Knowledge, attitude, and practices of pregnant women regarding environmental tobacco smoke in Yerevan and Nor-Hachn, Armenia 2007: a Qualitative study

Master of Public Health Thesis Project Utilizing Professional Publication Framework

Liana Atabekyan, MD

MPH candidate

College of Health Sciences

American University of Armenia

Primary adviser: Kim Arzoumanian, PhD

Secondary adviser: Margaret B. Pierce, PhD

Yerevan, Armenia, 2007

Acknowledgments

I would like to express my deep gratitude to my advisors Kim Arzoumanian and Margaret Pierce for their invaluable comments, continuous support and encouragement during my thesis project.

I appreciate the MPH faculty who shared with us their knowledge and experience during the study.

Thanks to colleagues in Nor-Hachn Policlinic and in the “Centre of Family Planning and Sexual Health” in Yerevan for their collaboration to complete the interviews with pregnant women.

My special thanks to my husband, parents and, especially, my children for their patience and support during my studies at in AUA.

Table of content

Abstract

According to the World Health Organization (WHO), Armenia is the sixth in the world for and number one smoking country in Europe: 63.7% of men (the heaviest puffers in Europe) and 3.1% of women in Armenia are smokers. The Armenian population is highly exposed to environmental tobacco smoke (ETS) everywhere. The Global Youth Survey, conducted in 2004 in Armenia, reported 90.1% of never smokers and 96.4% of current smokers are exposed to ETS at their households. A nationwide survey, in 2006, states that 90 % of interviewees report smoking in their households during the last month. In regards to smoking rules at home, 53% reported no restriction in households for family members and guests, and 16% - smoking is allowed in some rooms. Unfortunately, no official data exists in terms of pregnant women ETS exposure. A pilot survey done for this study showed 95 % of women interviewed were exposed to ETS during their pregnancies.

The problem of pregnant women's exposure to ETS is particularly alarming, because this population is the most vulnerable group of the Armenian population, as both mother and fetus health is jeopardized. To protect future generations of Armenia a policy limiting exposure to ETS should be developed. Thus, there is a need to understand the problem deeply and from a behavioral perspective for which qualitative research is the most appropriate methodology.

The aim of this study was to explore the knowledge, attitude and practices of pregnant women regarding ETS. An exploratory qualitative study was conducted in Yerevan and Nor-Hachn, Kotayk marz, health facilities. A semi-structured interview guide was employed. The sampling was done by convenience. Inclusion criteria were pregnant women above 18 years of age and registered for prenatal care. Twenty-five pregnant women were interviewed: fifteen in Nor-Hachn policlinic and ten in Yerevan. Interviews were tape-recorded. Data were analysed manually.

The study revealed a lack of information which results in poor knowledge about active/passive smoking health effects, particularly on pregnant woman and fetus. As the study shows this in turn forms tolerate behavior of pregnant women towards passive smoking in the households. Almost all interviewees mentioned no actions to avoid or minimize tobacco smoke. Women who realize the danger of smoke and try to avoid it by asking smokers not to smoke got no results and conflicts in the family. This study yields also the absence of information given by health care providers, specifically by gynecologists and nurses about ETS health effects on pregnant woman and fetus. The determinants of this problem do not work separately; they are interrelated with each other, as well as with social and cultural issues.

Based on the study findings the following recommendations are suggested: to conduct a quantitatve study in order to posess generalizable results; to develop and implement health education programs about passive smoking health effects on pregnant woman and fetus; to train and instruct gynecologists and nurses to give advice to pregnant women about passive smoking health effects on pregnant woman and her fetus during prenatal care.

1. Introduction

1.1 Background and Literature review

Tobacco is the second major cause of death in the world. One in ten deaths of adults worldwide occurs due to smoking which comprises about 5 million deaths every year. It is predicted that in 2030 smoking will be responsible for one in six deaths which exceeds overall mortality from AIDS, drugs, road accidents and suicides combined (1;2). Tobacco use is a major preventable disease. In many cardiovascular diseases, numerous cancers, respiratory diseases and many other health disorders smoking represents the highest risk factor. Smoking is hazardous not only for active smokers, but also those who have to breathe involuntarily the environmental tobacco smoke (ETS).

What is environmental tobacco smoke?

Secondhand tobacco smoke, known as ETS, is a combination of mainly sidestream smoke released from the burning end of a cigarette and also from partly exhaled mainstream smoke. ETS contains more than 4000 toxic chemicals and approximately 69 "known" or "probable" carcinogens in both vapor and particle phases (3-6). Among the most toxic substances of ETS are nicotine, carbon monoxide, nitrogen oxide, ammonia, acrolein, methyl isocyanate, hydrogen cyanide, phenol, respirabale suspended particulates etc. The carcinogens in ETS are benzopyrene (lung cancer), nitrosamines (cancers of bladder, respiratory system, and other organs), aromatic amines (cancers of bladder, and breast), benzene (leukemia), formaldehyde (nasal cancer) and polonium-210 (radioactive).

It has been shown that sidestream ETS smoke actually contains higher concentrations of certain toxic chemicals, including several cancer-causing ones, than does mainstream smoke. Some compounds are 10 times higher in sidestream than in mainstream smoke (3;4;6).

There is a common misconception that ventilation or air conditioning is a solution to the problem of passive smoke. However, toxic gases and particulate matters of ETS remain suspended in the air of a room, attached to the surface of furniture and walls long after smoking is has ceased (5).

1.2 Health impact of ETS on pregnant woman

According to the Surgeon General Report, it was estimated that in 2005 exposure to secondhand smoke in United States killed more than 3,000 adult nonsmokers from lung cancer, approximately 46,000 from coronary heart disease, and an estimated 430 newborns from sudden infant death syndrome. For every eight smokers that die from related tobacco use, secondhand smoking is known to kill one additional non-smoker (4). Several studies report there is no safety threshold of ETS exposure and even at extremely low levels it is dangerous, especially for vulnerable groups, including children, elders, and pregnant women (4;7).

ETS exposure of pregnant women is particularly concerning, as it causes serious consequences for mother-infant pair, and has long-term consequences for children throughout in childhood and into adulthood.

