

Prevalence of Hypertension and Cardiovascular Disease Risk Factors in Adults over 30 Years in Tocachi, Ecuador, June - August 2000

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Objective

This project sought to (1) determine the prevalence of hypertension adults over 30 years in Tocachi, Ecuador (2) Identify and study the following hypertension risk factors: obesity, smoking, alcoholism, stress, and family history of cardiovascular disease (CVD). (3) Identify the knowledge about hypertension that exists currently in Tocachi.

Introduction

Chronic hypertension, also known as the silent killer, is a condition that can lead to serious CVD, such as stroke. Although genetics play a role in the etiology of hypertension, many environmental and behavioral characteristics have been associated with this state. These factors include obesity, cigarette smoking, excessive alcohol, physical inactivity, and psychosocial stress.

CVD constitute about 50% of all non-transmittable diseases in Latin America. This illness is associated with an older population. Tocachi is a rural town 90 kilometers northeast of Quito, Ecuador. The population is 875 with 341 individuals over the age of 30. This village shows a need for assessment of various health needs such that a health program may be implemented. CVD is a relevant health concern for this population due to a high percentage of older inhabitants.

Methods

As part of a larger population-based health survey, a sample of adult residents from the rural town of Tocachi were invited to an interview and to have their blood pressure, height and weight measured. Of a possible population of 341 adults over 30 years, 202 (59%) subjects were interviewed. SPSS 7.5 and EPI-Info 6 were used for data analysis.

The frequency of cardiovascular risk factors were evaluated based on the following criteria:

Hypertension: Diastolic Blood Pressure greater than 140 mmHg or Systolic Blood Pressure greater than 90 mmHg.

Obesity: Body Mass Index equal to or greater than 30 kg/m².

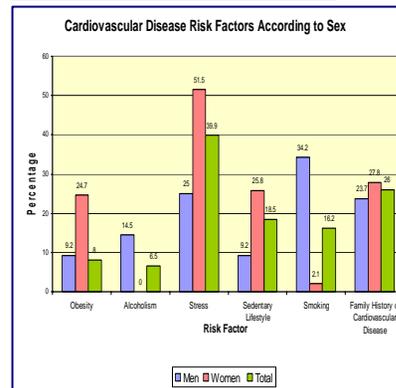
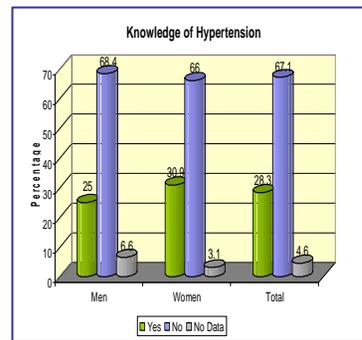
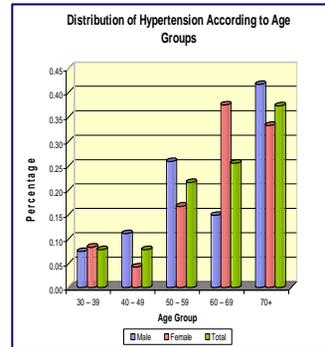
Excessive Alcohol Intake: Becomes inebriated more than once a month.

Stress: A value of 5 or greater on a stress scale composed of stress symptoms.

Sedentary Lifestyle: Works in a job that does not require significant physical activity and walks less than 2 hours daily.

Cigarette Smoking: Smokes now or has smoked in the last three years.

Cardiovascular Disease History: Awareness of a parent who suffered from a cardiovascular disease.



Results

Prevalence of Hypertension

Of the 173 subjects studied, 44% were male (n=76) and 56% were female (n=97). The average age of the participants was 57. The total prevalence of hypertension was 29.5%. Among women, the prevalence of hypertension was 24.7% and 35.5% for men. For both genders the prevalence of hypertension increased with age (p value for linear trends <0.05).

Prevalence of Cardiovascular Risk Factors

Women were more likely to be obese, to report higher levels of psychosocial stress, and to be sedentary as compared to men. Men were more likely than women to consume excessive amounts of alcohol, and to be cigarette smokers. The frequency of men and women reporting a positive family history of CVD were similar (23.7% for men and 28% for women.)

Knowledge of Hypertension

Approximately 67.1% of the subjects did not have knowledge about the cause of, or adverse health consequences of chronic hypertension. Over 90% of the population have received an education no higher than an elementary school level.

Conclusions

We found that there is a high prevalence of hypertension in the adults over 30 years in Tocachi. As age increases so does the possibility of having hypertension in this population.

