



ARTÍCULO ORIGINAL

Acceptance of induced abortion amongst medical students and physicians in Mexico

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ABSTRACT

Background. Abortion is illegal in most of Mexico, except in the case of rape or physical risk to the mother, but there are several indicators that suggest that at least in Mexico City, society would like to have a more liberal law. The present study was performed to learn what several groups of physicians and medical students residing outside of Mexico City think in this regard. **Methods.** Seven colleagues working in different cities agreed to apply a questionnaire to physicians and or medical students available to them, to learn their opinions regarding the acceptability of induced abortion in several scenarios. Questions one to three inquire if abortion is acceptable up to week 20 of pregnancy at the simple request of the parents, if the fetus has a severe malformation or anencephaly. Questions four to six personalize the situations by supposing that the physician or spouse have a high risk of having a malformed child. Question seven asks if they would offer prenatal diagnosis to a mother who would abort a malformed fetus. Statistical procedure includes multivariate analysis. **Results.** The inter-city physicians-students composition was very heterogeneous. The majority of respondents disagreed with abortion on demand of the parents, but clearly agrees to it in the presence of severe malformations. In general males, above 30 years old physicians and less religious individuals, are more in favor to abortion than their respective counterparts. The proportion of acceptance is over 70% in most cases. **Conclusion.** We believe that this work shows a preliminary indication of a national trend amongst physicians and medical students favoring induced early abortion if the fetus has a severe malformation.

Key words. Induced abortion in Mexico. Fetal malformations. Anencephaly. Abortion and physicians age. Gender and religiousness.

Abortion is illegal in most Mexican States, except in the case of rape or if the mother's life is at risk by the continuation of pregnancy.¹ In the Federal District (Mexico City) and 12 of the 31 states,² the pre-

Aceptación en México del aborto inducido entre estudiantes de medicina y médicos

RESUMEN

Antecedentes. El aborto es ilegal en la mayor parte de México, excepto cuando el embarazo es resultado de una violación o existe riesgo para la salud de la madre. Hay, sin embargo, indicadores que sugieren que en el D.F. la sociedad quisiera una ley más liberal y en el presente trabajo se explora la situación entre estudiantes de medicina y médicos fuera de la ciudad de México. **Métodos.** Siete colegas en diferentes ciudades aplicaron un cuestionario para conocer la opinión de los encuestados en relación con el aborto inducido. Las preguntas 1 a 3 averiguan la aceptabilidad del aborto antes de la semana 20 del embarazo por simple solicitud de los padres, por una malformación congénita severa o por la presencia de anencefalia. Las preguntas 4 a 6 personalizan la situación bajo el supuesto que el entrevistado o su cónyuge tengan alto riesgo de tener un bebé malformado y la pregunta siete averigua si ofrecerían el diagnóstico prenatal a una persona que abortaría un producto afectado. **Resultados.** Fue muy heterogénea la proporción estudiantes-médicos en las siete ciudades. La mayoría de los entrevistados estuvieron en desacuerdo con el aborto por la simple solicitud de los padres, pero más de 70% estuvo de acuerdo cuando había un producto malformado. En general, los varones mayores de 30 años y poco religiosos estaban más a favor del aborto que sus contrapartes. **Conclusión.** El trabajo muestra de manera preliminar, que existe una tendencia nacional entre estudiantes y médicos que favorece al aborto temprano en el caso de fetos malformados.

Palabras clave. Aborto inducido en México. Malformaciones fetales. Anencefalia. Abortos en relación con edad, sexo y religiosidad.

sence of a severe malformation has recently become a justification for the legal termination of pregnancy, although practical difficulties remain. There is a lot of controversy and insufficient public debate in

this issue, but there are some indicators that society would like to have a more liberal abortion law.

