Level of Knowledge about Pap Screening and Cervical Cancer Associated to the Fear, Stress or Shame of the Pap Procedure in a Low Socioeconomic Population in Lima, Peru

Miriam Castro, Rosaelia Morfin, Jose Roca, Edmundo Sánchez, Sixto Sánchez

MIRT Program, University of Washington, Seattle, Washington, USA; Dos de Mayo Hospital, Lima, Peru

OFICINA DE EPIDEMIOLOGÍA

Background

Cervical cancer is an important public health problem in Peru. The 1997 incidence rate in the city of Lima was recorded as 27.3 per 100,000. In the city of Trujillo, the rate was as high as 53.5 per 100,000, which was second highest in all of Latin America.

The most common malignant neoplasm in Peru is cervical cancer. According to the National Institute of Neoplastic Diseases (INEN), 29.1% of all malignant neoplasms in women from 1985 to 1997 were due to cervical cancer. The Anti-Cancer League in Peru has found that 80% to 86% of women examined between 1953 and 1994 with cervical neoplasms were diagnosed at an advanced stage. Mortality data is much more difficult to measure; there is still no national cancer registry in Peru where under-registration of deaths has been reported at 52.9%.

Objective

To find a correlation between the level of knowledge of cervical cancer and pap screening with the fear, stress or shame related to the Papanicolaou procedure in women from a low socioeconomic status community in Lima, Peru.

Materials and Methods

A community based, cross sectional prospective study was carried out between July and August 2001 in Motupe, a marginalized community of Lima, Peru. We included women between the ages of 18 to 50 years and excluded only those with problems speaking Spanish or a mental disability. Selection was a simple random sample of all households within the community of Motupe.

Two female interviewers (the co-principal investigators) from the University of Washington received cultural awareness training before conducting the interviews. In addition, two *promotoras*, or lay health educators, from the Motupe community were hired to support the interviewers and to serve as principal contacts between the interviewers and the participants.

The study was introduced as a questionnaire about women's health including the Papanicolou test and cervical cancer. Each participant was read a disclosure statement, and verbal consent was provided a second time, immediately preceding the interview.

A 45 minute standardized interview was used. It contained questions about demographic characteristics, sexual and reproductive history, history of pap screening, knowledge of pap smear and cervical cancer (12 questions), and fear, stress or shame associated with pap screening (6 questions). Participants were interviewed at home or at the primary health center of the community, according to the preference of the participant.

Data were analyzed using SPSS 10. Bivariate analysis was carried out using Chi square tests. Odds ratios (OR) and 95% confidence intervals (95% CI) were estimated and used to evaluate the association between the level of knowledge about cervical cancer (and other independent variables) and the presence of fear, stress or shame related to the pap screening. To control for confounders, multivariate analysis using logistic regression models were estimated where the dependent variable was the presence or absence of stress, fear and shame associated with the pap screening and the independent variables were all those associated (or marginally associated) variables identified during bivariate analyses.

Table 1. Variables associated to fear, stress or shame with the Pap procedure in all participants (having had or not a previous pap screening)*

CHARACTERISTICS	High fear, stress or shame (n= 57)		Low or no fear, stress or shame (n=240)		Univariate analysis	Multivariate Analysis***
	N	%	N	%	OR(95%IC)	OR(95%IC)
Age						
18 – 19	7	12.3	6	2.5	5.5 (1.8, 16.9)	5.6 (1.3,24.8)
20 – 50	50	87.7	234	97.5	Reference	
Average ± SE **	31.5 ± 9.1		31.3 ± 7.7			
Years Lived in Lima						
5 years or more	16	28.1	31	12.9	2.6 (1.3, 5.2)	1.5 (.7,3.2)
Less than 5 years	41	71.9	209	87.1	Reference	
Average ± SE **	14.3 ± 11.1		16.9 ± 9.7			
Educational Attainment						
Complete primary or less	26	45.6	81	33.8	1.6 (0.9, 2.9)	1.4 (0.7,2.8)
Any post-primary education	31	54.4	159	66.3	Reference	
Marital Status						
Single	11	19.3	30	12.5	1.7 (0.8, 3.6)	.4 (0.1, 1.6)
Other	46	80.7	210	87.5	Reference	
Sexual Partners in Past Year						
0	9	15.8	16	6.7	3.0 (1.1, 7.9)	2.1 (.6, 8.0)
1	39	68.4	202	84.2	Reference	
2 or more	9	15.8	22	9.2	2.1 (0.8, 5.3)	1.7 (0.7, 4.3)
Pregnancies						
None	8	14.0	12	5.0	3.1 (1.2, 8.0)	2.6 (0.6,12.2)
One or more	49	86.0	228	95.0	Reference	
Number of Paps in Lifetime						
None	20	35.1	37	15.4	4.7 (1.9, 11.5)	2.0 (0.7, 5.0)
One	25	43.9	98	40.8	2.2 (1.2, 5.0)	1.4 (0.6, 3.3)
Two or more	12	21.1	105	43.8	Reference	
Knowledge About the Pap						
Low or Fair	41	71.9	91	37.9	4.1(2.2, 7.9)	3.2(1.6, 6.4)
High	16	28.1	149	62.1	Reference	

* Excludes three women who answered "I don't know."; ** Using the t-test; *** Multivariate analysis was done controlling for the following variables: age (adolescent or not), years lived within Lima (5 years or less, more than 5 years), educational attainment (primary or less, versus complete primary or more), having had sex (yes or no), number of sexual partners in the last year (0, 1, 2 or more), number of pregnancies (none, one or more), having had an abortion (yes or no), number of Paps in lifetime (none, one, two or more) and level of knowledge about the Pap (low or fair versus high).

An interview being conducted at a participant's home.

Two investigators in the research setting, Motupe community.