During the last forty years a number of studies have revealed evidence that ETS exposure is one of the most hazardous of children's environmental exposures, specifically during intrauterine period (8;9). Passive smoking of pregnant woman has been shown to be as dangerous as maternal active smoking and is sufficient to induce teratogenic and carcinogenic mutations of embryo and fetus (4;10). Research states that passive smoking during pregnancy increases the concentration of ETS metabolites in amniotic fluids, fetal blood as well as in the first urine of babies (4).

Studies done in different countries and with different designs have found that prenatal exposure of ETS is responsible for spontaneous abortions (involuntary termination of an intrauterine pregnancy before 20 weeks of gestation), and preterm deliveries (<37 completed weeks of gestation) (4).

Many studies describe intrauterine growth retardation which reflects in the reduction of anthropometric measurements: upper and lower-arm length and circumference, head circumference etc (4;11-13). A causal relationship between maternal ETS exposure during pregnancy and low birth weight (less than 2,500g) has been found (4;11;12;14-18).

Studies show that ETS exposure is associated with congenital malformations such as cleft palate, cleft lip, spina bifida, feet deformities, genitourinary, gastrointestinal, cardiovascular, respiratory, immune and other organ-systems' anomalies (19;20).

ETS exposure during the prenatal period has also long term consequences. Low birth weight and intrauterine retardation are significant risk factors for childhood mortality and morbidity. There is a scientific evidence that maternal ETS exposure during pregnancy "may lead to transplacental carcinogenesis" (4). An association between passive smoking of pregnant women and postnatal childhood cancers, such as leukemia, lymphoma, and brain tumor has been also found (4;21;22). Children exposed to ETS in-utero more likely suffer from asthma, acute and chronic respiratory illnesses (4;5;9).

1.3 Situational analysis in Armenia

According to the World Health Organization (WHO), Armenia ranks sixth in the world for the percentage of the population that smokes and number one in Europe. Surveys show that 63.7% of men (the heaviest puffers in Europe) and 3.1% of women are smokers. Estimates of

women who report smoking are low due to cultural sensitivities (2). Different sources report in Armenia about 15-30% of women of reproductive age are regular smokers (23).

Tobacco use is considered as the number one risk factor of ten top factors in the disease burden among Armenian males (24). The number of lost years due to smoking in Armenia is 17 years per smoker among the young and much higher among 35-69 years old males– 21years (2). The tobacco related mortality rate in Armenia is among the highest in 45 countries after Moldova and Hungary (respectively 23.4 % and 23%) and comprises 22 % (2;25).

Tobacco use in Armenia is a public health priority not only based on the above mentioned indicators, but also because of high prevalence of passive smoking amongst the Armenian population. Non-smokers in Armenia are highly exposed to ETS seemingly everywhere; in work sites, public transportation, public places, and in households.

A household survey conducted in Gegharkunik and Armavir marzes of Armenia in 2004 showed that nearly 60% of the population (including children) are always or often exposed to tobacco smoke (26). The Global Youth Survey, 2004 in Armenia, revealed that 84.5% of never smokers and 94.3% of current smokers are constantly exposed to ETS in public places, and 90.1% of never smokers and 96.4% of current smokers are exposed to ETS at their households. Almost every seventh (66.9%) never smoker and every sixth (57.5%) current smoker noted exposure from father at home (27).

A household health survey conducted in 2006 in Yerevan and all marzes (regions) of Armenia revealed that passive smoking occurs in 65.9 % of households having smoking and non-smoking family member. 45.2 % of respondents report the smoker/s always smoke in a

presence of non-smoking family members; 20.7 % usually; 20.7 % occasionally and 13.4 % never had this situation (23).

Another survey conducted in 2006 in Armenia states that 90 % of interviewees report smoking at their households during last month. In regards to smoking rules at home, 53% reported no restriction in households for family members and guests, 16% - smoking is allowed in some rooms, 15.2 % - smoking is generally banned and 16 % -smoking is completely banned. This survey shows also that smoking rules at home are the same for families with children and without them (28).

Unfortunately, there are no official data or studies about passive smoking of pregnant women in Armenia. A pilot survey in 2006 of 20 women in one neighborhood who had had two to three pregnancies revealed that approximately 95% reported they were constantly exposed to ETS at the household level during their pregnancies.

1.4 Rationale of the study

Taking into consideration the high smoking prevalence of Armenian males and their dominant role in the family, as well as the absence of the smoking restriction rules at homes, passive smoking seems to be a real disaster in households, particularly for children and pregnant women.

Armenia is a small country with only 3.2 million people and low birth rate-1.2. Thus, there is an urgent need to protect our future generation from ETS adverse health effects.

In order to establish an informed policy in this field it is important to identify the social, cultural and behavioral aspects of pregnant women ETS exposure.

In the area of tobacco control quantitative research methods are generally used over the world to measure the risk of ETS. However, an equal number of researchers recognize the important role of qualitative methodology in explaining or understanding behavior in tobacco-related studies, especially where no previous investigation was conducted (29).

An exploratory qualitative study was chosen to understand in-depth the phenomenon of ETS exposure of pregnant women in Yerevan, and to possess more informed understanding of the problem of ETS exposure within the household unit.

1.5 Research questions

The aim of this study was 1) to reveal the knowledge, attitude, and practices of pregnant women in Yerevan and Nor-Hachn, Kotayk marz in relation to environmental tobacco smoke exposure, 2) to use the study findings to make recommendations for future health educational programs.

The research questions are

1. To explore the knowledge of pregnant women about ETS and its health effects
2. To explore the attitude of pregnant women on smoking and ETS
3. To explore the practices of pregnant women to avoid ETS

2. Methods and Materials

2.1 Study design

An exploratory qualitative research methodology was used. Twenty-five in-depth interviews were conducted in Nor-Hachn Policlinic and Centre of Family Planning and Sexual

Health in Yerevan. Nor-Hachn Policlinic serves pregnant women from this town and near villages Nor Geghi, Nor Artamet, and Getamech. Centre of Family Planning and Sexual Health in Yerevan serves pregnant women from all districts of Yerevan.