There is a significant difference in prevalence of CVD risk factors between men and women. This is characteristic to the differences in behavioral habits between men and women.

There is a very high percentage of the population who are unaware of hypertension.

Recommendation

Hypertension prevention and control will require targeted health education and prevention programs specific to the needs of the rural population in Tocachi.

Limitations

Information about Cardiovascular risk factors were assessed from questionnaires and thus are subject to some error. Due to time limitation, blood pressure was only measured once reducing accuracy.



The Health and Socio-Economic Factors of Flower Plantation Workers in Tocachi, Ecuador: A Cross-Sectional Epidemiological Survey

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Background

Ecuador has the fastest growing cut-flower industry in the world. Since its inception fifteen years ago, the flower industry has grown from a small cottage industry to a multi-million dollar industry. Ecuador now boasts cut flowers as the seventh largest export, netting 19.7 million U.S. dollars in 1998. Currently, Ecuador has 2700 hectares of land committed to 400 flower plantations. The United States provides a stable market for the cut flower industry, and is in fact, the number one importer of Ecuador's long stem rose.

The market demand for perfect roses contributes to the heavy use of pesticides in the industry. Each plantation uses approximately thirty-five different pesticides. Workers are largely unprotected from the caustic effects of the pesticides and as a result, are experiencing an increase of health problems related to pesticide exposure.

Tocachi, Ecuador is a small rural village in the Northern Sierra of Ecuador. The village of Tocachi is experiencing rapid socio-economic changes resulting from the flower plantation industry. The rise of the flower industry in Ecuador is increasingly effecting the labor distribution, land prices, local economy, family structure and health of communities throughout the country. The use of pesticides is a particular concern in flower plantations, where lack of training, proper labeling, and illiteracy rates cause unnecessary health risks to workers.

Objectives

The objective of this study is to identify the impact of flower plantations on a rural sierra community. The study aimed to identify key trends of flower plantations workers in Tocachi, Ecuador; identify cost benefit-characteristics of flower plantation work; and highlight the non-economic effects of the plantation on the Tocachi community.

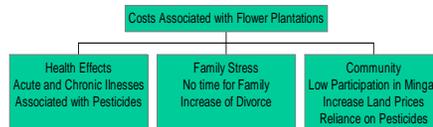


Methods

A cross-sectional epidemiological survey was conducted in Tocachi, Ecuador between July 10 and July 14, 2000. The fieldwork yielded 42 completed surveys. The survey was written in collaboration with researchers from Fundacion CIMAS in Quito, Ecuador. The survey was tested in Cochasqui, a neighboring village of Tocachi, and revised with assistance from CIMAS staff. A team of researchers consisting of research fellows from the Multidisciplinary International Research Training (MIRT) program, medical students from The Catholic University, and community members from Tocachi conducted the final survey. The database was developed using EpiInfo and the data was analyzed using SPSS version 7.5.

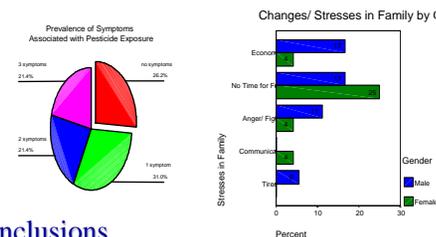
Information from a FOCUS group interview was also used to augment the survey data. Three FOCUS groups were conducted with woman of different age groups ("youth", "adult", and "mature") in Tocachi, Ecuador. The primary function of the FOCUS groups was to investigate the general happiness of woman in Ecuador. However, information from the "adult" group yielded pertinent information regarding the effects of flower plantations on the community of Tocachi. The FOCUS group interview was recorded with on tape cassette and then translated into English by a CIMAS student volunteer. The interview was analyzed for verification of trends found in the survey results.

Cost-Benefit Analysis of Flower Plantation Work in Tocachi



Results

Approximately 48% (n=20) of the sampled population indicated an increase in stressed family relations after working in the plantations. Reported causes of family stresses included; no time for family (50%); economic instability (22.2%) anger/ fights (16.7%); lack of communication (5.6%); and fatigue (5.6%). 73.8% (n=31) of the workers participated in zero out of the last five mingas (community work parties), indicating a decrease in community solidarity. The average plantation worker experiences 4.6 illnesses/ symptoms at one time. 75% of the symptoms reported are indicative of chronic pesticide poisoning. Individuals who reported eight or more symptoms (n=11) were mostly woman (63.3%); averaging 31.6 years. Although 83.3% of workers reported use of protection for pesticide exposure, the actual type of individual protection used was consistently below World Health Organization Standards. Although the costs associated with plantation work outweighed the benefits, focus group results suggest that residents will continue to be attracted to work on flower plantations.