A survey performed in Mexico City amongst 387 females and 338 men in 1994³ revealed that the majority thought that abortion should be legally available in case of: a) presence of congenital malformations; b) severe risk to the mother; and c) rape. There was general disapproval of the procedure in other situations. In 1997⁴ we showed that amongst 195 physicians, 73% of which were either religious or very religious (50 gynecologists, 58 internists, 27 neurologists, and 58 pediatricians), only 15% approved of abortion upon the parents request, 59% agreed with the abortion of a malformed fetus without specifying severity, and 91% agreed with it if the fetus had anencephaly. Similar results were found⁵ in 2001, amongst 121 gynecology & obstetrics residents working in seven different hospitals of Mexico City. In 2004 García, et al.,⁶ using a national probability sample, surveyed 3,000 individuals, and found that 82% believed that abortion should be legal when a woman's life is at risk, 76% when a woman's health is in danger, 64% in cases of rape and 53% if there is risk of fetal impairment. Approval of abortion in other circumstances was less than 25%.

As most of the data has come from Mexico City, we decided to expand the investigation to other cities, surveying medical students and physicians alike. The results are herein presented.

MATERIAL AND METHODS

General strategy

The authors asked the collaboration of human geneticist residing in different cities in Mexico. They were asked to apply a questionnaire to medical students or physicians accessible at their work place. In two cities only medical students were surveyed: Mérida (n = 30) and Torreón (n = 40). In other two locations only physicians were available: Puebla (n = 38) and Zacatecas (n = 20). In three cities: Cuernavaca (n = 62), León (n = 35) and San Luis Potosí (n = 75), the sample included medical students and physicians. Amongst all physicians 44% were general practitioners, 18% pediatricians, 17% gynecologist and 3% general surgeons. The rest had different specialties or no graduate training at all. All the students had taken at some time an undergraduate medical genetics course. The questionnaires were answered anonymously to guarantee confidentiality.

The questionnaire

The questionnaire was fully structured and developed by one of us (AC) with two objectives in mind:

1. Learn the opinions of the people sampled in regard to several aspects related to induced abortion, which we have used extensively in several occasions.
2. Explore the knowledge and experience of several aspects of modern genetics. We inquired also about some of the general characteristics of the people sampled, like gender, importance of religion in every day life, age, and specialty if pertinent.

The questions

The questions regarding the general characteristics of the respondents were straightforward for gender, age and schooling. The question regarding religiousness was: How important is religion in your everyday life? With four possible answers; very important, important, not important and irrelevant. The first two were taken as indicative of strong religiousness, and the last two of a weak one.

Questions 1, 2 and 3 inquire if induced abortion is acceptable up to week 20 of pregnancy at the:

1. Request of the parents.
2. The presence of a severely malformed fetus.
3. And anencephaly, respectively.

There were three possible answers: yes, no, I don't know. Questions 4, 5 and 6, personalize the problem by supposing that the physician or spouse has a high risk of having a child with a severe malformation or genetic disease, and inquire whether they would: ask for a prenatal diagnosis (question 4), and if positive would seek an abortion in the case it showed a severely malformed fetus (question 5), or a child with anencephaly (question 6). The possible answers were the same as in questions 1 to 3. Question 7 asked whether he (she) would offer a prenatal diagnosis to a patient that plans to abort an affected fetus. There were five possible answers: I strongly agree, I agree, I am undecided, I disagree and I strongly disagree.

Statistical analysis

The first step was to explore how homogenous were the responses to the seven questions in the ci-

ties investigated, using a χ^2 test. The second step was to repeat the analysis several times, eliminating each time one or two different cities until learning which group of localities showed no inter-city statistical differences. After these were done, questions about abortion were considered as dependent variables. All of them were coded in a binary way in correspondence to the response: "yes" = 1, "no" and "I do not know" = 0. Differences among categorical variables were tested by means of χ^2 statistic. Seven multivariate models were built for the abortion related questions through multiple logistic regression analysis. Odds ratio (OR) was derived as association measure of the exponential of regression coefficient. City variable was factorized as follows: a first dummy variable to compare SLP (San Luis Potosí) vs. Cuernavaca+León+Puebla+Torreón+Zacatecas and a second dummy variable to compare Mérida vs. Cuernavaca+León+Puebla+Torreón+Zacatecas. All the statistical analysis was carried out under the program SPSS/PC v12.0 (Chicago, IL).