Results

A total of 300 women were interviewed. The average age was 31 years, of which 15% were adolescents. A majority, 82%, had been born in other provinces of the country besides Lima, mostly in the mid-sierra region and 56.3% reported living in Lima for 15 years or more. The mean number of years studied was 7.9, 36.3% only completed primary school and 4% had no schooling. Fifty-seven percent reported their marital status as "living as married" and 58.7% were housewives.

Almost 70% initiated sexual activity by the age of 19 or younger, with 7% beginning at age 15. Only 10% reported having had more than one sexual partner during the last year. Almost half, 48.3%, had three or more pregnancies, where 87% of those having had a pregnancy also reported having some prenatal care, and 20% chose to have their last delivery in their home. Nearly 40% of the women do not use any type of contraceptive. In those that were using, hormonal contraceptives were most commonly used (28.3%).

The mean number of times a woman has ever had a Pap was 2.6 times. Twenty percent had their last Pap over two years ago and an additional 20% has never had a Pap in their lifetime. In the latter, not knowing what the Pap test was (23%), was the main reason for never having one. In women that were overdue for the Pap, not considering it to be important (27%), was the main reason for not having a Pap more recently.

Table 1 shows the factors associated to the presence of fear, stress or shame with the Pap test. The dependant variable was the presence of fear/stress in women that have previously had a Pap test or of fear/shame in women who have never had a Pap test. The OR and 95% CI levels are shown for both the univariate and multivariate analysis. It is noteworthy that the lack of Pap and cervical cancer knowledge is statistically and independently associated with the presence of fear, stress, or shame (OR: 3.2, 95% CI: 1.6, 6.4) of taking the Pap.

Discussion

Our findings suggest that the lack of knowledge about the Papanicolaou test and cervical cancer leads to under-utilization of screening for cervical cancer due to fear, stress or shame associated with this procedure. Since most women cited health establishments as the prime source for information about the Pap test and cervical cancer, and there is still a large proportion of women that do not have a high level of knowledge about this topic, the health establishments are either not effective at teaching the women about the Pap and cervical cancer, or they are not effective in reaching the population most at risk.

A good area of intervention would be to inform women about the Pap and cervical cancer during their prenatal care or family planning visits. If women can be effectively educated about the disease without causing them to feel afraid or stressed, they will be more likely to seek preventative care. Health care establishments can play a role in decreasing the fear of the Pap test and cervical cancer and increasing the rates of screening and the probability of early diagnosis of the disease.

Based on our findings, we suggest a better use of the existing network of *promotoras* to implement a community-based intervention program that targets women exhibiting the lowest utilization patterns and who are in lower educational and socioeconomic strata. This program would accentuate prevention and treatment of cervical cancer. *Promotoras* would be key personnel for such programs because of their accessibility, particularly to those who under-utilize women's health services.

Analysis of a Newspaper's Coverage of the HIV/AIDS Epidemic in Zimbabwe

Anuli Uzoaru, Godfrey Woelk, Ph.D.

University of Washington, Multidisciplinary International Research Training Program, Seattle WA and University of Zimbabwe, Harare, Zimbabwe

Objective

This project sought to examine the coverage of the HIV/AIDS epidemic in Zimbabwe by the *Herald,* a leading Zimbabwean newspaper. HIV/AIDS related articles published between 1997 and 2000 were reviewed for their headlines, content, themes, and style.

Introduction

Zimbabwe is a Southern African country of about 12 million. By the end of 1999, 1.4 million Zimbabweans- one in four of those between the ages of 15 and 49- were believed to be living with HIV/AIDS. The media is an important tool for disseminating information. Prior studies examining the role of media in Zimbabwe found that newspapers were cited most frequently as the major source of information. The impact of HIV/AIDS is further made worse by the stigma surrounding the disease. Thus it is important to examine media reporting of HIV/AIDS in Zimbabwe.

Methods

We used information from a newspaper library at the Southern Africa AIDS Information Service (SAfAIDS). From this collection, we selected the *Herald* newspaper because it is a long-running and prominent newspaper in Zimbabwe. There was a random selection process in which the first five *Herald* articles of each month for the years 1997-2000 were selected for this study. Sixty articles per year and two hundred total were analyzed for their content, style, and terminology.

Content: Content analysis was used in which there was codification and categorization of particular phrases and articles. Frequency of results were recorded. Twelve categories, obtained from previous studies on HIV/AIDS coverage, were designated to describe the themes of articles. Categories were those listed in Table 1.

Article Style: Articles were classified as: 1) an article; 2) editorial; 3) a letter to the editor; 4) an opinion column; 5) a cartoon; or 6) a brief

Language: The language within article headlines was examined for appropriateness. Within the articles, types of words used to reference HIV/AIDS were analyzed. Newspaper headlines were examined to see if they fell into one or more of 8 narrowly constructed categories: 1) women; 1a) adolescent girls; 2) men; 2b) adolescent boys; 3) children; 4) politics; 5) culture/beliefs; 6) church; or 7) other. Articles were also investigated to see if their focus was local or non-local. All results were quantified.
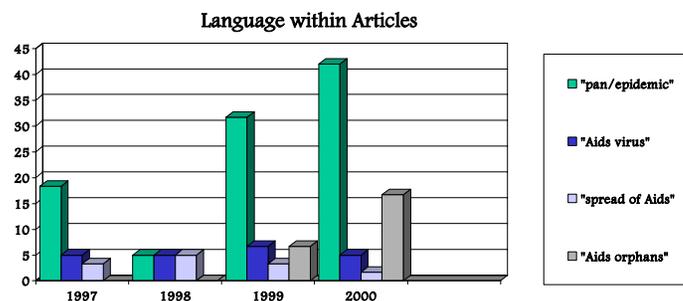
Table 1

