

**Arizona State University
Southwest Interdisciplinary Research Center**

THE “VIBA” CENTERS AND THE HEALTH OF ITS YOUTH

INVESTIGATIVE REPORT

Presented to:

**Advanced System of High School and Higher Education
Videobachillerato Subsystem (VIBA)**

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Introduction

Introduction

In order to assess the health needs of the student community of the Videobachillerato Subsystem (VIBA as hereon referred to in their Spanish acronym) and Advanced System of High School and Higher Education of the State Government of Guanajuato (SABES as hereon referred to in their Spanish acronym) have convened with Southwest Interdisciplinary Research Center (SIRC), a research center under Arizona State University to develop the project titled "Youth of Guanajuato and their Health."

SABES is a decentralized and autonomous institution apart from the state government. SABES operates as a sector of the Ministry of Education for the state of Guanajuato and was established with the mission of increasing the availability and access of high school education to the adolescent population in rural and suburban areas.

VIBA Subsystems and Interactive Distance Learning University of Guanajuato (UNIDEG) are two educational models implemented by SABES to complement the middle and high school levels of educational needs. In 2007, the VIBA Subsystem had 252 schools, which provided high school level education to a population of over 25 thousand students. In the period 2006-2007 VIBA Subsystems had schools in 38 of the 45 municipalities of the state. 86 percent of these schools were located in rural communities.

In 2005, the state of Guanajuato had a population of 4,893,812¹. The adolescent population (15-19 years) accounted for 10.3% of the total population of the state¹. According to data of the Second Census of Population and Housing 2005, thirty-six

percent of the population aged 16 to 19 years in the state of Guanajuato attended school¹. According to INEGI, the percentage of attendance in the state was below the national average (47.8%) and states like Michoacan (38.5%), Zacatecas (39.3%), and Mexico City (63.5%).

One of the objectives of this report is to present an epidemiological profile of the student population of the VIBA centers. This study aims to follow a theoretical model of bio-psycho-social ecological resilience which recognizes the effect of the environment as a fundamental factor in the lives of young people, and a factor affecting their possibilities for academic success². The bio-psycho-social ecological model seeks to complement the socio-economic models, which have documented a strong association between the material conditions of life of people and their health status. These latest models by themselves cannot explain why marginalized populations are able to maintain high levels of physical and mental health despite their precarious living conditions³. The psychosocial stress model is another theoretical framework that links social context factors such as the migration history of individuals, family separation and social isolation⁴. This theory has helped explain the relationship between stress and culture change and the effects of globalization and other phenomena associated with cross-border relations.

Some of the research questions that guided the development of this study from an ecological perspective and context are: 1) What are the pressures that young people receive from their social context (such as community, family, media, etc.), 2) How do they respond to these pressures and how do they adjust to them? 3) What are the protective factors or strengths that young people have to counteract possible negative influences of the environment which allow them to stay healthy? Being able to identify the cultural processes that protect young people from situations that can damage their health will lead to future development of interventions that strengthen these processes and reduce risk factors for physical and mental health among adolescents.

This being the first institutional collaboration between SABES and SIRC is the start of a

good foundation for future research and implementation of services that contribute to the physical and intellectual development of students. Collaboration encourages the participating institutions to plan and develop educational programs and/or professional exchanges to help strengthen and allow for the growth of this project.

Research Design

Research Design

The research design consisted of a cross-sectional study, with a sample population of 702 students enrolled in eight of the VIBA Subsystem centers during the school year of January-June 2007. A structured questionnaire was designed to collect data which evaluated a group of sociodemographic indicators of risk behaviors to health, immigration and other issues. These indicators were organized in 14 subject areas.

Sample Design

The sample size of this study was estimated to detect an odds ratio of 2.0 for a 15% prevalence of multiple dependent variables. Taking this and budget constraints into account, the initial estimate and ideal sample size consisted of 780 individuals. The initial calculation was computed through the *Computer Programs for Epidemiologic Analyses* version 1.5b⁵.

For the selection of the sample used in the study, the official enrollment lists of the participating schools near VIBA centers along with the number of students enrolled in the semester from January to June 2007 were taken into consideration. During said semester there were 252 VIBA centers that estimated more than twenty-five thousand students enrolled for the school year. For this study, 8 centers were randomly selected from a list 137 eligible VIBA centers located within a radius of 100 km from the City of Leon (map). The centers were then selected from the 20 located in the 38 eligible

municipalities that had access to a VIBA center (Table 1). Students enrolled in the 8 selected schools formed the unit of observation (Table 2).

Table 1.

The number of VIBA centers located within a 100km radius from the City of León.

