Original Research Article

Level of knowledge on prematurity and its complications in women seeking care at referral hospitals……. Where?

brief title:- knowledge on prematurity in women

ABSTRACT

OBJECTIVE: To (D) determine the level of knowledge that women (users) have on risk factors for and complications of prematurity at a referral hospital.

MATERIALS AND METHODS: This was a (C) comparative transverse (al) study conducted in 2015, including women seeking care at a referral hospital, dividing this population into four groups: 1. Pregnant, n=108 (37%), 2. Not pregnant, n=85 (29%), 3. Women seeking an ophthalmological appointment for their prematurely born infant, n=13 (5%), and 4. Women with babies in Neonatal Intensive Care Units, n=85 (29%). Inferential statistics with chi-squared and Mann–Whitney U tests were applied using SPSS ver. 21.statistical software package.

RESULTS: The population of women in its majority lived in a common-law marriage and had a secondary-school education. Knowledge of neonatal risk factors included [prematurity, n=161 (55%)] smoking, n=239 (82%) alcoholism, n=236 (81%) diabetes, n=176 (61%), hypertension, n=210 (72%), and fever, n=123 (42%). Significant differences among the study groups were found in relation to the following risk factors for and complication of prematurity; alcoholism, p=0.001; diabetes, p=0.012; the infant's eye problems, p=0.004; the infant's language problems, p=0.036, and retinopathy of the premature infant, p=0.027). Differences were found on comparing adolescent mothers with older mothers in terms of knowledge of risk factors, p=0.000 and knowledge of long-term prematurity complications, p=0.005.

CONCLUSION: The principal risk factors identified by mothers were smoking, alcoholism, and diabetes. The most frequently referred complications in the prematurely born infant were those that presented in the short term, mainly ocular and language problem complications.

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KEYWORD: Mothers knowledge, prematurity, users.

INTRODUCTION

The World Health Organization (WHO) defines a premature or preterm birth as a birth happening before 37 completed weeks of gestation. Every year, around 15 million premature births happen (where? Globally?), that is, more than one in every ten births (1). The prematurity rate globally oscillates between 5% and 18%. In Latin America, 150,000 (thousand) premature births were registered in the year 2010. In Mexico, the National Institute of Statistics and Geography registered 2,478,889 births in the year 2013, 7.4% of which were registered (at less than 40 weeks of gestation) (2-4)..........which group is this?

Teenage pregnancy and some maternal pathologies present during the pregnancy, such as high blood pressure and diabetes, are also associated with premature births (10,15,16). According to the WHO, hypertensive disorders affect pregnancies (around) in about 10% of (overall women), and 10% will develop gestational diabetes. Also, 45% of patients with obesity and genetic familiar predisposition will develop gestational diabetes. (up to 45%) (17-18).

For the first time in history, the complications of premature birth have surpassed all other complications, ranking as the highest cause of child mortality in the world. Of the 6.3 million deaths estimated in children younger than 5 years old worldwide during the year 2013, the complications of premature birth represented almost 1.1 million causes of death. In total, 35 thousand children die every year in Latin America due to complications of premature birth. Brazil headlines the region, as 9,000 children die each year, followed by Mexico (6,000) and Colombia (3,500) (19).

A large number of premature survivors will develop some type of physical disability, neurological or intellectual, which supposes a big cost for its families and society in general (1). Among the more frequent pathologies in premature children after birth are respiratory problems, intracranial haemorrhages, sepsis, retinopathy of prematurity, cardiovascular anomalies, digestive and metabolic anomalies. As for short and long term morbidity, patients present the risk of cerebral palsy and development retardation, language and learning problems, attention deficit and hearing, motor and vision alterations (20).

Among the most important problems developed by prematurity is the retinopathy of prematurity, vascular disease of multifactorial origin, in which in its late phase causes ocular alterations that

result in tractional detachment of the retina, causing irreversible blindness or some grade of visual incapacity at a very early age (21-24).

The attention of maternal-fetal health has an objective to prevent the maternal complications during the pregnancy, the opportune diagnosis and its adequate attention (25). Family planning and empowerment of women, most importantly teenagers, besides improving the quality of attention before, between and during the pregnancy, can help reduce the rate of premature births (26).

The 2012 National Health and Nutrition Survey proves that the knowledge about contraceptive methods among teenagers has improved, as 90% reported to know some method (27). The knowledge about prematurity problems is fundamental in its prevention and this depends on the educational grade of the mother. (before and during the pregnancy period). In Mexico, the National Institute of Statistics and Geography reported in 2013 that a 38% of mothers have completed middle school educational grade, 21.7% high school educational grade and 18.6% elementary school educational grade. (remarking how important it is to identify and apply for programs according to its needs and capacities) (28, 29). (The objectives of this study are to determine and to be able to lead strategies to increase the knowledge and decrease indirectly the neonatal morbidity and mortality.)……(This should be similar to the objective written in the Abstract above)

MATERIALS AND METHODS

A comparative transverse study conducted in the external consultation of the gynaecology and obstetrics services, retinopathy of prematurity clinic of the pediatric ophthalmology service and Neonatal Intensive Care Units of the Civilian Hospitals of Guadalajara, Mexico.