2.2 Study population

The study population was pregnant women in Yerevan and Nor-Hachn. The inclusion criteria were pregnant women above 18 years old who were registered in health care facilities of Yerevan and Nor-Hachn for prenatal care, and pregnant women who were not familiar with the researcher. The exclusion criteria were pregnant women who were not registered in health care facilities of Yerevan and Nor-Hachn.

2.3 Sampling

For this research the sampling was non-probability purposive. Pregnant women who visited their doctors for regular prenatal check-ups were asked to participate in the study. The researcher was not familiar with the interviewees.

2.4 Data collection and instrument

A semi-structured in-depth interview guide included two parts (see the appendix 1). The first section contains questions on age, education, smoking status, smokers in the household, number of smoked cigarettes and the duration of ETS exposure. The second section of the field guide consisted of open-ended questions with clarification probes. It was designed to cover the following areas: knowledge of ETS, attitude towards passive smoking and the practice of pregnant women to avoid it. The field guide was pretested on 3 pregnant women.

All interviews were conducted in Armenian, in a separate room of the health facilities without health workers' presence. The interviews were tape-recorded, transcribed and translated from Armenian into English. .

2.5 Ethical Considerations

The study was approved by the Institutional Review Board (IRB) of Committee on Human Research of the American University of Armenia.

Oral informed consent form was presented to every participant (see appendix 3). The study posed minimal risk to participants. It did not affect pregnant women physically and did not influence their prenatal check-ups and/or treatment. The interviewees did not receive any incentives. The confidentiality and anonymity of data collection was kept. No identification information was collected. The information obtained from participants will be used only by College of Health Sciences, at American University of Armenia. All data will be destroyed after 6 months of the completion of this study.

3. Results

Twenty five pregnant women were interviewed from July to September. No refusals were registered. Table 1 presents the characteristics of pregnant women participated in this research.

Table 1: Characteristics of study participants

Age range of participants	18 – 43 years
Number of parity	1 – 4
Education	3 women – school 8 grade

	6 women – school 10 grade 6 women – professional technical 10 women – university
Working status	2 women – currently working 2 women - in maternity leave 21 - housewives
Ever Smoking	0
Current Smoking	0
Number of Smokers at home	0 – 3
Number of smoked cigarettes per day by family members	3- 40 cigarettes
Duration of passive smoking per day	From 1 to 10 hours

Data were analyzed manually. Pattern analysis of interview transcripts identified the following main themes based on the interview guide questions:

1. Knowledge on active/passive smoking
2. Knowledge on health effects of active/ passive smoking on pregnant women
3. Attitude towards ETS
4. Smoking rules at households
5. Changes in the smoking rules during the pregnancy
6. Behavior of pregnant women to avoid ETS
7. Source of information and consultation from health care providers' about ETS adverse health effects.

8. Suggestions of pregnant women

It is worthy to notice that the comparison of information obtained from participants in Yerevan and Nor-Hachn do not reveal any differences, and for that reason the findings are presented together.

3.1 Knowledge on active/ passive smoking, and ETS

The study participants were asked to talk about smoking, active and passive, and explain the difference. The majority could not distinguish between them. They had not even heard the term 'passive smoking". A few interviewed women described it incorrectly.

- *" when you smoke a few for your pleasure, it is passive smoking"*
- *" frequent smoking during a day is active smoking. 2-3 cigarette smoking is passive"*

Only 3 interviewees could explain correctly what is active and what passive smoking.

3.2 Knowledge on health effects of active/passive smoking

Health effects of smoking were discussed by pregnant women. All interviewees said that personal smoking is dangerous for health and a majority mentioned respiratory diseases and lung cancers as consequences of active smoking. A few women added other health consequences.

- *" … smoking is hazardous for neural cells"*
- *"… smoking can cause lung cancer. It may have hazardous effects on blood pressure, skin, nails, and teeth. In general I think every organ-system can suffer from smoking"*

Concerning the effects of ETS or passive smoking, the interviewees had very poor awareness of adverse health effects. Although a majority said that passive smoking was harmful, none could describe even one condition caused by ETS.

Knowledge on ETS health effects for pregnant women and fetus

Participants were asked to discuss the passive smoking effects on pregnant women. All women had a very limited understanding of ETS and its health impact on a pregnant woman and her fetus. All of the respondents mentioned that they have heard that ETS is dangerous for pregnant woman and fetus. However, when asked what kind of adverse effects may cause secondhand smoke, the majority could cite no specific health effect.

- *"The smoke could harm fetus, because whatever a pregnant woman breathes, that passes to the fetus. But what concrete….. I can't say"*
- *"Smoke could harm baby, because it creates unsafe condition for fetus, lack of oxygen. But what condition specifically I don't know"*

Only two of 25 women mentioned some possible health conditions.

- *"If the air is not clean, the respiratory function will not be good and… I think the growth of child will suffer"*
- *"In my opinion like other poisonous gases, exhausted fumes, cigarette smoke is dangerous for pregnant woman and future child. It may be the cause of abortions, pregnancy complications, as well as infertility"*

3.3 Attitude towards smoking and ETS

A majority of interviewed pregnant women expressed their unfavorable attitude towards smoking.

- *" the thing that causes slow death can't be accepted well"*

Two participants said that if males are smoking its OK, but female smoking is unacceptable.

Then participants were asked to discuss their attitude towards passive smoking. All of them, except one, reported strong negative feelings about ETS. The main reason was feeling bad due to secondhand smoke.

- *"When somebody is smoking near me it seems like an impolite attitude toward me. He gets poisoned and poisons me"*
- *"I feel very bad when I breathe the smoke. I have nausea, dizziness, even fainting"*

Of all participants only one woman had a neutral view on passive smoking

3.4 Smoking rules inside the home

Study participants were asked to describe the smoking rules in their households for family members and visitors.

The majority of women who had smoking family members reported no smoking rules for them in the house and no assigned rooms for smoking.