Municipal	# of VIBA centers ¹			Total
	< 50 students	50-150 students	>150 students	
León	0	14	11	25
Guanajuato	0	6	5	11
Purísima del Rincón	0	4	0	4
Irapuato	0	8	5	13
Salamanca	2	4	4	10
Pénjamo ²	2	5	0	7
San Francisco del Rincón	2	2	1	5
San Miguel de Allende ³	0	4	1	5
Silao ⁴	N/A	N/A	N/A	8
Valle de Santiago ⁵	0	2	0	2
Dolores Hidalgo	0	11	1	12
San Felipe	2	9	1	12
Juventino Rosas ⁶	0	1	1	2
San Diego de la Unión	3	2	0	5
Romita ⁷	N/A	N/A	N/A	4
Comonfort ⁸	0	2	0	2
Abasolo	0	4	0	4
Ciudad Manuel Doblado	1	2	0	3
Cuerámaro	0	1	0	1
Ocampo	1	1	0	2
Total	13	82	31	137

¹ Four of the VIBA centers were excluded because they were located in Centers of Social Readaptation.

² Includes San Antonio de Aceves, Tierras negras, Cabecera Municipal, Corralero de Hidalgo, San Gabriel Purísima de Ramírez y Capilla de Márquez.

³ Includes Agustín González, Atotonilco, Cabecera Municipal, Los López y Los Rodríguez

⁴ Information about student numbers not available.

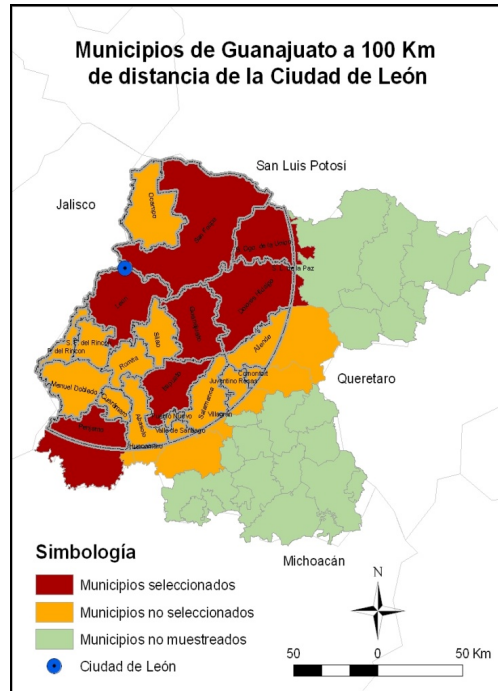
⁵ Includes Noria de Mosqueda y San José Paranguero

⁶ Includes Cabecera Municipal y Rincón de Centeno.

⁷ Information about student numbers not available.

⁸ Includes Pocitos de Corrales y La Orduña

Municipals in Guanajuato located within 100Km radius from the City of Leon



Key

- **Red covered areas refer to the selected municipals in study.**
- **Yellow covered areas refer to municipals not selected for study**
- **Green covered areas are not shown.**
- **Blue Dot refers to the location of the City of Leon.**

Table 2.

Selected centers and enrolled population during the school year of January-June 2007.

Region	Zone	Municipal	Center	Enrolled Population
1	1	San Felipe	Los Barcos	77
1	1	San Felipe	Santa Rosa	73
1	2	Dolores Hidalgo	Tequisquiapan	96
		San Diego de la		73
1	3	Unión	Pozo Ademado	
3	7	León	El Sauz seco	52
4	10	Guanajuato	Valenciana	192
6	17	Irapuato	Valencianita	86
6	19	Pénjamo	Corralejo de Hidalgo	93
Total				742

Piloting of Instrument and Staff Training

Nine psychologists of the SABES Department of Educational Psychology participated in the training. This stage was to familiarize staff in the management of the following: a) identify the project objectives, b) ethics in health research; c) assessment and management questionnaire, and d) resolution of possible problems that may arise during data collection. During training a group dynamic was developed involving the participating staff with the aim of identifying the health problems of VIBA students as opinionated by the selected psychologists from the selected sample VIBA centers.

Box 1 represents the health problems that the educational psychology department staff identified as priority in each center. As shown in the picture, the shading is intended to emphasize those topics that were identified as critical by the psychologists involved. This does not mean the rest of the items were not evaluated with similar margins. Both the group dynamics and the exercises that were carried out by the psychologists to familiarize themselves with the questionnaire allowed the assessment of the structure and content. As a result of both activities it was possible to operationalize certain concepts and identify inappropriate terminology as well as to evaluate the relevance of including information related to other topics.