Main Theme	1997	1998	1999	2000
Impact of HIV/AIDS	6.7%	23.3%	21.7%	21.0%
Medical research	25.0%	15.0%	11.7%	15.0%
Prevention and awareness	23.3%	25.0%	31.7%	16.7%
Counseling and care	13.3%	10.0%	18.3%	0.0%
Government policy/politics or economics	8.3%	6.7%	20.0%	28.3%
Women and HIV/AIDS	3.3%	1.7%	5.0%	5.0%
Alternative care	5.0%	5.0%	0.0%	1.7%
Children, orphans, and effects of HIV/AIDS	3.3%	1.7%	10.0%	10.0%
Personal portrayals	1.7%	8.3%	1.7%	3.3%
Legal disputes involving HIV/AIDS	10.0%	6.7%	1.7%	5.0%
Human Rights	11.7%	6.7%	8.3%	5.0%
Other	13.3%	10.0%	5.0%	5.0%
	commercial sex work	HIV/AIDS and the church	blood donation	blood donation
	Breastfeeding STDs Circumcision Contraception TB Impact support for PLWHAs Doctors and HIV/AIDS	gender violence TB Impact HIV/AIDS programs sexual behavior MTCT	Men and HIV/AIDS Elderly	Men and HIV/AIDS

Table 2

Language within Headline	1997	1998	1999	2000
"Aids"	43.00%	71.70%	71.70%	66.70%
"HIV"	21.70%	16.70%	18.30%	18.30%
"PLWHV"/"PLWA"/"PLWHVA"	1.70%	0.00%	0.00%	3.30%
"victim"	0.00%	3.30%	6.70%	0.00%
"Aids patient"	5.00%	3.30%	5.00%	0.00%
"Aids orphan"	0.00%	1.70%	6.70%	0.00%
"pandemic or epidemic"	1.70%	3.30%	0.00%	6.70%
"AIDS"	1.70%	1.70%	6.70%	1.70%

Figure 1

Language within Articles

Results

Messages of HIV/AIDS impact, medical research, prevention, and awareness, and politics and economics were among the common themes (Table1). Articles with themes of personal portrayal, alternative care, and women with HIV/AIDS were often minimal. The issue of children, orphans, and the impact of HIV/AIDS increased over the years while themes of human rights showed a decline. Articles were the principal type of newspaper clipping.

When examining headline language (Table 2), AIDS was more often mentioned than HIV. Terms such as "AIDS orphans", "victim" and "AIDS patient" were not common within headlines. Within articles, terms such as "sufferer" and "victim" were present, but not common (Figure 1). What author, Susan Sontag has catalogued as "war terminology" was present in articles, evidenced by the use of such words as "fight" and "combat". Inaccuracies such as "Aids test", "spread of Aids", and "Aids virus" were present. Terms like "Aids orphans", "scourge", "toll", and "havoc" were present, but in small quantities. Most headline references did not fall into the prescribed categories but instead fell into the "other" category. The majority of Herald articles in the study were of local focus, being that they focused on Zimbabwe.

Discussion

Overall, the results of this study support previous research findings. Articles were the predominant style of article clippings. While themes of prevention and awareness were common, there was a need for more focus on personalized stories and stories of living and coping with HIV and AIDS. At times, there existed the use of inappropriate terms or sensationalist language. Certain study limitations need to be taken into account. First, only *Herald* articles were examined, hence results cannot be generalized to all Zimbabwean newspapers. Also, in the selection process of newspaper clippings mentioning HIV/AIDS, there is the possibility of selection bias and recording errors.

Conclusions/Recommendations

The coverage of HIV/AIDS by Zimbabwe's *Herald* is laudable as it shows ample discussion about this topic during the study period (1997-2000). At the same time, there were clear gaps in coverage, ranging from a paucity of counseling and care stories to the use of misleading or inaccurate terminology. Altogether, studies such as these that monitor press articles can be very useful in gauging the extent and nature of HIV/AIDS coverage by the media. They can also provide insight for future studies as well as aid in the formulation of guidelines for mass media organizations.

Assessment of Reproductive Health Among Women Ages 15-49 Years in Pedro Moncayo County, Ecuador:

A Multidisciplinary Approach

Ivy Kuofie, Jose Suarez, MD, PhD, Patricio Romero

Multidisciplinary International Research Training Program, University of Washington, and Fundacion Centro de Investigaciones de Medio Ambiente y Salud del Ecuador

Objective

The purpose of this study was to determine the state of reproductive health among women of reproductive age between 15 and 49 years in Pedro Moncayo County(PMC), Ecuador and communicate this information to the residents of the county.

Introduction

PMC include the the parishes of Malchingui, Tocachi, La Esperanza, Tabacundo and Tupigachi located in the province of Pinchincha, Ecuador with 51% of the population being women. In 1994, the International Conference on Population Development (ICPD) recognized that "although women have a right to control their own reproduction, numerous social barriers" such as family planning services, poverty, a lack of education, and the low social status of women prevent them from taking charge."

Materials and Methods

This study was part of a larger population based survey designed to study demographic patterns pertaining to residents of PMC. After randomly selecting 500 household within the county, we invited selected residents to participate in a 30-60 minute interview. Using a standardized questionnaire, participants were asked to provide information on monthly income, civil status, educational level, contraception use and Pap smear exams. We used SPSS 7.5 software to perform all statistical analyses.

Results

• Approximately 24% of the population surveyed were women of reproductive age. Overall, 29.8% of reproductive age women reported using contraceptives, which is much lower than the reported use of 65.8% for Ecuador as a whole.

• Marital status was an important determinant of contraceptive use among female residents of PMC.
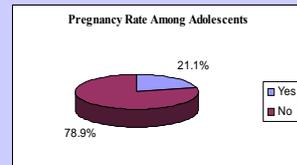
• The three most frequently used forms of contraception among teen-aged women in PMC are oral contraceptives, intrauterine devises and tubal ligation.