RESULTS

Table 1 shows the characteristics of the populations sampled regarding gender, age, schooling and religiousness. Highly significant inter-city differences were found in age and schooling. Table 2 shows the number and percent of respondents agreeing with abortion in three **non-personal** situations. Gender, schooling and religiousness showed statistical differences in the response to question 2 (agreement to abortion in the presence of a severely malformed fetus), and schooling in the response to question 3 (agreement to abortion if the fetus had anencephaly). Table 3 shows the number and per-

cent agreeing to four abortion-related questions, the first three of which are personalized.

The inter-city differences regarding the answers to the seven questions are shown inside tables 2 and 3, and they were highly significant ranging the "p" values from = 0.01 in the case of question 1 to < 0.0001 in questions 2, 3, 4 and 6. After omitting from the χ^2 analysis the answers from San Luis Potosí and Mérida no statistical differences remained in all questions, in other words, the answers from Cuernavaca, León, Puebla, Torreón and Zacatecas were homogeneous. In addition, the comparison of San Luis Potosí vs. Mérida, revealed significant differences in all questions, except No.1 (data not shown).

Table 4 shows the association of socio-demographic variables and the results of San Luis Potosí and Mérida with the probability to have had an affirmative response in the seven abortion related questions. Women were associated with a higher probability to answer "yes" in agreement to perform prenatal diagnosis to a pregnant patient, even if she plans to abort an affected fetus (question 7). Schooling did not show any statistical difference between MDs and students. In general terms, persons older than 30 years had a tendency to answer affirmatively, accepting abortion in the proposed situations. However, only question 6 (agreement to abort their own child with anencephaly) was statistically significant for age (OR = 5.47, p = 0.03). A stronger religiousness was associated with a lower probability to have responded affirmatively almost all questions, attaining statistical significance in question 1, acceptability of abortion at the parents request (OR = 0.36, p = 0.005) and question 2, agreement to abortion for the presence of a severely

Table 1. General characteristics of the people sampled.

City	N	Gender		Age		Schooling		Religiousness	
		M	F	≤ 30	> 30	Students	MD	Strong	Weak
Cuernavaca	63	31	31	41	22	39	23	48	15
León	35	20	15	15	19	9	26	27	7
Mérida	30	16	14	29	0	29	0	21	9
Puebla	38	25	13	7	31	0	38	32	6
San Luis Potosí	75	38	36	71	0	72	3	54	20
Torreón	40	22	18	40	0	40	0	34	6
Zacatecas	21	13	8	1	19	0	21	21	0
Total	302	165	135	204	91	189	111	237	63
$\chi^2 =$		3.31		157.4			196.9		10.5
p =		0.77		< 0.00001					0.11
D.F. = 6							< 0.00001		

Table 2. Percent of respondents agreeing with abortion: at parents request (Q.1), presence of a severely malformed fetus (Q.2), and fetus with anencephaly (Q.3).

Characteristic:	n	Q.1		Q.2		Q.3	
		No.	%	No.	%	No.	%
Gender							
Male	163	28	17.2	131*	79.9	128	78.0
Female	127	19	15.0	93	68.9	99	73.9
Age (years)							
≤ 30	197	28	14.2	146	70.5	151	73.3
30 +	91	19	20.8	77	85.6	75	83.3
Schooling							
Students	183	27	14.7	131**	69.3	134*	71.3
MD	108	20	18.5	92	83.6	92	83.6
Religiousness							
Strong	230	30*	13.0	172**	72.9	178	75.4
Weak	60	17	28.3	52	82.5	48	77.4
City							
Cuernavaca	57	14	24.6	55	87.0	54	87.1
León	35	2	5.7	29	82.8	29	82.8
Mérida	28	3	10.7	27	90.0	27	90.0
Puebla	40	8	20.0	32	80.0	32	80.0
San Luis Potosí	74	12	16.2	35	46.7	40	53.3
Torreón	37	7	18.9	31	83.8	30	81.1
Zacatecas	21	1	4.8	18	85.7	16	76.2
Total	292	47	16.1	225	74.7	228	76.0
$\chi^2 =$		25.6		56.3		60.3	
p =		0.012		< 0.0001		< 0.0001	
D.F. = 6							

* p = 0.01, D.F. 2; ** p = 0.02, D.F. 2.

malformed fetus (OR = 0.44, p = 0.04). The city where the survey was applied was an important confounder. The questionnaires belonging to San Luis Potosí, and Mérida, revealed a strong tendency to respond in disagreement to the questions related to abortion.