The piloting of the questionnaire was carried out in Martinique VIBA center of the city of León and involved 29 students in second, fourth and sixth semester. Supervision was provided by 2 psychologists and SIRC staff.

Box 1.									
Topics identified as critical by staff of the SABES Psychology Department									
Topics	Los Barcos San Felipe	Santa Rosa San Felipe	Tequisquiapan Dolores Hidalgo	Pozo Ademado San Diego de la Unión	El sauz Seco León	Valenciana Guanajuato	Valencianita Irapuato	Corralejo de Hidalgo	Penjamo
Malnutrition									
Self-esteem									
Reproductive Health (Teen Pregnancy)									
Bullying Harassment between students.									
Alcohol and Tobacco Use									
Illegal drug use within the community.									
Domestic violence between couples.									
Violence in the Community									
Sexual Abuse									
Depression									
Suicide									

Data Collection

The Institutional Review Board at Arizona State University and the VIBA-Department of Educational Psychology approved the research protocol and data collection instrument. After following the criteria as defined by SABES, psychologists responsible for selected schools reviewed the data collection instrument and consented to its application. The data collection took place from February 8th to the 13th in 2007 during regular school

hours. Nine psychologists from the VIBA centers were responsible for data collection. During this stage, students were informed of both the objective of the study, that participation was voluntary and anonymous, and the confidentiality in which the data would be managed. The questionnaire was answered directly by each student after verbal consent to participate. Seven hundred and two students answered the questionnaire for a participation rate of 94.6% (Table 3).

Table 3.

Selected centers and the population enrolled in the VIBA centers during the period of January-June 2007.

Centers	Enrolled Population January-June 2007	Interviewed Population
Los Barcos	77	71
Santa Rosa	73	71
Tequisquiapan	96	91
Pozo Ademado	73	71
El Sauz seco	52	49
Valenciana	192	178
Valencianita	86	82
Corralero de Hidalgo	93	89
Total	742	702

Through the instrument the data collected was on demographic characteristics, expectations of attending college, behaviors related to health, religion, access to medical services and expectations of migration to the United States. Some of the risk behaviors included in the study were those that would contribute to:

- **Unintentional Accidents.** Accompanied a person in a motor vehicle when that person had consumed alcohol and drove the motor vehicle after drinking alcohol;
- **Violence.** Participation in physical fights, injuries due to their involvement in fights, dating violence, forced sex, participation in physical fights at school.

- **Use of Tobacco.** Tobacco use throughout life, daily tobacco use, tobacco use frequency and age of first tobacco consumption.
- **Use of alcohol.** Alcohol use throughout life, daily alcohol consumption, frequency of alcohol use and age of first alcohol consumption
- **Use of Marijuana.** Marijuana use throughout life, daily marijuana use, frequency of marijuana use and age of first marijuana use.
- **Use of other illegal drugs.** Drug use throughout life, including cocaine, inhalants, steroids, heroin, methamphetamine, ecstasy.
- **Teenage pregnancy, knowledge of sexually transmitted diseases including HIV / AIDS.** Sex, age at first sexual intercourse, number of sexual partners, knowledge and use of family planning methods, contraceptive use during sexual intercourse and consumption of alcohol or drugs during sex.
 - **Physical activity.** Did they participate in any activities to be physically active, time spent watching television (hours/day).
 - **Overweight and weight control.** Risk of being overweight, self-description of their weight, attempts to lose weight.
 - **Mental health.** Depression and suicide.

Objectives

The general objectives of this report are:

- to obtain characteristics of the physical and mental health of students enrolled at VIBA Subsystem, and
- to describe health and recreational habits, health perception, the risk of illness, sexual and reproductive behavior and their exposure to violent events in the community and schools.

Key Variables

Symptoms of illnesses and risk behaviors associated to health were evaluated to achieve the objective. Below are descriptions of the questions used to assess these aspects.

Use of Alcohol and Tobacco. These substances were assessed using questions designed by Marsiglia, Kulis, Nieri and Martinez-Rodriguez⁶ in the study "The youth of Monterrey: a survey of my life." In this study, questions about alcohol consumption are formulated as follows "In all your life, how many times did you drink any alcoholic beverages (beer, wine, pulque, brandy, whiskey, rum, tequila, cooler, presidencola, etc.)" and "In the last 30 days how many times did you drink any alcoholic beverage?" The questions on the consumption of tobacco are asked as the following "In all your life, how many times have you smoked cigarettes or tobacco?" and "In the past 30 days, how often did you smoke cigarettes or tobacco?".