Selection criteria

Women in reproductive age whose newborns are hospitalized in the Neonatal Intensive Care Units who gave their verbal consent to participate in the study, to answer a poll about their knowledge on prematurity. For its analysis, teenage mothers who were younger than 18 years old were also considered

Comment [UP4]: This should be deleted.

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Comment [UP6]: This should be similar to the objective in the Abstract

Development of the study

The sample (how was the sample size arrived at?) of participating women was divided into 4 groups: I) Group of pregnant women, selected (how were they selected?) in the prenatal control service of the gynaecology and obstetrics department, II) Group of non-pregnant women selected in the gynaecology service, III) Group of women whose children attended the retinopathy of prematurity clinic of the pediatric ophthalmology service, and IV) Group of women whose children were premature and were hospitalized in the Neonatal Intensive Care Units. A survey was applied to evaluate the knowledge on prematurity in women using the pediatric and obstetric services of the mentioned hospitals service areas. How many hospitals? The information was then summarized in a spreadsheet for its later analysis.

Evaluation Questionnaires

The measurement of knowledge about problems related to prematurity was obtained through a questionnaire made with "YES and NO" questions, divided into three sections: 1. Risk factors, 2. Short term complications, and 3. Long term complications. The questionnaire was applied and filled by medical staff trained for this purpose, thus avoiding any confusion when answering it. To every section, every question was awarded a specific score, adding to a total of 10 points. According to the obtained score in the questionnaire, every woman was assigned in a "knowledge group": low (0-3 points), medium (4-7 points) and high (8-10 points).

Statistical analysis

The qualitative variables were analyzed through percentages and frequencies, the quantitative variables were analyzed through means and ranks. Inferential statistics with chi-squared and Mann–Whitney U tests. SPSS ver. 21.0 statistical software package.

Ethical considerations:

The study considered the principles of investigation in human beings established in the Helsinki declaration. According to the Mexican General Health Law, it is considered a no-risk study, and therefore a written consent was not required from the patients; however, verbal consent was

requested to answer the survey. The study was evaluated by the Investigation Committee of our institution and was authorized under the registry Nr. 2015-058.

RESULTS

A total of 290 participants were divided into 4 groups: 1. Pregnant, n=108 (37%); 2. Not pregnant, n=85 (29%); 3. Women seeking an ophthalmological appointment for their prematurely born infant, n=13 (5%), and 4. Women with children admitted to Neonatal Intensive Care Units, n=85 (29%). The social and demographic characteristics (Table 1) show a similarity in age, most of them married or common law marriage and with a middle school degree. The 4 groups add up to 291

> **Comment [UP9]:** The 4 groups add up to 291: 108+85+13+85=291 please reconcile the figures

Table 1. Social and Demographic characteristics of the patients included in the study about knowledge of neonatal risk factors.

	Pregnant women n=108	Non-pregnant women n=85	Women seeking an ophthalmological appointment for their prematurely born infant n=13	Women with children admitted to Neonatal Intensive Care Units n=85
Age, Mean (range)	21.5 (14-40)	34 (13-58)	24 (17-40)	23 (16-45)
Marital Status				
Single, n (%)	22 (20)	22 (26)	2 (15)	11 (13)
Married, n (%)	30 (28)	37 (44)	7 (54)	23 (27)
Civil union, n (%)	55 (51)	22 (26)	4 (31)	50 (60)
Divorced/widower, n (%)	1 (1)	4 (5)	0 (0)	0 (0)
Academic degree				
Analphabet, n (%)	1 (1)	3 (4)	0 (0)	1 (1)
Elementary, n (%)	19 (18)	25 (29)	4 (31)	18 (21)
Middle school, n (%)	51 (47)	39 (46)	5 (38)	40 (48)

High school, n (%)	31 (29)	12 (21)	3 (27)	21 (25)
Higher education, n (%)	6 (6)	0 (0)	1 (8)	4 (5)

Chi-squared to compare proportions and Mann–Whitney U tests to compare means.

Education and knowledge characteristics (Table 2) show that the most known risk factor was tobacco consumptions, while the least known was a fever. 55.5% of women knew about the term "prematurity". The percentage of women that had previously received an explanation on prematurity complications was of (43.1%), and (47.9%) of surveyed women were aware that the premature newborn has probabilities of not surviving.