Conclusions

- Using a full-cost accounting methodology, the costs associated with flower plantation work outweigh the benefits.
- The main costs of flower plantation work include: increased incidence of health risks associated with pesticide exposure, less time for family, less time for community events, and continued economic stress.
- The main benefit for work in the flower plantation: cash income and relating economic flexibility.

Recommendations

In the interest of occupational health and safety, we propose that public health officials and plantation owners work together to: design and conduct studies of flower plantation workers and their occupational exposures; implement a pesticide awareness program and initiate a structured surveillance system that allows for the monitoring and prevention of adverse health events associated with occupational exposures.



Epidemiological Factors Contributing to the Low Prevalence of Contraception Use among Women of Reproductive Age (15-49 years) in Tocachi, Ecuador

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Introduction

The prevalence of contraception use among women of reproductive age (15-49 years) in Ecuador varies greatly between urban (66%) and rural (44%) populations. This large discrepancy is in part due to other epidemiological factors which vary between urban and rural populations, such as educational and socioeconomic levels. However, one of the major factors contributing to a significantly lower prevalence of contraception use by rural women is a lack of access to health care and contraceptives.

Objectives

The aims of this study were to determine 1) the prevalence of contraception use; 2) the prevalence of contraception use and; 3) the epidemiological factors associated with the prevalence of contraception use among women of reproductive age (15-49 years) in the rural Andean village, Tocachi.

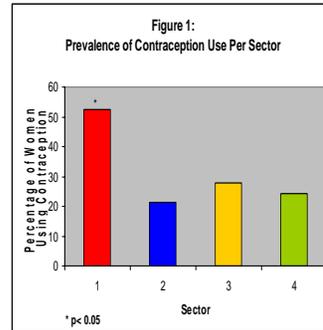
Methods

A cross-sectional epidemiological study was conducted in Tocachi, Ecuador, from July 10th-14th, 2000.

A questionnaire on reproductive health and contraception was administered to a random sample of 93 women of reproductive age (63% of that population in Tocachi).

Additionally, census information collected from Tocachi in the summer 1999 was used to obtain further pertinent epidemiological data.

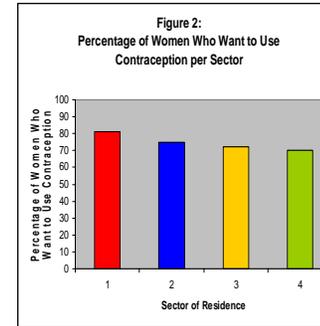
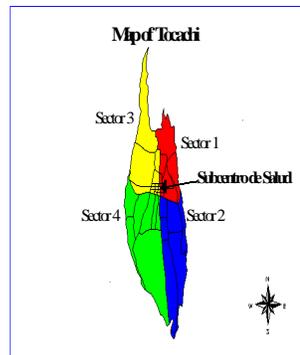
Statistical analyses were performed using Epi Info 6.0 and SPSS 7.5 for windows. For all categorical variables, the chi-squared test was used to assess any statistically significant ($P < 0.05$) differences.



Results

The epidemiological factors that influence the prevalence of contraception use among women nationally in Ecuador, such as educational and socio-economic level, are not associated with contraception use in Tocachi. The most significant epidemiological factor influencing the prevalence of contraception use in Tocachi is a woman's sector of residence. While the percentage of women who want to use contraception does not vary significantly between the four Tocachi sectors (figure 2), the percentage of women who actually do use contraception varies greatly (figure 1). In fact, the prevalence of contraception use is more than twice as high in sector one than it is in the other three sectors. Women in sector one are more than three times more likely to use contraception than women living in other sectors (Odds Ratio= 3.30; 95% confidence interval 1.1-10.3).

Hormonal methods of contraception (hormonal injections and birth control pills) are the most prevalent type of contraception used in Tocachi, followed by the intrauterine depository (IUD), natural methods, and tubal ligations. Except for hormonal methods, there is a significant difference between the prevalence of use of these contraceptives among women in Tocachi and among women nationally in Ecuador.