DISCUSSION

There was no effort made to have a representative sample of MDs or medical students. We chose the strategy described, to increase sample size and include general practitioners or not highly specialized individuals in various fields, which may somewhat limit the interpretation of the results. The very high χ^2 values found for age and schooling in table 1, reflects the inter-city heterogeneity of the sample. Schooling is directly related to age, and in Mérida, San Luis Potosí and Torreón, nobody belonged to the ≥ 30 group, although in San Luis Potosí three

individuals had already attained their MDs. In Puebla and Zacatecas the majority was 30 or older, and in Cuernavaca and León they were more evenly distributed.

The majority of respondents disagree with abortion at the parents request, for reasons independent of fetal pathology, suggesting that mere socioeconomic reasons are insufficient to grant this request (Table 2, Q.1). In addition to the inter-city statistical differences, religiousness was the only factor showing differences between categories: strong and weak, 13.0% of the former agreed with abortion against 28.3% of the latter. Roughly half of this group was composed of people to whom religion is irrelevant in everyday life. This finding coincides with our previous finding⁴ that only 7% of religious physicians agreed to voluntary abortion, against 38% of non-religious ones. In both studies older individuals were more agreeable to abortion than younger ones. Núñez, et al., in 1994³ reported

that the majority of 387 females and 339 males interviewed in Mexico City, disapproved of abortion on demand like the present findings.

Regarding abortion because of the presence of severe congenital malformation in the fetus, the majority approved of it (Table 2, Q.2), being males, older persons and less religious people more in favor than their counterparts. Never the less, it is worth noting that 73% of religious persons were in favor of abortion in this circumstance. In our previous study⁴ we had similar findings, and Gonzalez de Leon and Billings⁵ found that 91% of the 121 MDs they sampled in Mexico City, would agree with abortion if the malformations were incompatible with life after birth, and the figure decreased to 48% if the malformation was compatible with a newborn life. Garcia, Lara and Goldman⁷ reported that 83 % of the 1,206 physicians they studied in a national survey,

thought that abortion should be legal in the presence of severe malformations, and 70% indicated that they would be willing to perform it. In the case of anencephaly, the answers were similar to what we just described in the present study for congenital malformations (Table 2, Q.3). In San Luis Potosí the proportion of respondents agreeing to abortion in questions 2 and 3, were much lower than in the other cities.

Question Q.4 (Table 3) was answered positively by most respondents, but highly inter-city significant differences were found, San Luis Potosí showing the lower value, and the above 30 years old group and MDs showed significant differences when compared with the < 30 group and students respectively.

Questions 5 and 6 ask what they would do if the situations were their personal problem, as opposed

Table 3. Percent of respondents agreeing with: having a prenatal diagnosis if they or their spouse have a high risk pregnancy for a malformation (Q.4), abort due to the presence of a severely malformed fetus (Q.5), abort due to the presence of anencephaly (Q.6), and whether they would offer prenatal diagnosis to a pregnant patient, even if she plans to abort an affected fetus (Q.7).