Contraceptive Use Among Women 40-49 years of Age

28.0%

72.0%

☐ No
☐ Yes
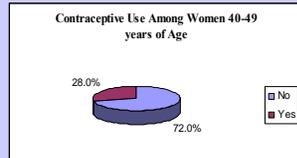
•Only 28% of the women use contraceptives.

•Women in this group tend to have high risk pregnancies.

•Children born to women over 40 have higher rates of disability than those born to women in other age groups.

Gynecological (Pap) Exams Among 40-49 years of age

21.3%

78.7%

☐ No
☐ Yes
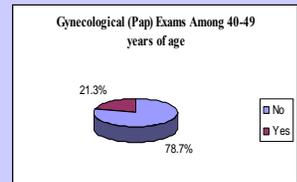
•Women in this age group are at the most risk for cervical cancer.

•Yet, only 21.3% of the women surveyed had received a pap exam this year.

Pregnancy Rate Among Adolescents

21.1%

78.9%

☐ Yes
☐ No

•Rate of pregnancy among adolescents in this county is observed at 21.1%

Types of Contraceptives Used by Adolescents

I.U.D. 40%

Pills 40%

Tubal Ligation 20%

☐ Pills
☐ Tubal Ligation
☐ I.U.D.
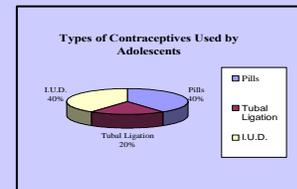
•60% of teenagers who use birth control use IUD or sterilization methods.

•ICPD has deemed these methods inappropriate for adolescents.

• The teen pregnancy was 21.1% for residents of PMC, and this rate was comparable to the Ecuadorian national average rate of 20.3%.

• Approximately 79% of women participating in this survey reported not having received a Pap smear exam within the last year. Importantly women in stable relationships (married or living with a partner) were more than twice as likely to have received an annual Pap smear exam as compared with women not in stable relationships.

Significant Findings

Income
Income is not an important variable in determining reproductive health among this population:

Pap Exam
• 16.7% of women with an income over $250 had a pap exam compared to 19.7% of women with no income.

Contraceptive Use
• 50% of women with an income over $250 use contraceptives compared to 24.9% of women with no income.

Education
Education is not an important factor in determining reproductive health status in Pedro Moncayo County:

Pap Exam
• 62.3% of the women with only first grade education compared to only 23.8% of women with second grade education had received a pap exam this year.

Contraceptive Use
• 56.9% with first grade education compared to 25.1% with second grade level education use contraceptive.

Marital Status
There is a positive correlation between women that had received a pap exam and marital status. There is a direct relationship between contraceptive use and marital status.

Pap Exam
• 32% of union women, 19.4% of disunion women and 7.7% of single women had received a pap exam this year.

Contraceptive Use
• 46.8% of women in a union, 12.9% of disunion, and 4.1% of single women use contraceptives.

Discussion

• As 24% of the total population surveyed were within childbearing age, knowledge concerning this group is very pertinent for Pedro Moncayo so that they may begin to address any problems that may be present.

• Marital status is the strongest indicator for determining the reproductive health of child bearing age women. Women who are married or in a joint couple situation tend to have the highest percentages of contraceptive use and pap exams.

• Education level was not an important indicator of reproductive health.

•Women with primary education had a higher rate of contraceptive use and more of them had a Pap exam within the last year than women who completed secondary level education.

•Additional studies are needed to identify social, political, cultural and economic factors that contribute to the under-utilization of reproductive health services in Pedro Moncayo County.

Recommendations

Health education programs should be implemented to teach young women about appropriate forms of contraceptives; family planning; and the importance of having pap exams. Future studies should include a larger sample, comparisons between individual parishes, number of children and age groups should be compared to the variables mentioned.

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

A.Moore and J.Suarez

University of Washington, Seattle, Washington, USA; and Fundación CIMAS (Centro de Investigación de Medio Ambiente y Salud), Quito, Ecuador

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 about an hour by bus 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, I utilized the technique of focus group to add a qualitative aspect to the traditional quantitative and statistical method. Three focus groups were held in the dining room of *el Jardin* (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. At the start of each focus group, I introduced myself and the research team participants as well as explained the concept of the focus group technique. The introduction 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: Sample Focus Group Question and Responses

Question:
What do you think a woman should have in her life to be content? Happy?

Summary of Responses*:*
Elder women (40+)
- • Health
- • Work
- • Love and affection of children
- Money to buy food

Adult women (25-40)
- • Work
- • Love and Sharing
- • Study and find a profession
- • Have children and husband
- • Self Respect
- • Respect from spouse/partner

Young women (14-17)
- • Health
- • Work
- • Love and understanding of family
- • Understanding of friends
- • Good economic situation

Discussion

To establish a point of comparison for level of personal satisfaction, I asked each group of women in Tocachi to outline key components a woman would need to be content. The responses varied by age group, with the most similarity arising between the elder and young women. Both of these groups highlighted health, work, love of family members and a stable economic situation. The adult women however, did not focus as intently in these more fundamental needs, but rather highlighted the need for education, self- respect and finally the realization of the women through other familial roles. I attribute part of this difference in outlook to the educational level of the adult women group. Two-thirds of the group had formal university training and professional titles. As a result, their viewpoints would be more likely to include educational objectives as a part of the concept of contentment. After establishing these ideas within each group, I then asked them to use these components to evaluate their's and their peer's current situation in Tocachi.