Use of illegal drugs. The use of illegal drugs was assessed using separate questions for each addictive substance. The questions were formulated as follows: How many times in your life have you used:

- Tranquilizers (Valium, Diazepam, Librium, Ativan, Rohypnol, etc.)?
- Amphetamines/stimulants?
- Cocaine powder (parakeet, snow, staples, etc.) or cocaine paste?
- Crack?
- Hallucinogens (like mushrooms, LSD, PCP, mescaline, peyote)?
- Heroin (harpoon, fi, H)?
- Inhalants (glue, spray paint, gasoline, assets, spray, thinner, Chem)?
- Methamphetamine (studs, ecstasy, crystal)?

Physical activity. The questions were formulated as: During the past 7 days, how many days were you physically active at least 20 minutes? Response options were from zero days to 6 or more days.

Self-perceived health. This concept was evaluated using the following question: How would you rate your health over the past 30 days? Response options were: excellent, very good, good, regular, poor, and very bad.

Report their health status. This concept was evaluated with the following question: "In the past 6 months have you had any health problems due to an illness, discomfort or injury?" The choice of response was positive or negative and "How mild or severe was your health problem?" The options were: mild, regular and severe.

Self-perception of their body weight. The question was formulated as: How do you describe your weight? Response options were: too high, high, normal, low and too low.

Fasting. This term was evaluated using the following question: During the past 30 days did you fast (refrain yourself from eating) for 24 hours or more looking to lose weight or avoid gaining weight? Response options to this question were either affirmative or negative.

Suicidal ideation. The instrument applied included a suicide ideation scale used in a study of adolescent women in Mexico City⁷, this scale consists of 4 questions: "could not continue," "had thoughts about death," "I felt my family would be better if I was not alive" and "thought about killing myself." The frequencies of each of these 4 questions were presented separately in the report.

Depression. We used the Spanish version of the scale (CES-D)⁸ which has been used in Mexico in several studies regarding depression⁹⁻¹¹. The scale was constructed by adding the code value assigned to the option of responding to 20 questions. If more than 4 questions were not answered by the participant for that particular case a scale was not calculated. A value of 16 or more indicates a high level of depressive symptoms. The scale emphasizes symptoms of depression as affective and mood levels of young people⁸.

Sex and sexuality. A series of questions were used such as:

- Have you ever had sex?
- Who was your first sexual relationship?
 - How old were you when you had sex for the first time? "Throughout your life, how many different people have you had sex with? The last time you had sex, did you drink alcohol or did you use any drugs before having sex?"
 - The last time you had sex, did you or your partner use protection such as a condom?
 - The last time you had sex, did you or your partner use any contraceptive method to avoid pregnancy (check all methods used.)
 - Have you ever been pregnant or has your partner become pregnant?

Physical and sexual violence. Three questions were used to describe exposure to violence among VIBA youth such as physical violence by an intimate partner, sexual violence and/or domestic violence. The questions were formulated as: How many times has your partner – boyfriend/girlfriend or spouse poked, pinched, beaten or physically hurt you? How many times has someone physically forced you to have sex when you did not want to? And how many times has your father, mother and / or brother(s)/sister(s) pushed, pinched, beaten or physically hurt you?

Chapter 1

Sociodemographic Characteristics of the Population

1. Sociodemographic Characteristics of the Population

Figure 1.1 shows the relevance distribution of the study population in terms of students attending VIBA schools and the in which they were enrolled. As it can be observed of the 702 students who participated in the study one of every four students attended the VIBA center in Valenciana Guanajuato City of which two in five students were enrollees from the second semester.