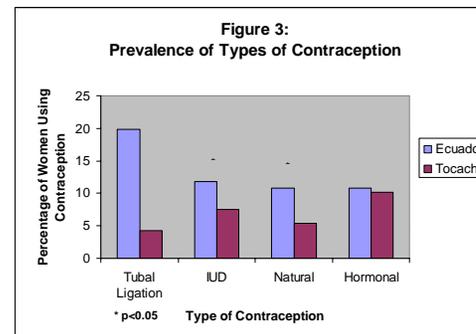


Conclusions

Since the proportion of women using contraception in sector one is more than twice as high as in any other sector, and yet the proportion of women who want to be using contraception does not vary greatly between the four sectors, the location of a woman's residence in Tocachi is somehow affecting the likelihood that she uses contraception.

One possible explanation for this result is proximity to the local health center, El Subcentro de Salud. Although the health center is located centrally in Tocachi (see map), out of the four sectors, only sector one has a majority of its population living close to the center of town. Sectors two, three, and four have a large percentage of their populations living in more remote areas. Thus, most of the women living in sector one have easier access to the health center, and thus easier access to contraceptives, than women living in other sectors. The high prevalence of contraception use in sector one may be attributed to this easier access to the health center.

The significantly lower prevalence of use of all types of contraception among Tocachi women versus women nationally in Ecuador, except for hormonal methods, can be explained by availability of the contraceptives from the local health center in Tocachi.



Although nationally in Ecuador, hormonal methods of contraception are used less frequently than the other modern methods of contraception, in Tocachi, hormonal methods are the most used. This is mostly likely due to the fact that they are available from the health center, whereas IUDs and tubal ligations are not. In order to obtain a tubal ligation or the insertion of an IUD, women must travel to neighboring cities with hospitals or doctor's offices. Thus, the easier accessibility of women to hormonal methods of contraception from the local health center probably accounts for their high prevalence of use in Tocachi, and the difficulty of obtaining other modern methods of contraception most likely accounts for their low prevalence of use.

Limitations

Due to the sensitive nature of the topic of contraception, especially in rural Ecuador, it is possible that some of the subjects did not answer all of the questions about contraception truthfully.

Recommendations

To decrease the discrepancy between the proportion of women who actually use contraception and the proportion of women who would like to be using contraception in Tocachi, a strong focus of the local health center should be educational outreach about contraception, especially to women living in more remote areas of the community.



This research was conducted in association with the Multidisciplinary International Research Training (MIRT) Program. This program was supported by a grant from the Fogarty International Center, National Institutes of Health to the University of Washington.



Qualitative Analysis of Mental Health and the Level of Personal Satisfaction Among Women (Ages 14-65) in Tocachi, Ecuador

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Introduction

This project explores the level of personal satisfaction and state of mental health of women in Tocachi, Ecuador. Comprised mostly of *mestizos* and some indigenous people, Tocachi is a rural village, which is located outside of Quito. This project aims to answer the following questions: How do these women construct contentment; What components of their lives would they like to change; How do their experiences shape their views of their community? An alternative method of analysis of women's health is needed to more effectively meet the needs of these female groups; and by employing a qualitative analysis better insight into their ideas can be obtained. This work aims to identify and characterize the knowledge, attributes and beliefs of women in Tocachi around mental health and personal satisfaction.



Methodology

For this study, the technique of the focus group was utilized to add a qualitative aspect to the traditional quantitative and statistical method of study of mental health. Three focus groups were held in the dining room of *el Jardín* (local school and community center). The groups were divided by age (14-17;25-40;40+) to acquire an age based range of ideas around themes. Group one, *Mujeres mayores* (Elder women), consisted of five women from Tocachi and three women from the Tocachi research team. Group two, *Mujeres Jovenes* (Young women), consisted of three women from Tocachi and three women from the Tocachi research team. Finally, group three, *Mujeres Adultas* (Adult women), consisted of three women from Tocachi and three women from the Tocachi research team. An introduction of participants and an explanation of the technique of focus groups was utilized to establish a comfortable atmosphere for the participants. All conversations were recorded and a focus group guide was utilized for each meeting.