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. Additionally, geographic location influences how people experience any state level economic condition, and this would not change in times of crisis. Much of what the women in each group stated with respect to their economic situation in Tocachi results from the crisis that the entire country is experiencing. 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. All this considered, variations were still found in other areas. For the elder women, the level of contentment seemed to vary with the amount of visits from children who have moved away from Tocachi. Furthermore, the concept of *soledad* (solitude) appeared several times in the conversation. The greater the amount of *soledad*, the less likely the elder women were to feel content and ultimately personally satisfied. Although the women acknowledge the reality of *soledad* with older age, it seems to still deeply effect them. For adult women, personal satisfaction varied with type of relationship one had with her partner as well as with educational level (or her ability to change that level).

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*. For the elder women, *pena* comes mostly from lack of something, whether it be money, work or visits from their children. This group usually copes with their sadness by crying or looking for outside distractions. For example, one participant stated that she would spend more time taking care of her *animalitos* (little animals) in times of sadness. Solitude seems not only to be a source for lack of contentment, but also a source of deep sadness in the elder women. While the sources are not necessarily the same, the coping methods are similar for both young and adult women. The young women discuss their feelings sadness with friends or their mothers and try to find distractions to get their mind of off the source of the pain. Misunderstanding or the lack of effort to understand between family members and friends seems to be the source of sadness in this group. Finally adult women named financial situations as well as familial and marital disagreements as sources of *pena*. Walking, reading, screaming and crying are all methods employed by this group to deal with their feelings of sadness or *pena*.

THE DIETARY INTAKE PATTERN AND NUTRITIONAL STATUS OF PREGNANT WOMEN IN HARARE: AN ASSESSMENT OF THE RELATION WITH LOW BIRTH WEIGHTS

Arlene N. Davis, Godfrey B. Woelk, PhD, Michelle Williams, ScD, Sarah Mudzamiri

University of Washington, Multidisciplinary International Research Training Program, University of Zimbabwe School of Medicine

BACKGROUND

• The high prevalence of low birth weight (LBW) infants (less than 2.5 kg) continues to be an important public health concern in many developing countries like Zimbabwe.

• Low birth weight infants experience a greater risk for infections, mental retardation and death than normal weight infants. In 1999, one out of every ten neonates was low birth weight in Harare, Zimbabwe.

• Numerous studies have indicated that antepartum malnutrition is an important risk factor f or LBW babies. In Zimbabwe, 5% of mothers of children under five are malnourished but little nutritional assessment has been done during their pregnancies.

OBJECTIVES

We sought to 1) evaluate maternal antepartum dietary intake patterns of pregnant women in Harare; 2) determine the risk of delivering a low birth weight infant in relation to antepartum dietary intake.

METHODS

▪ Participants were recruited from among women delivering at Parirenyatwa Hospital, during the period of April 1998 through March 1999. A total of 500 women were included in this study.

▪ During the labor and delivery hospital admission period, women provided consent to participate in the research. A research nurse interviewed participants and collected information concerning maternal medical and reproductive history.

▪ A modified food frequency questionnaire was used to elicit information pertaining to maternal regular dietary intake patterns during pregnancy. Women reported the frequency and serving size of individual food items consumed each day during the index pregnancy.

▪ Nutrient values were calculated using food composition tables for Zimbabwe and the Southern African Region. For this study, we focused on maternal daily consumption of total energy (kilocalories or kcal) and total protein intake(g).

RESULTS

Demographics

• The study population is primarily Black African young women (mean age=23) from low socioeconomic backgrounds.

Table 1: Risk of Low Birth Weight in Relation to Protein and Total Caloric Intake, Harare, Zimbabwe.

Covariate	LBW (N=70)		Non-LBW (N=428)		Odds Ratio
Protein	n	%	n	%	(95% CI)
≥RDA of 55g/day	59	84.3	391	91.4	1.00-
<RDA of 55g/day	11	15.7	37	8.6	1.97(0.89-4.28)
Energy					
≥RDA of 2500 kcal/day	51	72.9	329	76.9	1.00-
<RDA of 2500 kcal/day	19	27.1	99	23.1	1.24(0.67-2.27)

*LBW=Low birth weight (<2.5kg)

Figure 1: Food items most frequently consumed. Given as the total number to consume each item. Percentage given in parentheses.

	Less than once per week or never	Once per week	Most Days (2-6 times/wk.)	Daily (1-3 times)	More than three times per day
Staple Foods					
Sadza	8 (1.6)	1 (0.2)	12 (2.4)	166 (33.2)	313 (62.6)
White bread	148 (29.6)	1 (0.2)	10 (2.0)	157 (31.4)	184 (36.8)
Porridge	299 (59.8)	3 (0.6)	19 (3.8)	177 (35.4)	2 (0.4)
Meats and Poultry					
Beef Stew	130 (26.0)	4 (0.8)	81 (16.2)	209 (41.8)	76 (15.2)
Chicken	386 (77.2)	8 (1.6)	80 (16.0)	20 (4.0)	6 (1.2)
Dairy Foods					
Butter	180 (36.0)	2 (0.4)	60 (12.0)	242 (48.4)	16 (3.2)
Cow's milk	188 (37.6)	13 (2.6)	177 (35.4)	107 (21.4)	15 (3.0)
Vegetables					
Green Rape	24 (4.8)	12 (2.4)	197 (39.4)	262 (52.4)	5 (1.0)
Tomatoes	34 (6.8)	0	10 (3.2)	293 (58.6)	157 (31.4)
Onions	183 (36.6)	1 (0.2)	84 (16.8)	227 (45.4)	5 (1.0)
Fruits					
Bananas	295 (59.0)	3 (0.6)	74 (14.8)	107 (21.4)	21 (4.2)
Mangos	374 (74.8)	1 (0.2)	33 (6.6)	78 (15.6)	14 (2.8)
Other foods					
Oil	28 (5.6)	0	11 (2.2)	193 (38.6)	268 (53.6)
Sugar	57 (11.4)	0	10 (2.0)	153 (30.6)	280 (56.0)
Tea	99 (19.8)	2 (0.4)	10 (2.0)	265 (53.0)	124 (24.8)
Peanut butter	273 (54.6)	6 (1.2)	43 (10.2)	45 (17.6)	2 (0.4)

Children in Harare, Zimbabwe

Harare, Zimbabwe

Prevalence of Low Birth Weight

• Approximately 14 of neonates (70/500) were low birth weight (LBW) in this population.