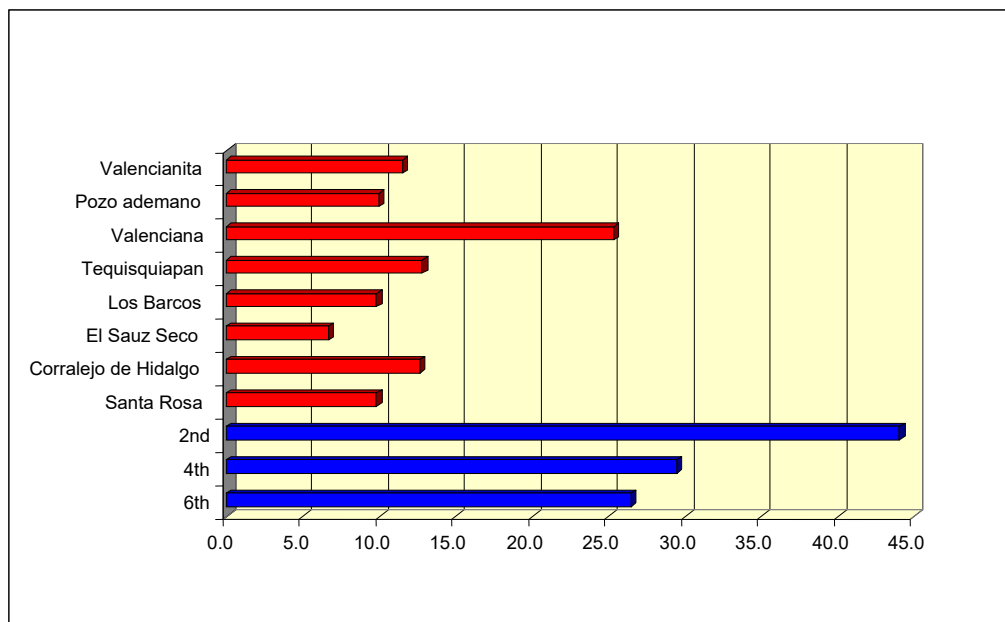


Figure 1.1 Distributed percentage of the population interviewed by school grade and VIBA center that provided assistance (n=702).

In 2007, the state of Guanajuato had 252 VIBA centers of which the distribution of the student population was mostly female (58.9%)¹². The overall study population shows a similar gender distribution in all schools that participated in the study, with a female participant percentage of 59.5% (Figure 1.2).

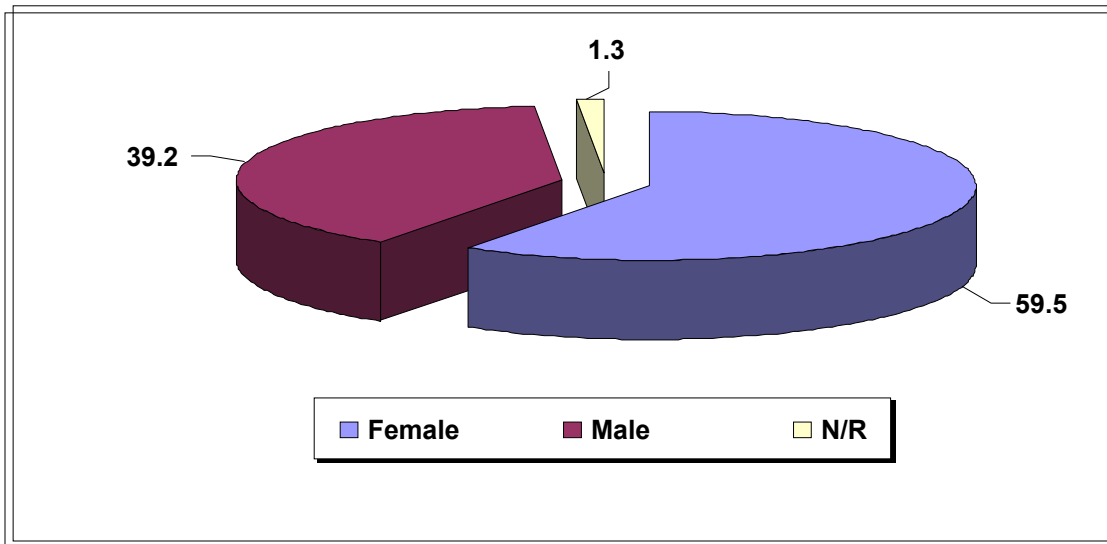


Figure 1.2 Percentage distribution of population interviewed according to sex (n=702).