Table 1: Criteria for contentment
Elder women (40+)
<ul style="list-style-type: none"> • Health • Work • Love and affection of children • Money to buy food
Adult women (25-40)
<ul style="list-style-type: none"> • Work • Love and Sharing • Study and find a profession • Have children and husband • Self Respect • Respect from spouse/partner
Young women (14-17)
<ul style="list-style-type: none"> • Health • Work • Love and understanding of family • Understanding of friends • Good economic situation

Table 2: Sources of pena (feelings of sadness) by age group
Elder women (40+)
<ul style="list-style-type: none"> • Solitude • Lack of visits from children • Lack of money and work
Adult women (25-40)
<ul style="list-style-type: none"> • Marital and frustrations associated with their households • Lack of money, work, and time for children
Young women (14-17)
<ul style="list-style-type: none"> • Misunderstanding in the home and among friends • Lack of money in the family

Table 3: Methods of coping with pena by age group
Elder women (40+)
<ul style="list-style-type: none"> • Cry • Look for distractions • Go out with friends
Adult women (25-40)
<ul style="list-style-type: none"> • Walk, read, cry
Young women (14-17)
<ul style="list-style-type: none"> • Talk to friends and/or mother • Look for distractions

Discussion

To establish a point of comparison for level of personal satisfaction, each group of women in Tocachi was asked to outline key items a woman would need to be content. The responses varied by age group, with the most similarity arising between the *mujeres mayores* and *mujeres jovenes* groups.

The level of personal satisfaction with one's life situation did not vary extensively across focus group samples. Among all three groups, the level of personal satisfaction seemed to depend greatly on the economic situation of that particular woman. This similarity was expected due to the current economic crisis in Ecuador. Women in the country contend with problems as a result of changes in the economic climate under normal circumstances, and this remains the same during times of economic crisis as well. With respect to methods for coping with sadness or *pena*, all three groups cited different methods as well as the sources of the feelings of sadness or *pena*.

In describing the life of a woman in Tocachi, responses across all three groups were similar. Most agreed that life was extremely hard for women in Tocachi. Some of the key reasons cited were the fact that women had to work not only outside of the home, but also had the responsibility of the house and children to contend with. All three groups agreed that for the most part, husbands were not helpful with respect to household duties or children. As we have seen earlier, economic resources were also cited as a source for making life difficult for women. This applies for either the management of a small amount of resources or for the actual acquisition of those resources. The young women mentioned that life was especially difficult for the young women who wished to study – for these women have to work during the day and study at night, all in addition to carrying out their normal household duties.

All three groups agree that both husband and wife should make the decisions of the house. While this was the case, most of the women agreed that in Tocachi, the husband is the member of the household who has the decision making power and often the final word. An interesting series of responses arose with respect to who held the responsibility of household finances. In all three groups, responses varied, but all combinations (husband only, husband and wife, wife, single woman) were cited. During this discussion, money was named as a source of much frustration and arguments in many homes.

Conclusions/Recommendations

- Women of Tocachi have developed a clear conceptualization of the components of contentment
- The majority of the women interviewed expressed feelings of sadness and *pena*
- Coping techniques for *pena* vary with age
- Researcher suggests that young women continue to engage in group discussions and activities outside of the home to maintain current level of personal satisfaction
- Researcher suggests that adult women draw on a network of women in the community to meet once a month to engage in activities that relate to personal development, as defined and desired by those women
- Researcher suggests that the members of the Tocachi community utilize community activities uniting elder women and children to quell feelings of solitude



This research was conducted in association with the Multidisciplinary International Research Training (MIRT) Program. The program was supported by a grant from the Fogarty International Center, National Institutes of Health to the University of Washington.

Maternal Health, Fertility and Access to Health Care Among Reproductive Age Women in Tocachi, Ecuador: Analysis of Cross-Sectional Survey Data

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Introduction

Tocachi is a rural village located in the sierra region of Ecuador, about 90 km north of the capital city of Quito. Much like other environmentally similar regions in Ecuador, women in Tocachi, are expected to have fertility rates and reproductive practices differing from that of women from urban areas. The present study examines fertility rates, utilization of health care services and the gynecological health of reproductive age women in the town of Tocachi.

Materials & Methods

This cross sectional study focused on 92 women who live in Tocachi, Ecuador, ages 15 to 49. The women were interviewed in their homes as part of a health survey conducted by investigators at the Fundacion CIMAS del Ecuador. Participants were asked questions regarding their reproductive histories, gynecological health and utilization of health care resources. Data from a previous Tocachi census were used to assess various demographic statistics including marital status, socioeconomic status, educational level, literacy and economic activity. Economic activity for each woman was determined using the definitions from the Instituto Nacional de Estadística y Censos del Ecuador (INEC) defining an individual as either actively earning an income or inactive in garnering monetary economic resources. A socioeconomic housing index was also calculated using information provided about household conditions, classifying the women into groups of low, middle and high standard living conditions.