Dietary Intake

• Most women reported consuming 3 meals and snacks daily. *Sadza* (stiff white maize) is the most frequently consumed food. Figure 1 illustrates the most frequently consumed foods across the major food groups.

Daily Energy and Protein Intake

• The mean daily energy intake was 3225 kcal. Approximately 24% (N=118) of women did not meet the World Health Organization (WHO) recommendation daily allowance (RDA) of 2500 kcal for energy intake for pregnant women in developing countries.

• The mean daily protein intake was 115g, which was more than twice the WHO RDA of 55g. Only 9.6% (N=48) did not meet the RDA for total protein. Table 2 summarizes these finding.

Antepartum diet and LBW deliveries

• As seen in **Table 1**, LBW infants were more likely to have mothers who consumed diets with lower than the R.D.A. for energy during their pregnancies than normal weight infants (27.1% vs. 23.1%).

▪ Inadequate energy consumption during pregnancy was associated with an almost doubling in risk of LBW (odds ratio=1.97, 95% confidence interval, 0.89-4.28, p=0.063).

• Similar results are seen for protein intake. LBW infants were more likely to have mothers with intakes lower than the RDA for proteins during their pregnancies than normal weight infants (15.7% vs. 11.2%).

▪ In this population, we noted that inadequate protein intake was associated with a slight increased risk of delivering an LBW infant (odds ratio = 1.24, 95% confidence interval, 0.67-2.27; p=0.464).

CONCLUSION

A large number of women did not meet the WHO RDA for energy and protein consumption during pregnancies. These preliminary data suggest that protein and caloric intake deficiencies are prevalent among poor urban women in Zimbabwe; and that these deficiencies may be associated with adverse pregnancy outcomes, such as delivery of LBW infants.

LIMITATIONS AND RECOMMENDATIONS

• The dietary intake data was subjected to recall bias of certain foods and over/under estimation of the food portions.

• Future analysis might use multiple 24 hours food recall during prenatal visits to validate the food frequency questionnaire used in our study. The use of representative food models may also help reduce inaccurate reporting of food portions.

A Comparative Study of Growth and Nutritional Status Among Children Who Work and Children Who Do Not Work, Pedro Moncayo County, Ecuador

Lorena P. Chavez, Jose Suarez, MD, PhD, Alfredo Analuisa

Multidisciplinary International Research Training Program, University of Washington, and Fundacion Cimas del Ecuador

Introduction

Pedro Moncayo County (PMC), Ecuador is comprised of five parishes: La Esperanza, Malchingui, Tabacundo, Tocachi, and Tupigachi. Together these five parishes have an estimated total population of 26,712 and is also one of the counties with the highest poverty level. The prevalence of extreme poverty in the county is 40.1%. Consequently, the adult population looks to the younger generation to supplement their budget and the 482,459 workers between the ages of 8 and 19 years of age make up 14.2% of the economically active population. In addition to this extra burden on their already limited childhood, the caloric intake is often insufficient to allow for proper growth and development. The purpose of this study is to determine the level to which socioeconomic status, level of education for the head of household, and the amount of time that children work affects their nutritional and growth status.

Materials & Methods

A cross-sectional survey questionnaire was administered to a randomized sample of 473 families in 49 communities and neighborhoods throughout the five parishes of PMC. A pilot test was issued in a neighborhood of La Esperanza parish and the level of comprehension of the questions by the participants, the flow of the questionnaire overall, and the effectiveness of the questions with respect to the desired answers were all assessed. The survey consisted of questions regarding demographics, offer and demand of health services, morbidity and children's growth. To evaluate the nutritional and growth status among children fifteen years of age and younger their age, weight, and height was taken in to consideration for those less than 59 months of age and Body Mass Index (BMI) for those older than 5 years of age and BMI was used as an indicator for children's growth status using the criteria established by the American Institute for Cancer Research. Global, chronic, and acute malnutrition were calculated using -3 SD's from the mean. 1,120 children were included in this analysis of which 737 fell within the age group 5 to 15 years old that we studied. Data on work status for this group was only available for 440 children and correlated with their BMI values. Socioeconomic status and Educational level for the heads of household were determined and correlated with the BMI values for the 1,120 children in their respective households. Statistical analyses were performed using SPSS 10.0 and Epi Info 2000 software.

Results

Prevalence of Below Normal BMI Values (BNBV) and Normal BMI Values (NBV)
Of the children 5-15 years of age (n=737) 63.1% have BNBV. The highest percentage of BNBV (48.9%) manifests itself in the 5-10 years of age group. Males (n=158) make up 25% of children with BNBV and females (n=151) in the same age group make up 32.9% of children with BNBV. The age group with the highest percentage, 43.8%, of NBV is in children 11-15 years of age (n=92). Males (n=41) and females (n=51) in this age group make up 46.1% and 51.5% of all children with NBV, respectively.
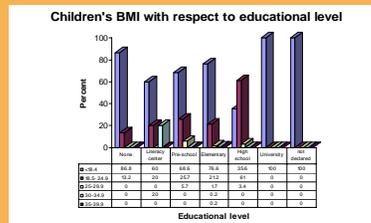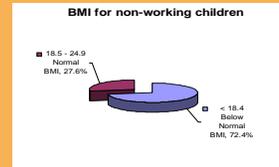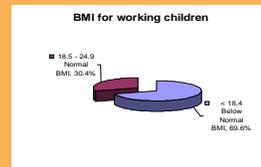
Socioeconomic Status
In PMC, 64.7% (n=725) of the households in which these children live have a low income index, followed by 21.1% (n=263) with a medium income index and 2.2% (n=25) with a high income index. The highest percentage of BNBV, 77.5% (n=158), was found among the population of medium income household index. The group with the highest percentage, 40.0%, of NBV is the high income household group.