Characteristic	N	Q.4		Q.5		Q.6		Q.7	
		No.	%	No.	%	No.	%	No.	%
Gender									
Male	164	146	89.0	106	64.6	136	80.9	90	59.6
Female	135	112	82.9	70	55.1	95	70.9	90	71.4
Age (years)									
≤ 30	204	137*	78.9	102*	50.0	137*	67.5	128	63.7
30 +	90	89	98.9	70	77.8	86	95.6	49	69.0
Schooling									
Students	188	151*	80.3	94*	49.7	125*	66.5	125**	65.4
M.D.	113	107	94.7	82	74.5	101	91.8	58	73.4
Religiousness									
Strong	232	205	88.4	134	56.8	178	75.4	131	64.8
Weak	63	53	84.1	42	66.7	48	77.4	38	51.3
City									
Cuernavaca	63	62	98.4	46	73.0	54	85.7	35	55.6
León	35	31	88.6	22	62.8	27	77.1	27	77.1
Mérida	30	27	90.0	8	26.7	12	40.0	15	50.0
Puebla	37	37	100.0	36	97.3	36	97.3	26	70.2
San Luis Potosí	75	45	60.0	46	62.2	46	62.2	54	74.0
Torreón	40	37	92.5	33	82.5	33	82.5	23	57.5
Zacatecas	21	21	100.0	19	90.5	19	90.5	-	-
Total	301	260	86.4	227	75.7	227	75.7	180	64.7
$\chi^2 =$			64.83		28.03		66.66		41.96
p =			< 0.0001		< 0.005		< 0.0001		< 0.003
D.F. = 6									

*p < 0.0001, D.F. 2; ** p = 0.02, D.F. 2

Table 4. Multivariate models by logistic regression analysis associated with the probability to respond affirmatively on abortion questions.

Variable		Q.1	Q.2	Q.3	Model Q.4	Q.5	Q.6	Q.7
Gender Female vs. male	OR	1.04	0.62	0.85	0.63	0.66	0.69	1.91
	95% CI	0.53-2.03	0.35-1.12	0.48-1.51	0.29-1.36	0.40-1.10	0.38-1.28	1.11-3.27
	p	0.91	0.11	0.57	0.24	0.11	0.24	0.02
Schooling MD's vs. students	OR	0.29	0.73	1.52	1.12	1.12	1.01	0.73
	95% CI	0.04 - 2.42	0.22 - 2.38	0.40 - 5.84	0.21 - 5.93	0.39 - 3.18	0.30 - 3.37	0.25 - 2.15
	p	0.26	0.60	0.54	0.89	0.84	0.99	0.57
Age > 30 vs. ≤ 30 y	OR	5.43	1.72	0.77	5.40	2.49	5.47	2.14
	95% CI	0.65 - 45.08	0.48 - 6.14	0.19 - 3.16	0.41 - 70.48	0.82 - 7.61	1.19 - 25.21	0.68 - 6.69
	p	0.12	0.40	0.71	0.20	0.11	0.03	0.19
Religiousness Strong vs. weak	OR	0.36	0.44	0.79	0.96	0.57	0.71	1.20
	95% CI	0.18 - 0.74	0.20 - 0.98	0.38 - 1.63	0.39 - 2.35	0.30 - 1.09	0.33 - 1.52	0.64 - 2.23
	p	0.005	0.04	0.52	0.93	0.09	0.38	0.57
City								
SLP vs. rest	OR	1.08	0.18	0.26	0.10	0.83	0.46	2.02
	95% CI	0.45 - 2.63	0.09-0.37	0.13 - 0.52	0.04 - 0.26	0.44 - 1.56	0.23 - 0.93	1.01 - 4.07
	p	0.86	< 0.001	< 0.001	< 0.001	0.57	0.03	0.05
Mérida vs. rest	OR	0.61	1.81	1.97	0.61	0.28	0.19	0.76
	95% CI	0.15 - 2.39	0.48 - 6.77	0.53 - 7.29	0.14 - 2.56	0.11 - 0.73	0.08 - 0.48	0.32 - 1.82
	p	0.48	0.38	0.31	0.50	0.009	< 0.001	0.54

Q.1 = Agreement to abortion at the parents request. Q.2 = Agreement to abortion due to the presence of a severely malformed fetus. Q.3 = Agreement to abortion due to the presence of anencephaly. Q.4 = Agreement to ask for a prenatal diagnosis, if faced with a personal high risk pregnancy for a severe malformation. Q.5 = Agreement to abort their own child with a severe malformation. Q.6 = Agreement to abort their own child with anencephaly. Q.7 = Agreement to perform prenatal diagnosis to a pregnant patient, even if she plans to abort an affected fetus. OR = Odds ratio 95% CI = 95% confidence interval. p = significance.