These data were then analyzed using SPSS. Cross tabulations and frequency tables or figures were used to compare the distributions of variables of interest for Tocachi residents and women included in an Ecuadorian national survey of maternal health. Analysis of variance (ANOVA) procedures were used to assess the relation between level of education and number of pregnancies, as well as, the socioeconomic housing index and number of pregnancies.

Women in Tocachi were found to have fertility rates similar to those reported for women in the rural sierra regions of Ecuador (2.5 births per woman). It was evident, however, that women in Tocachi begin their reproductive activity at a relatively young age (over 70% of women reported giving birth to at least one child by the age of 20-24 years). Notably we found that women in Tocachi of lower socioeconomic status (SES) as measured by economic activity and level of

education, had a greater number of children. At least 80% of the women who had 6 or more children were economically inactive (Figure 1). The relationships between women with the greatest number of pregnancies and economic inactivity and low educational level were found to be significant to p values of .018 and .015, respectively using ANOVA. Women of low SES were also less likely to use prenatal care services during pregnancy and

delivery than other women (refer to Chart 2). Out of the women who had not received any education, only 50% had at least one check-up during their last pregnancy, while 83.4% of those with a primary education had received some pre-natal care and 100% of both the women with a secondary and a superior education had received some prenatal care. Our analysis of reproductive outcomes reveals that the risk of complications during pregnancy increased with maternal age, as 50% of the women who reported complications during pregnancy were between the ages of 35 and 39. With respect to utilization of gynecological health care services, we observed that 38% of women reported never having received any gynecological or screening tests (Table 1). The largest percentage of this group coming from women with little or no education and another 15% of the total population having not received any attention in more than 2 years. It was also found that a large portion of the population used the established professional health care system, with 74% of the women reporting having a physician or nurse attend to them during the birth of their last child either at home or at an established health care facility. Only 14% of the women reported having delivered their last child at the Tocachi health facility, or "subcentro de salud."

Results

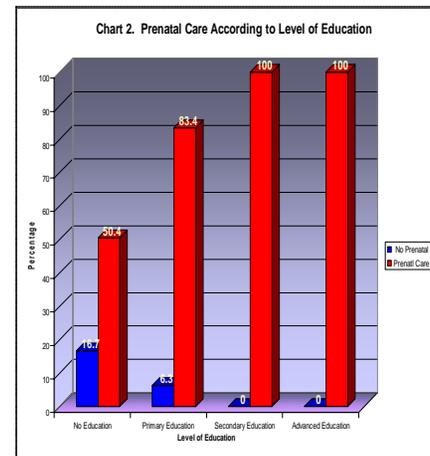
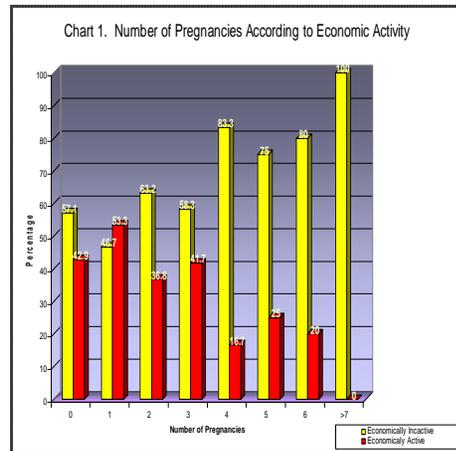


Table 1. Elapsed Time Since Last Gynecological Visit

Educational Level	Time Since Last Visit			
	1-12 months	1-2 years	>2 years	Never
No Education	40.0%	0.0%	20.0%	40.0%
Primary Education	36.8%	7.0%	15.8%	40.4%
Secondary Education	38.1%	14.3%	14.3%	13.3%
Advanced Education	66.7%	33.3%	0.0%	0.0%
Total Population	37.0%	10.0%	15.0%	38.0%

Discussion

These data suggest that women in Tocachi, particularly women in the lowest SES classes, are at high risk for experiencing pregnancy complications and are the least likely to receive adequate prenatal and subsequent gynecological health care. Further assessments of economic and non-economic barriers to health care and community outreach activities are needed to address the health care needs of women and children in Tocachi.

Among the major limitations to the study, was the fact that our population sample was only half of the estimated population of women of reproductive age in Tocachi. This small sample size may misrepresent the actual tendencies in the village, though the circumstances did not permit a complete census. Other limitations include inaccurate reporting due to poor recollection and/or the sensitivity of questions and topics discussed during interviews.