Educational Level
Children from homes whose head of household had no educational instruction experienced the highest percent of BNBV. The highest percentage of children with NBV live in homes whose head of household's instruction reached high school level.

Child Labor
As we did not have any children less than five years of age who reported working, only those older than five years of age were considered for analysis. Out of 737 children older than five years of age 440 children had all the information needed for analysis and within this sample , only 71 (9.6%) reported having a job. The average hours per day children worked were 3.7 ± 2.8hrs. The minimum and maximum values for hours per day worked were 1 and 9, respectively. The legal limit of 30 hours of labor per week established in the Work Code was exceeded by 21.0%. Also, 62% of the children that work are younger than 12 years of age.
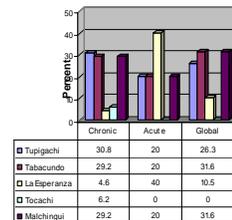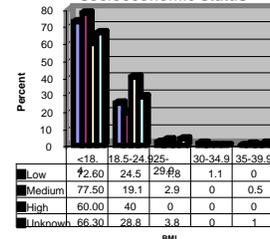
Discussion and Conclusions

Of the 1,120 children surveyed, we found that the majority were malnourished regardless of their employment status. Infants were largely and disproportionately found to be suffering from growth retardation. We determined that the level of education for the head of household and the socioeconomic status of the household have an impact on the children's growth and nutritional status. At this time, we were unable to determine if child labor has an impact on the growth and nutritional status of children. The age at which the majority of children are being introduced into the work field is too early to allow for proper growth and development. However, in this study we found that between the non-working and working conditions, the difference in BNBV is not much. These results could have been affected by the size of our sample and the amount of missing data in the working children condition. Also, many of the children whose status was reported as non-working actually did work but did not get compensated for their labor. This is a very common situation for many of the children in PMC and if the requirements of their chores exceed their caloric intake, this kind of labor could also have an impact on their health.

Recommendations

Our study could have been promoted better so as to ensure the least possible percentage of missing data. This problem could be eliminated by making sure the community/neighborhood presidents thoroughly explain how important it is for all family members to be present at the selected time of interview. Due to such high levels of malnutrition in this area, further studies of the impact of child labor on the health of children need to be done because if their current health status continues, the malnutrition cycle could be perpetuated as these children will soon be the parents of tomorrow's infants. Additionally, the measurement tools for nutrition need to be carefully reviewed and tested before applying them to the target sample to avoid some of the limitations we had on the type of desired analyses. In future studies, the sample size needs to be bigger in order to ascertain better and more representative data of the population especially with regards to child labor.

Limitations

Much of this data could not be collected because the person (s) of interest were not present at the time of interview. The measurement tools available for our study did not allow for a meticulous analysis of the quality of the nutrition of the children. Also, within the BNBV, the range of malnutrition for children 5 to 15 years of age could not be differentiated and this made it difficult to discern between very low BMI values and just below normal BMI values. In the working children sample we had 21.1% (n=17) missing data which due to the small sample could have made a difference in the malnutrition levels.

BMI for working children

- 18.5 - 24.9 Normal BMI, 30.4%
- < 18.4 Below Normal BMI, 69.6%

BMI for non-working children

- 18.5 - 24.9 Normal BMI, 27.6%
- < 18.4 Below Normal BMI, 72.4%

Children's BMI with respect to educational level

	None	Literacy center	Pre-school	Elementary	High school	University	not declared
<18.4	86.8	60	68.6	76.6	356	100	100
18.5-24.9	13.2	20	257	212	61	0	0
25-29.9	0	0	5.7	1.7	3.4	0	0
30-34.9	0	20	0	0.2	0	0	0
35-39.9	0	0	0	0.2	0	0	0

Percentage of malnutrition among children 0-59 months of age by parish

	Chronic	Acute	Global
Tupigachi	30.8	20	26.3
Tabacundo	29.2	20	31.6
La Esperanza	4.6	40	10.5
Tocachi	6.2	0	0
Malchingui	29.2	20	31.6

BMI distribution with respect to socioeconomic status

	<18.	18.5-24.9	25-29.9	30-34.9	35-39.9
Low	72.60	24.5	29.8	1.1	0
Medium	77.50	19.1	2.9	0	0.5
High	60.00	40	0	0	0
Unknown	66.30	28.8	3.8	0	1

AN ASSESSMENT OF THE OFFER AND DEMAND OF HEALTH SERVICES IN PEDRO MONCAYO COUNTY, ECUADOR

Tourette A. Jackson, BS, Fernando Ortega, MD, Jose Suarez, MD, MPH

Multidisciplinary International Research Training Program, University of Washington, Seattle, WA and Fundacion Cimas del Ecuador, Quito, Ecuador
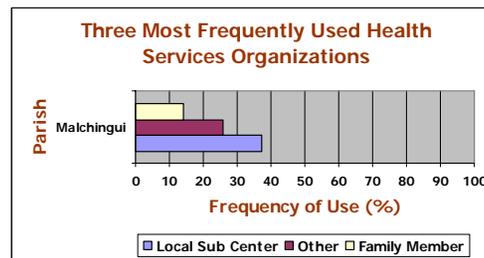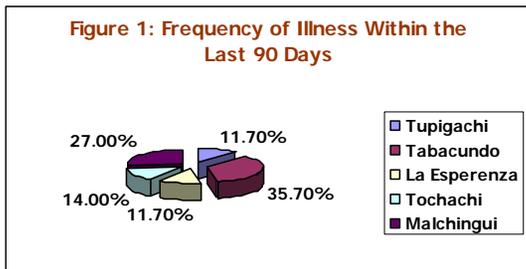
BACKGROUND

Within health systems in developing countries, limited access and poor resources are of significant concern. In 1998, 49% of deaths in Pedro Moncayo County (PMC), Ecuador were attributed to unknown causes, thus highlighting the profound lack of health information needed to identify and track significant determinants of morbidity and mortality among residents of PMC.