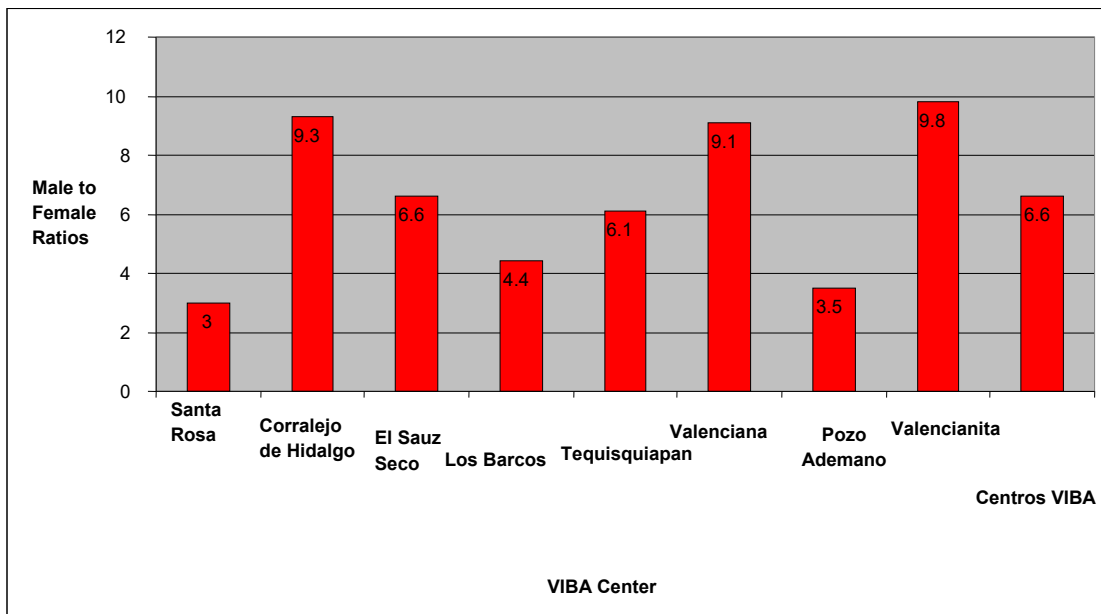


Figure 1.3 Male to female ratios (numbers of male students for every 10 female students) at each VIBA center.

When comparing the gender ratios of students in different VIBA centers it was found that some of the centers had a male to female ratio of 1:1, while other centers showed strong disparities between the two gender groups. Figure 1.3 shows, that the male to female ratio was more balanced in the VIBA centers of Hidalgo Corralero, Valencia and Valencianita, with ratios of 9 male students for every 10 female students. Santa Rosa and Pozo Ademado VIBA centers show the greatest disparities between the number of male to female students with ratios of 3 male students for every ten female students.

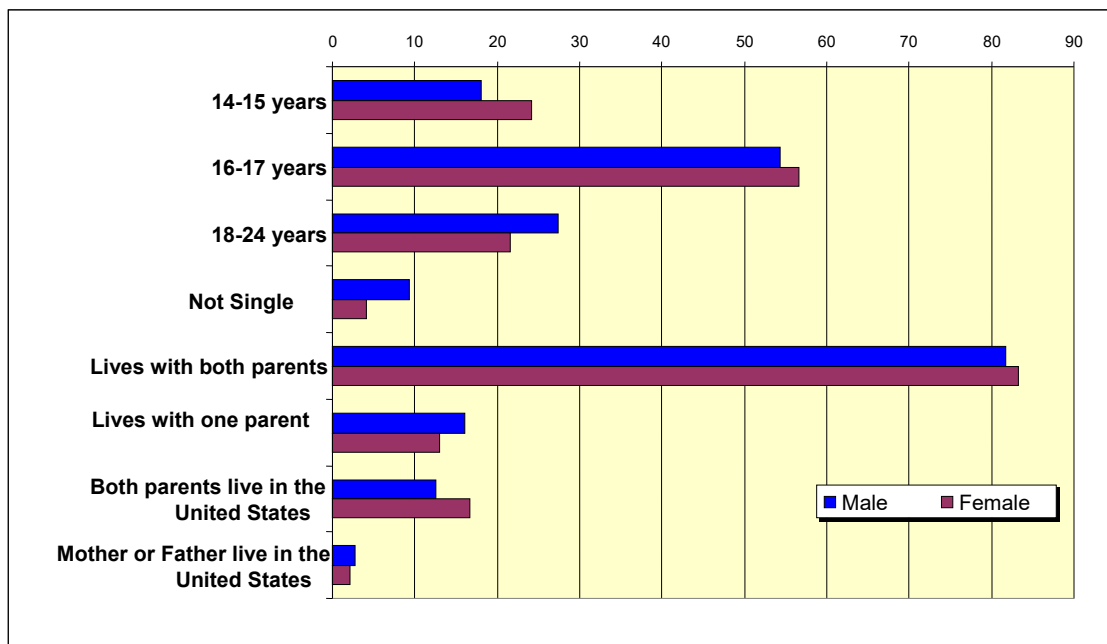


Figure 1.4 Participant distribution by age groups and some characteristics of family arrangements as shown by sex (n=693).

The average age of the participating student population was 16.6 years. As expected, this population was predominantly single and in most cases living with a parent. Figure 1.4 shows the distribution by age groups and characteristics such as living arrangement of students, marital status, whether they lived in the parental home and whether one or both parents were absent from home due to international migration. According to the data over 50% of students for both sexes were between 16 and 17 years old. Of this population approximately 9% of the males reported having a different marital status to that of being single and of which only 4% of the population in this category reported

were females. More than 90% of students of both genders reported they were living with one or both parents. It was noted that 15% of male students reported that the maternal or paternal absence from home was because their parents were working or living in the United States. Similar situations were also reported by 19% of female students.

