonatal Risk. Briggs et al. 2011 [7]	Book
Médicaments grossesse et lactation. Delaloye et al. 2006 [32]	Book
Arzneimittel in Schwangerschaft und Stillzeit. Schaefer et al. 2012 [6]	Book
Grossesse et allaitement: guide thérapeutique. Feirreira et al. 2007 [33]	Book
Centre de référence sur les agents tératogènes de Paris. www.lecrat.org (available since 2006) [25]	Website
Pharmakovigilanz- und Beratungszentrum für Embryonaltoxikologie Berlin. www.embryotox.de (available since 2008) [26]	Website
Reprotox. www.reprotox.org (available since 1994) [34]	Website
Swiss teratogen information service. www.swisstis.ch (available since 1976)	Call centre
Schweizer Toxzentrum. www.toxi.ch (available since 1966)	Call centre
Clinical Pharmacology services	Call centre

midwives 32%; pharmacists 19%). The demographic characteristics of the participants are presented in table 3.

On the questions of the professionals' own opinions on number of drugs used, anxiety and adherence, this survey showed that nearly half of the participants estimated that 30%–60% of pregnant women are exposed to at least one drug during their pregnancy (vitamins excluded) (n = 586; 47%), and they assessed that more than 80% of these pregnant women express anxiety when taking a drug (n = 549; 44%). The majority of the participants estimated that 20% or even fewer of their patients are nonadherent to their treatment (n = 761; 76%) (table 3).

The evaluation of the awareness of specialised information sources (table 2) revealed that almost 80% of participants commonly use the Swiss Drug Reference Book (Compendium) to assess the risk associated with drugs during pregnancy. The large majority of participants are not aware of or do not use the available specialised information sources cited in the survey.

Overall, the perception of risk associated with drug use in pregnancy was overestimated (n = 950; 73% of participants answered that part of the questionnaire with n = 360 missing values). The majority of the responding participants believed that more than 30% of drugs are teratogenic or foetotoxic (n = 465; 49% with n = 153 responding "I don't know") and 34% (n = 332) evaluated correctly that only a small proportion of drugs are known to be teratogenic. A majority of the participants estimated that the birth defect rate of a pregnancy with frequent paracetamol exposure was less than 1% (n = 516; 55% with n = 190 responding "I don't know"), thus suggesting that the basal risk of 2%–3% is unknown. A large proportion of the responding HCPs did not accept a birth defects risk of 2%–4% (i.e., baseline risk) (n = 378; 40% with n = 200 responding "I don't know") or even less (<1%) (n = 259; 27%) due to the intake of antieptileptic drugs. A large majority of the participants (n = 687; 72% with n = 43 responding "I don't know") disagreed with the statement that herbal products were generally less toxic for the unborn child than conventional medication and a large proportion were aware that thousands of exposures were required to rule out a 2% increase in major birth defects rate (n = 467; 49% with n = 208 responding "I don't know").

The analysis of the three scores, awareness of specialised source, general risk perception and risk perception associated with the blinded reading of the three drugs' labels, stratified by the different HCPSs is presented in table 4. The frequency of use of the specialised information sources differed significantly in the various professions, suggesting that gynaecologists more frequently use the specialised sources on drug use in pregnancy. In addition, they rated the overall teratogenic risk of drugs more accurately than the paediatricians, pharmacists and midwives. Nonetheless, the gynaecologists' scores were low, with 50%–75% inadequate answers to the questions.

As presented in table 5 (n = 950 participants answering that part of the questionnaire with 360 missing values), the blinded reading of drug labels indicates that 35% (n = 330 with n = 47 responding "I don't know") of the participants would have rather not or under no circumstances prescribed, delivered or recommended drug A (paracetamol) after reading its drug label in the Swiss Drug Reference Book [3]. A large majority (n = 593; 62% with n = 66 responding "I don't know") would have rather not or under no circumstances prescribed, delivered or recommended drug B (lamotrigine), and almost all participants (n = 884; 93% with n = 25 responding "I don't know") would have under no circumstances prescribed, delivered or recommended the drug C (isotretinoin).

Several participant characteristics were significant predictors of the three scores. For the awareness of specialised source model, significant factors were profession (gynaecologist, $\beta = 0.17$, $p < 0.001$), professional location (private practice or pharmacy, $\beta = -0.17$, $p < 0.001$), language (French, $\beta = -0.11$, $p < 0.001$), professional experience ($\beta = -0.002$, $p < 0.001$) and frequency of exposure to pregnant patients (several times a day, $\beta = 0.11$, $p < 0.05$). This model explained 20% of the variance (adjusted $r2 = 0.20$, $p < 0.001$). For the general risk perception score, sex (women, $\beta = -0.17$, $p < 0.05$) and profession (gynaecologist, $\beta = 0.69$, $p < 0.001$) were found to be significant predictors in the multivariate analysis, explaining 6% of the variance (adjusted $r2 = 0.06$, $p < 0.001$). For the risk perception associated to the blinded reading model, significant factors were, profession (gynaecologist, $\beta = 0.30$, $p < 0.001$), sex (male, $\beta = 0.15$, $p < 0.001$), age ($\beta = -0.011$, $p < 0.001$) and the model explained 7% of the variance (adjusted $r2 = 0.07$, $p < 0.001$).