- *"My husband smokes in all rooms of our apartment, even in the bedroom… (2 times before sleep and during the night) "*
- *"My husband and mother –in-law are smokers and they smoke in the kitchen and also in other rooms"*

Only three women said that smokers go outside.

- *"My husband and father-in-low always go out to the balcony for smoking"*

In regards to smoking restriction rules for guests, almost all (24) women said there are no rules for them as well. Only one woman said

- *"There is no smoker in my family, I am lucky. The atmosphere in my home is clean. Nobody can smoke there"*

3.5 Changes in Smoking Rules during pregnancy

Respondents were asked to remember the smoking household habits before the pregnancy and after getting pregnant, whether there were changes or not and if so what those changes were.

The majority of interviewees mentioned no changes in the rules regarding family members as well as guests**.** A few women reported some minor changes in smoking behaviors of their family members.

- *"When I got married my husband liked to smoke in the bedroom. But when we knew I am pregnant he stopped smoking there. However, he smokes in all other rooms"*

Almost all respondents said for their guests the rules were not changed since they became pregnant.

- *"As before, all my guests smoke in my apartment and we are not against"*
- *"Although there is no smoker in my family and I can't stand the fume because of my condition (pregnancy), I allow my guests to smoke"*

A few women reported some changes for close relatives, but not for other visitors.

- *"…now for my close friends or guests it is not permitted, and they know I am pregnant …, but when I have official party at my home no rules exist…"*

Only two women said when they got pregnant, smoking in their homes became completely banned for all kind of guests.

- *"Before my pregnancy I put the ash-tray on the table and let my guests smoke; now it is totally banned"*
- *"I feel very bad from the smoke after getting pregnant, so we don't permit people to smoke in our house"*

3.6 Behavior of pregnant women to avoid ETS

Participants were questioned how they behave at home when someone smokes. The purpose was to see whether pregnant women try to avoid secondhand smoke, and if yes, what their actions are. The answers were divided into subgroups: behavior of pregnant woman concerning family members' smoking and behavior towards guests' smoking at home.

Behavior towards smoking family members

Respondents who had smokers at home were asked to discuss their actions to avoid ETS. A majority said when family members smoke (mainly husband and father-in-law) they do nothing and must breathe the smoke. It should be noted that all interviewees, except one, indicated experiencing coughing, nausea, even faintness due to ETS. Some women mentioned that sometimes they go out to the other room or to the balcony, if possible.

- *"When my mother-in-law and husband smoke, I go to my bedroom. Asking every day not to smoke at home means fighting every day"*

When interviewees were asked if they have ever requested family members not to smoke at home, the majority answered no. They also explained the motivation of such practices. They mentioned two main reasons to bear passive smoking at home; they do not want to initiate conflicts in the family and they feel embarrassed to tell smokers, especially the father in-law, not to smoke inside the house.

- *"In my office I put a message on the wall " No smoking" and my colleagues obey. But at home I can't behave in such way. Oh, no, I will have a terrible conflict with my husband and my parents-in- law. Once during my previous pregnancy I tried to ask and I was accused of dictating my rules at home"*

- *"I feel very bad from the smoke, but I can't ask my father-in-law go out for smoking, it seems impolite"*

Only a few women mentioned they ask their husbands to smoke outside or in another room. However, they noticed that not always were their requests satisfied.

- *"I ask my husband and he goes to the balcony, but next time he again smokes at home. I am tired of asking hundreds times…"*

Behavior towards guests smoking at home

Almost all women report that their behavior towards guests smoking in their presence is tolerant, because it is temporary. A majority report no request to the guests to smoke outside or to stop smoking.

- *" If the guest sees that I am pregnant and coughing from the smoke, and continues smoking what else can I say him"*

A few respondents ask to smoke outside the room, if the guest is close one

- *" I ask only my close relatives(guests) to smoke in a balcony"*

Only two women report if the guest is starting to smoke, they ask him to stop or smoke outside. It is worthy to mention that these women indicate the support of their husbands and father-in-law.

- *"My husband does not permit our guests to smoke at home, whoever they are. If he is not at home I'll do it"*

3.7 Sources of information concerning smoking health effects on pregnant woman

Study participants were asked to discuss whether they have received any information about passive smoking and its health effects, particularly on pregnant women, and name the source of the information.

None of the pregnant women could remember even one program on mass media related to ETS.

When asked whether they had been consulted about smoking related issues by the gynecologist or nurse during their regular prenatal checkups, all of them answered no. To add, they have never received or seen in health care facilities any printed materials about this issue.

- *" My gynecologist always gave me advise about what to eat, what kind of exercises to do and every thing concerning my lifestyle, but I have never heard any advice from her about passive smoking harm"*

3.8 Suggestions of study participants

The majority of study participants were very enthusiastic about the study topic. At the end of the interviews they made suggestions. Some of them said before they have not even thought about passive smoking, but afterwards they will be more inquisitive and will try to get more information about this topic. Almost all women expressed their willingness to participate in educational courses. They said it would be very helpful to get educational printed materials concerning passive smoking and pregnancy.

- *"In the waiting room of the policlinic we see a lot of materials about pregnancy and AIDS, sexually transmitted diseases, and we read them while waiting for our turn. If*

there were brochures regarding sidestream smoke impact on pregnant woman and child, of course I am sure everybody would read"

Some women recommended organizing training not only for pregnant women, but also for their family members, especially husbands.

- *"My mother in law does not allow me to pick up heavy things, and said it could cause premature delivery. But she does not pay attention on continuous tobacco smoke in our apartment, because she doesn't realize its harm to me"*
- *" It is very difficult to convince my 30 years old husband, who smokes the whole day near me, that smoking could damage his future child's health, because he had never heard about it"*

Two women suggested educating schoolboys to prepare them to be knowledgeable future husbands.