Chapter 2

Health Habits

2. Health Habits

This section presents information regarding the risk behaviors associated with adolescent practices and health such as the consumption of tobacco, alcohol and other drugs. The recreational practices and the use of free time among students of the VIBA center are also described in this section.

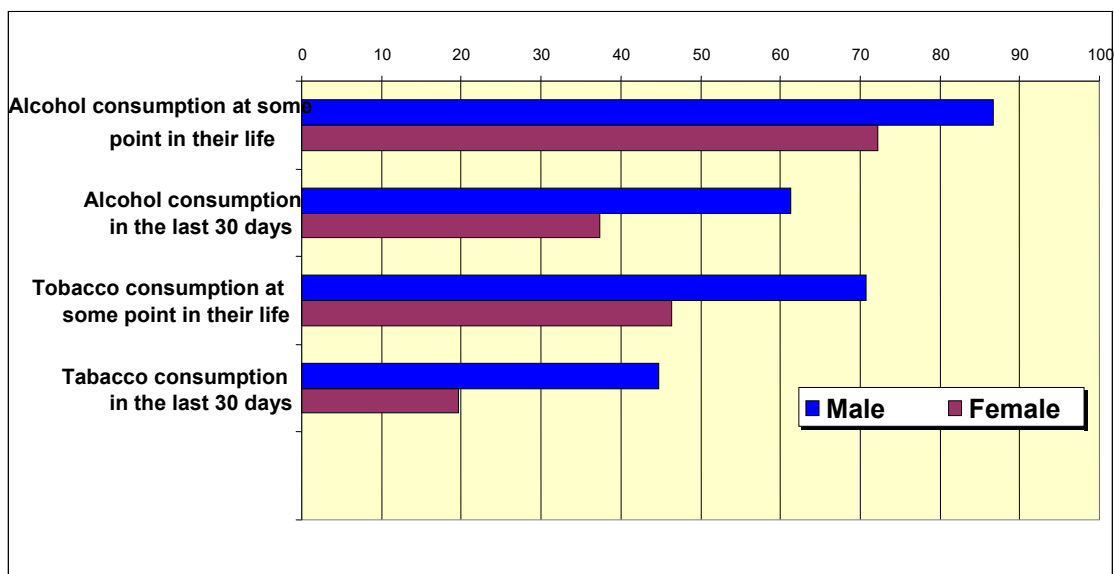


Figure 2.1 Alcohol and Tobacco prevalence among students at VIBA centers compared by sex (n=693).

Tobacco and Alcohol Use

The prevalence of alcohol and tobacco use among the student population at the VIBA centers are compared by gender as shown in Figure 2.1. As it can be noted, 87% of male students reported having consumed an alcoholic beverage (beer, wine, pulque, brandy, whiskey, rum, tequila, cooler, etc.) at some point in their lives. Among the female population the prevalence of alcohol consumption was 72.2%. The data collected demonstrated that 3 out of every 5 male students consumed an alcoholic beverage during the last 30 days compared to the female population whose ratio was of 2 in every 5.

Reported percentages as demonstrated by the data collected showed that 70.7% of male students reported having used tobacco at some point in their life compared to 46.4% of the female population. The prevalence of tobacco use in the past 30 days was under 20% within the female population and was at 45% among the male population.