Missing values were similar throughout the questionnaire except for participants never exposed to pregnant women in their daily practice, who were associated with a 50% lower response rate to the questions building the three scores.

Discussion

To the best of our knowledge, this is the largest survey worldwide evaluating the perception of risk of HCPs regarding drug use during pregnancy. The results reveal an important overestimation of the risk associated with drug use during pregnancy and lack of awareness of the available information sources needed to provide a realistic evaluation of risk.

The consequences of lack of information can be serious if patients are exposed to a teratogenic agent, but unrealistic risk perception can generate psychological and physiological maternal harm (e.g., if women choose to abruptly discontinue a needed drug) or termination of viable and otherwise wanted pregnancies. There are several likely reasons why HCPs overestimate this risk. Foremost is the fear surrounding the teratogenicity of drugs subsequent to the thalidomide disaster, followed by other proven teratogenic drugs (e.g., diethystilboestrol and retinoids), which have been widely relayed by the scientific literature and by the media. In our survey, the majority of participants stated that the number of teratogenic or foetotoxic drugs was above 30%, whereas in reality only a very few drugs have been proven to be human teratogens [2].

Conflicting information between various sources can also be a limiting factor in decision making when a drug is required during pregnancy. An important source of misinformation is the Swiss Drug Reference Book (Compen-

dium Suisse des médicaments), which includes the disclaimer that was mentioned above. The blinded reading of the paracetamol monograph in the Swiss Drug Reference Book, which showed that almost 40% of the participants would have rather not or under no circumstances use paracetamol is a striking example of the biased in-

Table 3: Participants' characteristics.

Characteristics	Total participants		Pharmacist		Gynaecologist		Paediatrician		Midwife	
	n	%	n	%	n	%	n	%	n	%
Questionnaire language (n = 1,310)										
– French (including 53 Italian speaking)	456	35	221	35	50	26	96	44	84	34
– German (including 15 Italian speaking)	854	65	418	65	140	74	123	56	162	66
Age in years (n = 1,309)										
– Mean (range)	43 (24–91)		42 (24–91)		48 (30–67)		44 (27–69)		44 (25–66)	
Sex (n = 1310)										
– Female	943	72	466	73	110	58	114	52	242	98
– Male	367	28	173	27	80	42	105	48	4	2
Profession (n = 1,310)			639	49	190	15	219	17	246	19
– Other* (n = 16; 1%)										
Professional experience in years (n = 1,310)										
– Mean (range)	16 (0–65)		16 (0–65)		18 (1–48)		14 (0–41)		17 (1–40)	
Professional location (n = 1,309)										
– Hospital	219	17	39	6	70	37	83	38	27	11
– Private clinic	32	2	6	<1	15	8	5	2	2	<1
– Private practice or pharmacy	910	70	529	83	90	47	116	53	168	68
– Other**	60	5	44	7	0	0	6	3	8	3
– Two different positions	88	7	21	3	15	98	9	4	41	17
Exposure to pregnant women during every day practice (n = 1,310)										
– Never	46	4	15	2	2	1	24	11	4	2
– Rarely	299	23	114	18	3	2	126	57	52	21
– Often	711	54	461	72	46	24	63	29	134	54
– Several times a day	254	19	49	8	139	73	6	3	56	23
Participants who completed specific training on drugs in pregnancy during the last 5 years (n = 950)	299	32	192	30	52	27	9	4	41	17
Participants' opinion about the number of pregnant women non adherent to treatment (n = 1,236)										
≤ 20%	761	62	351	70	152	69	79	51	168	64
50%	228	18	141	28	21	10	43	28	21	8
80%	18	1	6	1	2	<1	7	5	3	1
I don't know	150	12	8	1	45	20	27	16	70	27
Participants' opinion about the number of pregnant women expressing anxiety if they have to take a drug during pregnancy (n = 1,236)										
>80%	549	44	285	46	74	40	96	48	88	38
30%–60%	482	39	245	40	69	37	76	38	88	38
10%–20%	148	12	58	10	31	17	21	10	36	16
<10%	57	5	19	3	11	6	8	4	18	8
Participants' opinion about the number of pregnant women taking at least one drug during pregnancy (n = 1,236)										
>80%	314	25	170	28	54	29	29	14	59	36
30%–60%	586	47	298	49	87	47	101	50	97	42
10%–20%	265	21	113	19	37	20	58	29	52	23
<10%	71	6	26	4	7	4	13	7	22	10

* family physician, medical student, nurse, public health physician
** industry, schools, administration

Table 4: Sum scores obtained by healthcare professionals.