OBJECTIVES

The goals of this study were to assess (1) to determine the retrospective morbidity experience of PMC; (2) to determine the extent to which formal and non-formal health systems are utilized in relation to family health; (3) to determine the extent to which formal and non-formal health systems are utilized in relation to the mother-infant dyad.

METHODS

A cross-sectional survey assessed the offer and demand of heath services, morbidity, mortality, and factors related to the growth of children. Retrospective morbidity (based on the last 90 days), type and utilization of of health service organizations (HSO) in relation to family health, the mother-infant dyad and disability were key variables of interest. The survey was administered to 470 families within the rural and urban communities of the parish of Tabacundo between the days of July 15-21, 2001.

RESULTS

Retrospective Morbidity [n=549]

The highest frequency of illness within PMC was found in Tabacundo (35.70%) and Malchingui (27.0%) followed by Tocachi (14.0%). There was no significant difference in the frequency of illness amongst La Esperanza and Tupigachi (11.70%).

Figure 1: Frequency of Illness Within the Last 90 Days

- Tupigachi — 11.70%
- Tabacundo — 35.70%
- La Esperenza — 11.70%
- Tochachi — 14.00%
- Malchingui — 27.00%

Family Health [n=313]

The top three frequencies of health system use was evaluated in each parish. Within four parishes (Tupigachi, Tabacundo, La Esperanza, and Tocachi) the top three frequencies were found within formal health systems. In Malchingui the top three frequencies were found within both formal and non-formal heath systems.

Three Main Frequencies of Health Services Organization Use

Legend: Private HSO Tabacundo, Health Center Tabacundo, Private HSO Cayambe

Top Three Frequencies of Health Services Organization Use

Legend: Private HSO Cayambe, Health Center Tabacundo, Local Sub Center

Three Most Frequently Used Health Services Organizations

Legend: Local Sub Center, Other, Family Member
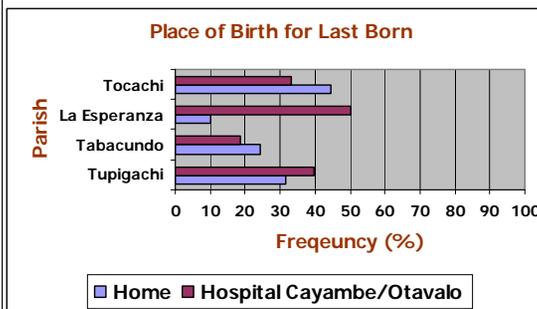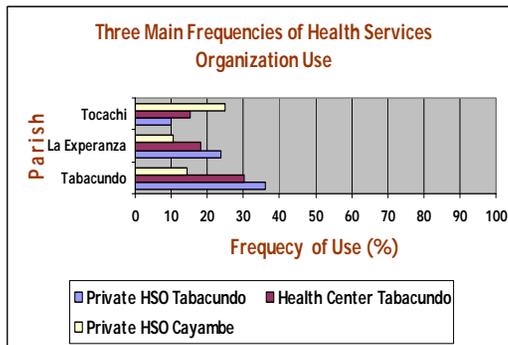
Mother-Infant Dyad Health [N = 571]

Only 22.9% of women sought prenatal care (n=131). The highest frequencies of prenatal care were found in Tocachi (44.0%) and Malchingui (30.8%). In contrast, the highest frequencies of last birth rates at the home were found in Tocahci (44.40%) and Malchingui (39.40%).

Place of Birth for Last Born

Legend: Home, Hospital Cayambe/Otavalo

Place of Birth for Last Born

Legend: Home, Quito

CONCLUSIONS

Most women sought prenatal care within formal Health Service Organizations, but chose to give birth at home with the aid of a mid-wife. This suggests that some problems within the health system may be of culturally competency rather than the offer and demand of health services.
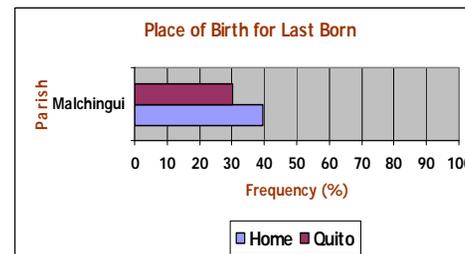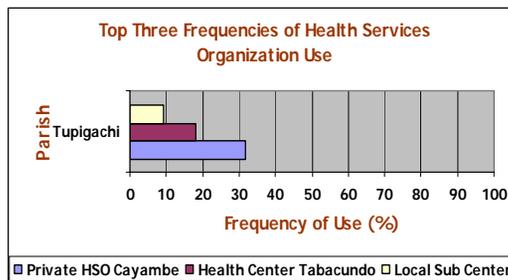
LIMITATIONS

- The sample size was not large enough to generalize the results
- Because of time constraints and geographical location it was not possible to evaluate open-ended questions
- Recall Bias

PUBLC HEALTH IMPLICATIONS

Although medical services were offered at a subsidized rate, even the minimum cost of services ($0.50) maybe prohibitive for some families. Organizations such as Cimas must continue to (1) Inform, educate and empower the community about health issues; In turn the community is able to (2) Diagnose and investigate health problems and health hazards in the community; To aid the government in (3) Development of policies and plans that support individual and community health efforts; To (4) Assure a competent public health and personal health care workforce; In efforts to (5) Link people to needed personal health services and assure the provision of health care when otherwise unavailable ---Five of the Essential Public Health Services.