- *"… the thing which you learn in childhood or teenage period roots in your mind and you never forget about it. If the boy knows about passive smoking harm on pregnant women since schoolyears, in the future he will protect his wife from passive smoking"*

4. Discussion

The aim of this qualitative study was to describe the knowledge of pregnant women regarding passive smoking and its health consequences, as well as their behavior at households to avoid secondhand smoke. Although it was assumed that in urban and rural settings the perception and knowledge about smoking in general and passive smoking particularly, as well as the behavior of women should be different, the information that was gathered from study participants from Yerevan and Nor-Hachn was very similar, in fact. It should be noted that half

of 15 participants in Nor-Hachn policlinic live in nearby villages who were registered in that policlinic for prenatal care.

The study revealed a pattern of high ETS exposure of pregnant women. This was expected because of the high exposure among the Armenian general population to ETS as shown in previous surveys (23;27;28). The fact that pregnant women do not take any steps to avoid involuntarily breathing tobacco smoke is very concerning.

IDENTIFIED PATTERNS

One of the main causes to bear the secondhand smoke is a lack of knowledge as is shown by this study. All respondents show very limited awareness about passive smoking. They did not know about the chemical nature of secondhand smoke that they breathe. Only a few women mentioned nicotine and tars in tobacco smoke. The interviewees had some information about the negative health impacts of active smoking, but they had almost no understanding about secondhand smoke health consequences in general and particularly on pregnant woman and fetus. Although a majority said that they have heard that passive smoking could be dangerous for them, they couldn't describe even one consequence of it. Only two women define some conditions, but it seems they did not know for sure and just tried to connect logically smoke and respiratory function of the fetus and growth. Interestingly the study participants with high education had similar little knowledge on passive smoking health effects compared with women with lower educational level.

Regarding attitude towards smoking all women, with one exception, express their strong negative opinions. The main cause of such attitude stated by almost all participants was the personal experience of health effects such as nausea, headache and dizziness.

However, the study shows that pregnant women do not protect their right to live in a clean indoor atmosphere. On one hand they notice nausea, respiratory disorders because of smoke, and on the other hand they do nothing and as they mentioned "tolerate anyhow". Even those pregnant women who had some knowledge about passive smoking health impact do not "fight" against smoking at home.

A household survey in Armenia in 2005 showed that 96.4 % of respondents think smoking should be banned at households. However, half of them reported no restrictions in their households (28). A similar picture was found by this study. Almost all participants express their desire to have smokeless households, but few mentioned such practice. They explain that establishing smoking restriction rules at households depends on family members, especially males.

The vast majority of interviewees do not ask smoking family members as well as guests to smoke outside or to stop smoking. All of them said they couldn't ask smokers, especially fathers-in-law, because it would not be accepted by other family members and would result in a conflict in the family. Some of women said they tried to ask smokers, but this didn't result in any changes.

The reason not to ask guests as explained by the participants was the fact that in Armenian culture it is not accepted to restrict guests from doing something, including smoking, even though it is harmful. It is seen as impolite and disrespectful towards visitors. Another reason to tolerate guests' indoor smoking was again the fear of conflicts in the family. Because most participants were living in big families with parents-in-law, brothers or sisters-in-law, they do not have a right to restrict those family members' guests from smoking. Thus, a pattern of social

hierarchy and a lack of empowerment of a woman in the family as a barrier to non-exposure is evident.

It is worthy to note that those few women who had smoking restrictions at their households mentioned support of their husbands and other family members.

This study found a lack of information about passive smoking. None of the respondents mentioned even one source. Moreover, none of them received information from their gynecologists and nurses about active and passive smoking, and their hazardous effects on pregnant woman and fetus. This fact plays a significant role in such tolerant behavior towards passive smoking. It should be noted that two participants of this study were midwifes and graduated nursing college recently. They mentioned that during their two-year education they had no course, not even one lesson concerning passive smoking harm on pregnant women and fetus.

As the study revealed, almost all interviewees were interested in information about passive smoking health effects.

It is widely known that health education is a primary means of inducing behavioral change. Many studies show the transition from the improved knowledge to attitude and finally changed behavior. Thus, health education of the Armenian population, particularly pregnant women on passive smoking and its adverse health effects would be the first step to decrease ETS exposure.

5. Strengths and Limitations

The strength of this qualitative research is that this method allowed in-depth examination of the factors that determine passive smoking exposure of pregnant women in Armenia. Like other qualitative studies, this approach revealed the aspects of the problem which could not be done by means of quantitative study due to the open-ended nature of the interviews. Another strength was the audio taping of all interviews which makes the analysis more precise.

The main weakness of this study is a lack of generalizability of obtained findings which is common for qualitative research methods. Another limitation might be the fact that data collection and data analysis were done by the same researcher. Data translation from Armenian into English could also be seen as a weakness, because it might modify somehow the meaning of some quotes typical for Armenian language.

6. Conclusion

To conclude, this qualitative study revealed high ETS exposure of pregnant women at households. The study showed pregnant women breathe secondhand smoke at their households and do not act to avoid or minimize it. The determinants of this problem do not work separately; they are interrelated with each other, as well as with social and cultural issues.

The main factor is a lack of information which results in poor knowledge and which in turn forms tolerant behavior towards passive smoking. This refers to both pregnant women and their family members, because as study showed women who realize the danger of smoke and try to avoid it by asking smokers not to smoke got no results and sometimes conflicts in the family. In contrast, those few participants who had smoking restrictions at home reported the support of smoking and non-smoking family members.

Another important factor which determines low level of knowledge about ETS health effects on pregnant woman and fetus is the absence of advice by health care providers, specifically by gynecologists and nurses. This understanding of the complexity of the problem shows the need for reinforcement by the health care system and the family members. Therefore, health care providers should also be targeted in the future health education programs to combat passive smoking.

7. Recommendations

Considering the findings of this qualitative study the following recommendations are suggested

1. Use this study to develop an instrument and implement a quantitative study among Armenian pregnant women to assess knowledge, attitude and practices regarding passive smoking.

2. As the study demonstrates, pregnant women's high ETS exposure at household depends on both the pregnant woman and her family members' knowledge and behavior. Thus, there is an urgent need to implement a health educational program about passive smoking and its adverse health effects, emphasizing pregnant women and fetus' health. Educational materials distribution in policlinics as well as mass media campaigns is essential. The target for such a campaign is both the pregnant woman, as well as her husband, parents, siblings and in-laws.