Profession	Score of awareness of the specialised information sources (n = 733) *Lowest score= 0* *Best score = 3* Mean (95% confidence interval)	Score of general risk perception linked to drug use during pregnancy (n = 491) *Lowest score = 0* *Best score = 5* Mean (95% confidence interval)	Score of risk perception after blinded reading of official drug labels (n = 857) *Lowest score = 0* *Best score = 3* Mean (95% confidence interval)
Gynaecologists	0.4 (0.3–0.4)	2.7 (2.5–2.9)	1.5 (1.4–1.6)
Paediatrician	0.2 (0.2–0.2) *	2.6 (2.4–2.9)	1.4 (1.3–1.5) *
Midwives	0.2 (0.1–0.2) *	1.9 (1.7–2.1) *	1.2 (1.1–1.2) *
Pharmacists	0.2 (0.2–0.2) *	2.5 (2.4–2.6)	1.3 (1.2–1.4) *

* $p < 0.05$ in the multivariable linear regression analysis; reference group gynaecologist

formation provided by this source of information. On the other hand, when a drug has been proven to be a human teratogen, the Swiss Drug Reference clearly states that it should not be used in pregnancy and is thus correctly interpreted, since isotretinoin is one of the well-known human teratogens. Reference books or websites giving a realistic assessment of drug safety in pregnancy are available, but appeared to be either underused or unknown by the participants. [6, 7, 25, 26]

The fear of legal issues is illustrated by 80% of the responding participants advising a patient not to take a needed antiepileptic drug if it would increase the teratogenic risk by up to 1% above baseline. HCPs may adopt a self-protective approach and, as a result, commonly advise avoidance of all pharmacotherapy agents by pregnant women. Unfortunately, such an approach likely prevents HCPs from actively seeking knowledge in this field.

In our survey, several factors were linked to an increased awareness of the available specialised information sources or to a more accurate risk perception on drug use during pregnancy. Gynaecologists were slightly more aware of the availability of specialised information sources and tended to have more accurate scores of risk perception. This could be explained by a higher exposure to evidence-based information in their training and increased experience in the prescription of drugs to pregnant women compared with other professionals. Only 35% of the HCPs in our sample population stated having completed specific training on the use of drugs in pregnancy during the last 5 years, supporting the lack of knowledge of specialised information. Yet this factor was not shown to be a significant predictor in the multivariate analysis, possibly because it was confounded with other factors (frequency of exposure to pregnant patients). We were able to observe other predictive factors of an increased perception of risk, such as being a woman; however, those factors seem to explain a very small part of the observed variability and their contribution appears to be of little significance in comparison with the overall unrealistic perception of risk observed in our survey.

There are several limitations to our study. The response rate was low (18.4%), with an unequal distribution between the groups and an important proportion of missing values in the third part of the questionnaire, which might introduce a bias in some of the responses. It is possible that HPCs more aware of the issue were more likely to participate in our survey. For example, HCPs who are not exposed to pregnant patients in their daily practice had a higher rate of missing values. Consequently, any selection biases would most probably be conservative. The degree to which our findings can be extrapolated to the entire HCP population is based on the representativeness of the Swiss HCP participants. Overall, the language structure of our study population (65% chose the German questionnaire) matches quite well with the Swiss population (65 % of Swiss are Swiss-German). The large proportion of female responders is not surprising, as almost 100% of midwives are female, as are a large majority of pharmacists (accounting for almost 70% of the respondents). Almost 70% of the HCPs were practicing in the community sector. This over representation is explained by the large participation of pharmacists mostly active in the community sector, but is no longer observed after stratification by profession [27]. Finally, the response rate is similar to other national surveys of HCPs. [28–30] Although generalisability of our findings cannot be assured, strong trends were revealed by this survey, which indicates possible major concerns on the appropriate use of drugs during pregnancy. Cross-sectional studies are weak because they provide no direct evidence of the sequence of events [31]. This makes it difficult to identify causes for the unrealistic risk perception or the scant knowledge of available specialised information sources, and allows only for interpretation based on associations. Further studies are needed to confirm those results in other populations and better define causes.

In conclusion, these findings clearly indicate the need for increased training of HCPs in order to have a better perception of drug-associated risk and to use the appropriate tools to optimise medication use during pregnancy. Thus, although minimising drug exposure to pregnant patients is always prudent, it is equally important to counsel women appropriately to continue their medications prescribed for chronic or pregnancy-induced conditions or reassure them in the case of an inadvertent exposure, to prevent poor adherence to treatment and risk of therapeutic failure or unnecessary termination of a viable and wanted pregnancy, as well as needless anxiety.

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Table 5: Risk rating after blinded reading of three drugs labels.

Rating	Drug A paracetamol n (% answers)	Drug B lamotrigine n (% answers)	Drug C isotretinoin n (% answers)
After reading this statement would you prescribe/deliver/ recommend this drug in case of a confirmed indication?			
In all circumstances	28 (3)	11 (1)	3 (<1)
Rather yes	545 (57)	280 (29)	11 (1)
Rather no	249 (26)	368 (39)	27 (3)
Under no circumstances	81 (9)	225 (24)	884 (93)
I don't know	47 (3)	66 (7)	25 (3)

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