Table 2. Overall knowledge by sections of risk factors and mortality by the whole population of the survey.

	Population n=290
Risk factors	
Knowledge of the term "prematurity", n (%) (This is not a risk factor)	161 (55)
Smoking, n (%)	239 (82)
Alcoholism, n (%)	236 (81)
Diabetes, n (%)	176 (61)
High blood pressure, n (%)	210 (72)
Fever, n (%)	123 (42)
Explanation of complications, n (%)	125 (57)
Knowledge on mortality rate	
Newborn <7 months may not live, n (%)	139 (48)
Newborn <7 months can be healthy, n (%)	179 (62)

Comment [UP10]: This is not a risk factor

Knowledge of specific risk factors (Table 3) show statistically significant differences (p = 0.032); however, the categorized knowledge scores of short and long term problems was very similar between the study groups (p=0.577 y p=0.157 respectively).

Table 3. Scoring based on knowledge by sections according to the study group of women in different hospital services about neonatal risk factors.

	Pregnant women n=108	Non-pregnant women n=85	Women seeking an ophthalmological appointment for their prematurely born infant n=13	Women with children admitted to Neonatal Intensive Care Units n=85	P value
Knowledge of prematurity, n (%)	66 (61)	60 (71)	6 (46)	29 (35)	0.000
Previous premature newborn, median (range)	0 (0-2)	2 (0-7)	2 (0-3)	0 (0-5)	
Scoring based on knowledge of risk factors	6 (0-10)	8 (0-10)	6 (2-8)	8 (0-10)	0.032
Low, n (%)	12 (11)	4 (5)	1 (8)	11 (13)	
Medium, n (%)	44 (41)	21 (25)	7 (54)	27 (32)	
High, n (%)	52 (48)	60 (70)	5 (38)	46 (55)	
Probable short term scoring,	6 (0-10)	7 (0-10)	8 (0-10)	7 (0-10)	0.577

	Pregnant women n=108	Non-pregnant women n=85	Women seeking an ophthalmological appointment for their prematurely born infant n=13	Women with children admitted to Neonatal Intensive Care Units n=85	P value
median (range)					
Low, n (%)	19 (18)	16 (19)	1 (8)	13 (15)	
Medium, n (%)	49 (45)	28 (33)	5 (38)	36 (42)	
High, n (%)	40 (37)	41 (48)	7 (54)	35 (41)	
Probable long term scoring, median (range)	6 (0-10)	7 (0-10)	9 (3-10)	6 (0-10)	0.157
Low, n (%)	27 (25)	21 (25)	1 (8)	27 (32)	
Medium, n (%)	42 (39)	23 (27)	4 (31)	21 (25)	
High, n (%)	39 (36)	41 (48)	8 (61)	36 (43)	

Chi-squared to compare proportions and Mann–Whitney U tests to compare means.

The knowledge of newborn risk factors and main short and long term complications (Table 4) show real differences between the study groups in terms of alcoholism (p=0.001), diabetes (p=0.012), previous explanation of complications (p=0.046), ocular problems (p=0.004), language problems (p=0.013) and learning problems (p=0.036).

Table 4. Percentage of knowledge on prematurity-related topics in women according to the study groups.

	Pregnant women n=108	Non-pregnant women n=85	Women seeking an ophthalmological appointment for their prematurely born infant n=13	Women with children admitted to Neonatal Intensive Care Units n=85	P value

Risk factors					
Smoking, n (%)	84 (78)	78 (92)	10 (77)	67 (80)	0.060
Alcoholism, n (%)	79 (73)	80 (94)	12 (92)	65 (77)	0.001
Diabetes, n (%)	57 (53)	62 (73)	5 (38)	52 (62)	0.012
High blood pressure, n (%)	82 (76)	62 (73)	9 (69)	57 (68)	0.655
Fever, n (%)	46 (43)	39 (46)	3 (23)	35 (42)	0.488
Previous explanation of complications (%)	37 (34)	40 (47)	9 (69)	39 (46)	0.046
Short term problems					
Temperature control, n (%)	61 (56.48)	54 (63.52)	6 (46.15)	51 (60.71)	0.575
Respiratory complications, n (%)	95 (87.96)	76 (89.41)	10 (76.92)	76 (90.47)	0.542
Cerebral bleedings, n (%)	47 (43.51)	39 (45.88)	8 (61.53)	39 (46.42)	0.679
Risk of infection, n (%)	84 (77.77)	66 (77.64)	11 (84.61)	66 (78.57)	0.951
Ocular problems, n (%)	52 (48.14)	57 (67.05)	12 (92.30)	47 (55.95)	0.004
Cardiac complications (%)	90 (83.33)	70 (82.35)	8 (61.53)	66 (78.57)	0.268
Digestive complications, n (%)	75 (69.44)	64 (75.29)	9 (69.23)	57 (67.85)	0.732
Jaundice, n (%)	69 (63.88)	56 (65.88)	9 (69.23)	56 (66.66)	0.697
Long term problems					
Cerebral palsy, n (%)	54 (50)	55 (64.70)	10 (76.92)	43 (51.19)	0.063
Language complications, n (%)	67 (62.03)	65 (76.47)	10 (76.92)	45 (53.57)	0.013
Learning complications, n (%)	68 (62.96)	60 (70.58)	12 (92.30)	47 (55.95)	0.036
Hearing complications, n (%)	61 (56.48)	50 (58.82)	12 (92.30)	50 (59.52)	0.101
Visual complications, n (%)	61 (56.48)	51 (60)	11 (84.61)	59 (70.23)	0.080
Attention deficit, n (%)	64 (59.25)	50 (58.82)	10 (76.92)	41 (48.80)	0.192
Motor problems, n (%)	51 (47.22)	51 (60)	7 (53.84)	34 (40.47)	0.078
Retinopathy of prematurity, n (%)	7 (6.48)	5 (5.88)	1 (7.69)	15 (17.85)	0.027