3. To train and instruct health care workers, especially gynecologists and nurses to give pregnant women advice on passive smoking health hazards during prenatal care.

A professional publication of this study will be designed and possibly be published in following journals

- JAMA
- Environmental Health Perspectives
- The European Journal of Public Health

Reference list

(1) Tobacco Free Initiative. 2007. Geneva, World Health Organization.

Ref Type: Statute

(2) Bazarchyan A, Darbinyan Z, Davidyants A, Movsisyan N. Contemporary Issues in Tobacco Control Policy in Armenia. 2004.

Ref Type: Serial (Book,Monograph)

(3) Respiratory health effects of passive smoking: Lung cancer and other disorders. Washington D.C.: Office of Health and Environmental Assessment, US Environmental Protection Agency, 1992.

(4) A Report of the Surgeon General. The health consequences of involuntary exposure to tobacco smoke. 2006. Atlanta, U.S. Dept of Health and Human Services, CDC, Office on Smoking and Health.

Ref Type: Report

(5) Protection from exposure to second-hand tobacco smoke. Policy recommendations. 2007. Geneva, World Health Organization, 2007.

Ref Type: Report

(6) M.R.Guerin. The chemistry of Environmental Tobacco Smoke: composition and measurment. 2006.

(7) Bos R. P, Henderson P. T. Genotoxic risk of passive smoking. Rev Environ Health 1984; 4(2):161-178.

(8) International Consultation on Environmental Tobacco Smoke(ETS) and Child Health. 1999. Geneva, Switzerland, World Health Organization.

Ref Type: Report

(9) Joseph R.Difranza, C.Andrew Aligne, Michael Weitzman. Prenatal and Postnatal Environmental Tobacco Smoke Exposure and Children's Health. Pediatrics 2004; 113(4):1007-1015.

(10) Husgafvel-Pursiainen K. Genotoxicity of environmental tobacco smoke: a review. Mutat Res 2004; 567(2-3):427-445.

(11) Jan Dejmek, Ivo Solansky, Katerina Podrazilova, Radim J Sram. The exposure of nonsmoking and smoking mothers to environmental tobacco smoke during different gestational phases and fetal growth. Environmental Health Perspectives 2002; 110(6):601-606.

(12) Hanke W, Sobala W, Kalinka J. Environmental tobacco smoke exposure among pregnant women: impact on fetal biometry at 20-24 weeks of gestation and newborn child's birth weight. Int Arch Occup Environ Health 2004; 77(1):47-52.

(13) Luciano A, Bolognani M, Biondani P, Ghizzi C, Zoppi G. The influence of maternal passive and light active smoking on intrauterine growth and body composition of the newborn. Eur J Clin Nutr 1998; 52(10):760-763.

(14) Hanke W, Sobala W, Kalinka J. The effect of environmental tobacco smoke on birthweight: a prospective study employing biomarkers of exposure. Ginekol Pol 2000; 71(8):833-836.

(15) Hegaard H. The effect of environmental tobacco smoke during pregnancy on birth weight. Acta Obstet Gynecol Scand 2006; 85(6):675-681.

(16) Hrub D, Kachlik P. Influence of maternal active and passive smoking during pregnancy on birthweight in newborns. Centr Eur J Public Health 2000; 8(4):249-252.

(17) Kharrazi M, Delorenze G, Kaufman F, Eskenazi B. Environmental tobacco smoke and pregnancy outcome. Epidemiology 2004; 15(6):660-670.

(18) Ward C, Lewis S, Coleman T. Prevalence of maternal smoking and environmental tobacco smoke exposure during pregnancy and impact on birth weight: retrospective study using Millenium Cohort. BMC Public Health 2007; 16(7).

(19) Nelson E, Jodscheit K, Guo Y. Maternal passive smoking during pregnancy and fetal developmental toxicity. Part 1: gross morphological effects. Human and Experimental Toxicology 1999; 18(4):252-256.

(20) ZHANG JUN, SAVITZ DA, SCHWINGL PJ, CAI WW. A Case-Control Study of Paternal Smoking and Birth Defects. Int J Epidemiol 1992; 21(2):273-278.

(21) Sasco A, Vainio H. From in utero and childhood exposure to parental smoking to childhood cancer: a possible link and the need for action. Hum Exp Toxicol 1999; 18(4):192-201.

(22) Tredaniel J, Boffetta P, Little J, Saracci R, Hirsch A. Exposure to passive smoking during pregnancy and childhood, and cancer risk: the epidemiological evidence. Paediatr Perinat Epidemiol 1994; 8(3):233-255.

(23) Household Health Survey. Baseline Evaluation. 2006. Armenia, USAID/Primary Health Care Reform.

Ref Type: Report

(24) Highlights on health in Armenia, 2005. 2006. Copenhagen, WHO Regional Office for Europe.

Ref Type: Report

(25) Peto R , Lopes A, Boreham J, Thun M, Heath Jr C. Mortality from Smoking in Developed Countries 1950-2000. Oxford University Press, 1994.

(26) Anahit Demirchyan, Michael Thompson. Sevan Household Health Assessment: Follow-Up 2004. 2004. Yerevan, Armenia, American University of Armenia, Center For Health Services Research and Development.

Ref Type: Report

(27) Bazarchyan A. Global Youth Tobacco Survey (GYTS) 2004, Armenia. 2004. National Institute of Health of Armenia.

Ref Type: Report

(28) Knowledge, attitude and practices on tobacco control policies in adult population in Armenia. 2006. Yerevan, American University of Armenia, Center for Health Services Research and Development.

Ref Type: Report

(29) Mathie A. Qualitative Research For Tobacco Control; A How-to Introductory Manual for Researchers and Development Practitioners. 2005. Canada, Research for International Tobacco Control (RITC), International Development Research Centre (IDRC).