to questions 2 and 3, which refer to agreement to abortion in others. No major differences are obvious between both set of questions, although there is a tendency to fewer people agreeing to abortion when it was their own personal problem. We encountered similar findings in our previous study³ and the explanation may be that in the decision to abort, in addition to the medical issues there are ethical ones, which may make one doctor recommend one think for their patients and do differently for themselves.

The results of question seven is difficult to interpret because although it remains true that older persons, the above 30 group and MDs were more agreeable to perform prenatal diagnosis than their counterparts, the same was not true regarding religiousness, which is hard to explain.

The results of the multivariate analysis (Table 4) generally support what we have already shown re-

garding the importance of the role of gender, age, and religiousness in the probability to respond in agreement to abortion questions. Odds ratio (O.R.) values estimate the direction and magnitude of association with each question. Values above 1 indicate a higher probability to respond affirmatively to abortion questions, while values below 1 indicate a lower probability to respond affirmatively. Confidence intervals to be significant should not include the null value (= 1), as was observed in the present case. The trend to respond affirmatively is lower in women than men (except for Q.7), higher in older physicians (> 30 years) than younger ones (≤ 30 years), and lower in religious people. All of these associations had to be controlled by the effect of the variable city where the survey was conducted, because physicians of San Luis Potosí and Mérida showed, consistently, lower probability to respond affirmatively to abortion questions. In this regard it

is of interest to mention that Southern Mexico and the Bajío were the two regions associated with the higher anti choice views,⁶ and Mérida and San Luis Potosí are located in these regions.

The trend of the younger group to reject abortion may be explained by the current emphasis on ethics in medical schools where the dominant approach is from a conservative religious perspective, and for Catholicism, by far the most popular religion in Mexico, there is no justifications for abortion, even when the law would allow it. An alternative hypothesis, as suggested by Faúndes, et al.,⁸ who had a similar finding in Brazil, that younger respondents "have had less time to be personally exposed to unwanted pregnancies" that older colleagues and therefore are less likely to help their patients in this situation.

These overall results suggest that male physicians or students, older than 30 years and weak religious feelings are more likely to respond affirmatively to abortion questions, that women ≤ 30 years with strong religious feelings. These probabilities are independent of the effects of schooling and city sampled.

To understand why respondents in Mérida and San Luis Potosí showed a higher probability to reject abortion than others, it would have been useful to compare their stated reasons with that of the other places. Unfortunately no qualitative data was obtained in the present survey and the answer needs to wait for further data.

In the recent book edited by Wertz and Fletcher⁹ they publish the results of a 36 nations survey regarding several aspects of genetics and ethics. One question explores personal attitudes towards first trimester abortion in several conditions, including anencephaly (question six of our survey). Only in Argentina and Chile, the proportion of geneticists agreeing to abortion was below 70%, the rest of the world giving higher values. In that survey the figure in Mexico was 90% as opposed to an average of 76% in the present study, the difference probably explained by the fact that in the former only clinical geneticists were interviewed, who are more familiar with the abortion difficulties as compared to regular physicians or young students.

The present data obtained at the national level, although not methodologically perfect, confirms previous results suggesting that amongst physicians the clear majority agree to induce abortion in the presence of fetuses with congenital malformations. This conclusion should be viewed as preliminary, in

view of the sample size in some cities and its heterogeneous students-physicians composition, which makes us unsure as how representative it truly is, and needs to be confirmed by further studies.

The position of the medical community regarding this matter should play a relevant role on the application of laws regulating abortion and women's access to safe services. It seems important to include in medical schools curriculum more information on sexual health and abortion to promote a broader debate about prenatal diagnosis and abortions in the specific case of fetal pathologies. Favorable legislation has already been passed in Mexico City and 12 different states.²

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