Chi-squared to compare proportions

The number of teenage mothers was 83 (28.6%), while the adult population of the study was 207 (71.4%). The largest frequency with respect to the knowledge category in teenage mothers was "medium knowledge", while in the adult population was "high knowledge". This pattern is also shown in the three knowledge groups: Risk factors (p=0.00), short term problems (p=0.005) and long term problems (p=0.12) (Table 5).

Table 5. Knowledge of risk factors in teenage mothers in different hospital service areas.

	Low knowledge	Medium knowledge	High knowledge	P value
Knowledge of risk factors				0.000
Teenagers, n=83	12 (14)	41 (49)	30 (36)	

Adults, n=207	16 (8)	58 (28)	133 (64)	
Knowledge of short term complications				0.005
Teenagers, n=83	16 (19)	44 (53)	23 (28)	
Adults, n=207	33 (16)	74 (36)	100 (48)	
Knowledge of long term complications				0.120
Teenagers, n=83	20 (24)	33 (40)	30 (36)	
Adults, n=207	56 (27)	57 (28)	94 (45)	

Chi-squared to compare proportions (Fisher's exact test).

DISCUSSION

The results obtained in this study are comparable to those obtained in a study performed in a Chinese population called "Parental knowledge of prematurity and related issued", which reports an estimate of the knowledge the parents have regarding prematurity problems (Reference?). That population has a similar grade of knowledge as the population in our study, presenting a 62% knowledge of the main risk factors, 73.8% knowledge of the short term problems and 50.6% of the long term problems. The quoted study was conducted in parents whose children were admitted to

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Neonatal Intensive Care Units, while our study was conducted in 4 different groups of mothers: 1. Pregnant, 2. Not pregnant, 3. Women seeking an ophthalmological appointment for their prematurely born infant, and 4. Women with children admitted in Neonatal Intensive Care Units; also, a scoring scale was used to determine if the knowledge was a low, medium or high grade.

The present study allows us to observe the knowledge mothers have about prematurity, depending on the characteristics of each one. The subjects that have greater knowledge about problems related to prematurity were those whose children needed neonatal ophthalmologic examination, via the attending physician; however, this same group of mothers turned out to have a lower knowledge of other problems, especially the short term complications. The group of mothers with children admitted to the Neonatal Intensive Care Unit were also showed to have a higher degree of knowledge, this is probably due to the fact that these children presented some of those complications at birth and were therefore admitted into those services. In the risk factors sections, the group that presented the best result was the group comprised of non-pregnant mothers. Why was this so?

We could observe that some factors influence both the quantity and quality of the knowledge that a woman has about prematurity. The fact that they obtained information about the subject before the survey, or that they have had a premature child prior to the survey, defines the outcome severely.

The knowledge score is directly proportional to the age and academic degree of the mother, while the type of family is also very important

CONCLUSION

Women who have better knowledge of prematurity and its complications were adults (>18 years old), with a background of a premature child or a previous experience about this. The main risk factors identified by these mothers were: smoking, alcoholism and diabetes. The more known complications were those presented in the short term, mainly ocular and language complications. It

is necessary to increase the knowledge of prematurity in the general population, focusing on younger women in reproductive age, to implement strategies and programs able to prevent premature births.

CONSENT

Verbal consent was obtained from the respondents.

ETHICAL ISSUE

Ethical approval for this study was obtained from the Research and Ethics Committee (REC) of the Hospital Civil Fray Antonio Alcalde, Guadalajara, Jalisco, Mexico.

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