Ref Type: Report

www.data.euro.who.int/tobacco

Appendix 1 English version of the interview guide

IN-DEPTH INTERVIEW GUIDE

Section 1

---

1. How old are you?

2. What is your background education?

a. School (8 years)

b. School (10 years)

c. Professional technical

d. Institute/University

e. Scientific degree

3. Where do you work?

a. ___ not working (housewife)

b. ___working (specify)_____

4. How many pregnancies have you had? _____

5. Have you ever smoked?

a. yes

b.no

6. Do you smoke now?

a. yes

b.no

7. How many smokers do you have at your household? _____

8. How much do they smoke? _____

9. How many hours a day are you exposed to cigarette smoke at your household?_____

Section 2 Interview questions

---

1. Do you have any problems with your pregnancy?
2. Let's talk about smoking. What do you know about passive or secondhand smoking?
3. Tell me please, possible health consequences (effects) of smoking; active/passive. In general do you feel there is any harm to your health when other people smoke?
4. Let's talk about secondhand smoke and fetus. Do you feel there is any harm to the baby when other people smoke? If yes, could you list possible health consequences?

5. Could you describe the rules about smoking inside your home in general. Tell me please the rules for smoking family members, and guests. Do you have seprate rooms for smoking at your home?
6. Are there any changes in smoking rules during your pregnancy?
7. Please, tell me if someone smokes near you at the same room or apartment, what are your actions? Do you leave that room? Do you ask to stop smoking or smoke outside? What are the actions of your husband or other smokers?
8. During your pregnancy, about how many hours a day, on average, were you in the same room with another person who was smoking? What are the nonsmoking family members behavior?
9. Please, tell me have you ever got information about active/passive smoking. From where did you get the information about it? Have you ever got consultation from health workers on secondhand smoking? During your prenatal care visits, did a gynecologist or nurse, talk with you about active and passive smoking?

Appendix 2 Armenian version of interview guide

ՈՒՂԵՑՈՒՅՑ

Մաս 1 _____

1. Քանի՞ տարեկան եք տարիներով:

_____

2. Ի՞նչ կրթություն ունեք:

ա. Դպրոց 8 դասարան

բ. Դպրոց 10 դասարան

գ. Տեխնիկականյյ ուսումնարան

դ. Ինստիտուտ/ Համալսարան

ե. Գիտական կոչում

3. Դուք աշխատու՞մ եք:

ա. չեմ աշխատում տնային տնտեսուհի

բ. ֆիզիոլոգիական արձակուրդում եմ

գ. աշխատում եմ նշեք_____

4. Նշեք, խնդրեմ ձեր ո՞րերրորդ հղիությունն է

_____

5. Դուք երբևե ծխել եք

ա, այո

բ. ոչ

6. Դուք ներկայումս ծխում եք

ա. այո

բ. ոչ

7. Քանի ծխող կա Ձեր տանը:

_____

8. Որքան են նրանք ծխում(քանի հատիկ):

_____

9. Օրեկան քանի ժամ եք ենթարկվում ծխախոտի ծխի ազդեցությանը

_____

Մաս 2 Հարցազրույցի հարցեր

1. Ինչպես՞ է ընթանում ձեր հղիությունը:
2. Ինչպիսի՞ն է ձեր վերաբերմունքը ծխելու նկատմամբ:
3. Խոսենք ակտիվ և պասիվ ծխելու մասին: Ի՞նչ գիտեք դրանց մասին: Ի՞նչ է երկրորդային ծուխը:
4. Պատմեք խնդրեմ առողջության վրա ծխախոտի հնարավոր ազդեցությունների մասին: Ինչպես կազդի ակտիվ ծխելը: Ինչպես կազդի պասիվ ծխելը: Իսկ հղի կնոջ վրա կարող են վերը նշվածները ազդել:

5. Խոսենք ծխելու և նրա ազդեցությունը պտղի/ սաղմի վրա: Կարո՞ղ եք նշել պտղի վրա ծխի հնարավոր հետևանքներից:
6. Նկարագրեք խնդրեմ ձեր տանը ծխելու կանոնները: Թույլատրվում է արդյոք տան ներսում ծխել տնեցիներին, նաև հյուրերին: Ունե՞ք արդյոք առանձնացված սենյակներ/տարածքներ ծխելու համար:
7. Այժմ երբ դուք հղի եք այդ կանոնները փոխվե՞լ են արդյոք:
8. Ասացեք խնդրեմ, երբ ձեր ներկայությամբ տանը ծխում են, որո՞նք են ձեր գործողությունները: Դուք դուրս եք գալիս սենյակից: Դուք խնդրում եք դադարեցնել ծխելը կամ ծխել դրսում: Ինչպիսի՞ն են ձեր ամուսնու կամ այլ ծխողների գործողությունները: Ինչպիսի՞ն են չծխողների դիրքորոշումը / գործողությունները:
9. Ասացեք խնդրեմ, դուք երբևէ տեղեկատվություն ստացել եք ծխելու, ակտիվ և պասիվ, վերաբերյալ: Եթե այո, ապա որտեղից: Ձեր նախածննդաբերական այցելությունների ժամանակ գինեկոլոգը կամ բուժքույրը խորհուրդներ տվե՞լ են այդ թեմաներով:

Appendix 3 English version of oral consent form

Oral Consent Form for In-depth Interview

Title of Research Project: Qualitative study to explore knowledge, attitude and practice towards environmental tobacco smoke among pregnant women in Yerevan and Nor-Hachn .

Explanation of Research Project:

Dear friend,

My name is Liana Atabekyan. I am a second year Master of Public Health student at the American University of Armenia, College of Health Sciences. As part of my course requirement at the American University of Armenia, I am conducting a research study about knowledge attitudes, and practices of pregnant women regarding passive smoking. You are invited to participate in this study, because you are pregnant. Your participation would be highly valuable for us. For the study in-depth interview will be conducted with pregnant woman in Yerevan which will take approximately 1 hour to complete. It will be tape recorded in case of participant's permission. There will be no other requirements for participating.

Confidentiality

The information that you share will be anonymous and confidential and will be used only in this project. Your name will not be associated with your personal data. Only the study team will have access to the taped interviews. Data will be kept for 6 months after the study is completed and then will be destroyed.

Risk/Benefits

This study does not involve any kind of risks. The participation or refusal to participate in the study will not affect you physically and will not influence on your prenatal check-ups and/or

treatment. You will not receive any incentives, financial or otherwise for your participation in this study. However, the information obtained from you will help us to explore the attitudes of pregnant women towards secondhand smoke for the purpose of developing informed educational programs in the future.

Voluntariness

Your participation in this study is completely voluntary. If you agree to participate the in-depth interview will take about 1hour. You can freely express any opinion. If you feel something we ask about is sensitive, we can either move on the next question or discontinue the interview. Not joining the study or withdrawing from the study at any time will not have any consequences for you.

Whom to contact

If you need more information about the study, please do not hesitate to contact the investigators in charge of this study: Liana Atabekyan 091)35 90 19, e-mail: liana-atabekyan@yandex.ru, professor Kim Arzoumanian, e-mail: kimarzoumanian@yahoo.com, or professor Margaret Pierce e-mail: mgtpierce@hotmail.com.

If you feel you have not been treated fairly or think you have been hurt by joining the study you should contact the American University of Armenia at 3741) 51 25 68 and ask Dr. Yelena Amirkhanyan.

Thank you very much for your participation in advance.

Appendix 4 Armenian version of oral consent form

Բանավոր Համաձայնագիր Հարցազրույցի համար

Բարև ձեզ

Ես Լիանան Աթաբեկյանն եմ, Հայաստանի ամերիկյան համալսարանի Հանրային Առողջապահության բաժնի երկրորդ կուրսի ուսանող: Ես անցկացնում եմ հետազոտություն ծխախոտի երկրոդային ծխի վերաբերյալ հղի կանանց գիտելիքների, վերաբերմունքի, և վարքի մասին: Դուք հրավիրվում եք մասնակցելու այս հետազոտությանը, որովհետև հղի եք: Ձեր մասնակցությունը շատ արժեքավոր է մեզ համար: Այս հետազոտության համար կանցկացվի հարցազրույց, որը կտևի մեկ ժամ: Ձեր թույլտվությամբ հարցազրույցը կձայնագրվի: Ոչ մի անձնական տվյալ չի հավաքվելու: Ձեր տրամադրած տեղեկությունները կմնան գաղտնի և կօգտագործվեն միայն այս ծրագրում: : Բոլոր տվյալները կոչնչացվեն հետազոտության ավարտից վեց ամիս հետո.

Այս հետազոտությունը ձեզ համար որևէ վտանգ չի ներկայացնում: Ձեր մասնակցությունը կամ մերժումը մասնակցել հարցազրույցին որևէ կերպ չի ազդի ձեր նախածննդաբերական այցելությունների կամ բուժման վրա:

Դուք անձամբ դրամական կամ այլ օգուտ չեք ստանա ձեր մասնակցության համար: Սակայն ձեր տված տեղեկությունները կօգնեն մեզ գնահատելու հղի կանանց վերաբերմունքը ծխախոտի երկրորդային ծխի մասին, որը իր հերթին կնպաստի հետագայում կազմելու կրթական ծրագիր:

Ձեր մասնակցությունը կամավոր է: Դուք ազատ կարող եք արտահայտել ցանկացած կարծիք: Եթե կզգաք, որ իմ տված հարցը զգայուն է, կամ չեք ցանկանա

պատասխանել հարցին, տեղեկացրեք ինձ և մենք կանցնենք մյուս հարցերին կամ կընդհատենք զրույցը:

Եթե կցանկանաք լրացուցիչ տեղեկություններ ստանալ այս հետազոտության մասին, կարող եք դիմել պատասխանատու անձանց. Լիանա Աթաբեկյանին հեռ. 091 35 90 19, Կիմ Արզումանյանին էլ. փոստ kimarzoumanian@yahoo.com, Մարգարեթ Փիրսին էլ. փոստ mgtpierce@hotmail.com

Եթե զգաք , որ ձեր նկատմամբ անարդարացի վերաբերմունք է ցուցաբերվել, կարող եք դիմել նաև Ելենա Ամիրխանյանին, Հայաստանի Ամերիկյան համալսարան, +37410 51 25 68

Նախօրոք շնորհակալություն մասնակցության համար:

Appendix 5 Institutional Review Board Approval

A DECADE OF ACHIEVEMENT - ՆՎԱՃՈՒՄՆԵՐԻ ՏԱՍՆԱՄՅԱԿ

AMERICAN UNIVERSITY OF ARMENIA
ՀԱՅԱՍՏԱՆԻ ԱՄԵՐԻԿՅԱՆ ՀԱՄԱԼՍԱՐԱՆ - 2001
College of Health Sciences

14 May 2007

Liana Atabekyan, MD
Graduate Student, Master Public Health Program
40 Marshall Bagramian
Yerevan 0019 Armenia

RE: IRB Application Form

Dear Dr. Atabekyan:

A departmental Institutional Review Board (IRB) committee within the College of Health Sciences, reviewed your proposal entitled, "Assessment of knowledge, attitude, and practice toward environmental tobacco smoke among pregnant women in Yerevan." The proposal was approved: Your study appears to be based on comparable prior research, is directly related to your professional duties, and is appropriate for an MPH thesis project.

In our opinion, the proposal follows widely accepted standards. We agree with you that the survey involves minimal risk because there are no patient interventions and participation is a voluntary decision.

It is our determination that this application does not need to be reviewed by the University's IRB and approval is given to you by the College of Health Sciences to proceed with your project.

This approval does not supersede the continued advice and interactions among you and your faculty advisors. Should any change occur within the proposal, please promptly keep us informed.

Sincerely,

Yelena Amirkhanyan, MD, MPH
MPH Program Coordinator
Chair, College of Health Sciences Student IRB

cc: Administrator, AUA Committee on Human Research
Student's Thesis File

40 Marshal Bagramian Avenue
Yerevan, 375019, Armenia
Tel.: (3741) 512526, 512525,
Fax: (3741) 151048, 512840

300 Lakeside Drive
4th Floor
Oakland, CA 94612
Tel.: (510) 987-9452
Fax: (510) 208-3576