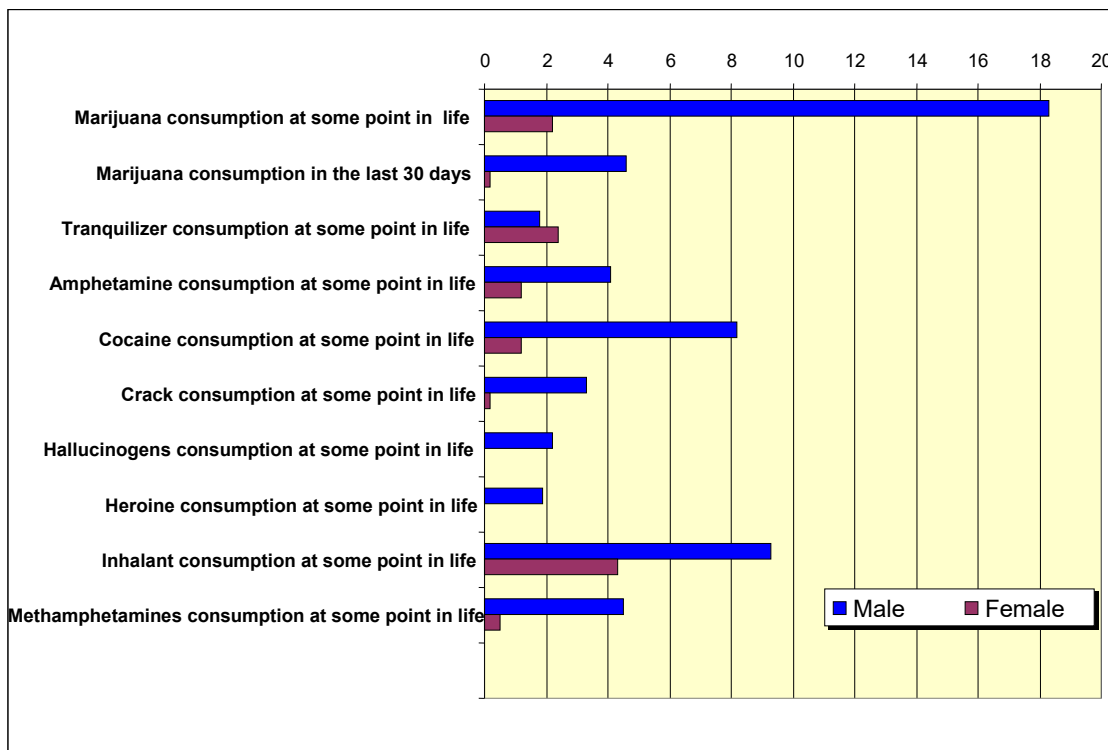


Figure 2.2 Illegal drug consumption among VIBA students as demonstrated by their sex (n=693).

Illegal Drug Use

Figure 2.2 presents the prevalence of illegal drug use at some point in life among students of the VIBA center. Marijuana was the illegal drug most commonly used among males (18.3%) followed by inhalants (9.3%), cocaine powder (8.2%), methamphetamines (4.5%) and amphetamines or other stimulants (4.1%). Compared to the female population in which inhalants (4.3%) was the most commonly drug used followed by tranquilizers (2.4%) and marijuana (2.2%). During the month prior to the survey, marijuana use in the past 30 days was approximately 5% among the male population and only 0.5 percent in the female population.

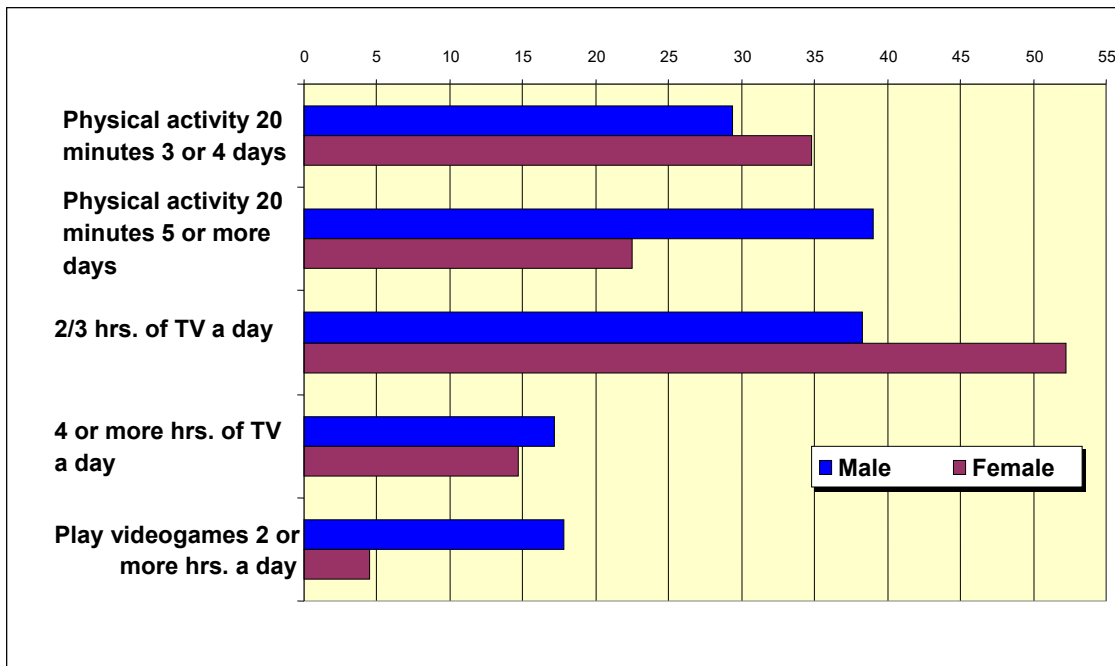


Figure 2.3 Student percentages of VIBA center of those who participate in a physical activity for approximately 20 minutes or more each day, number of hours during an average school day participants spent watching TV and playing video games/or computers the week prior to the survey (n=603)

Physical Activity and Use of Leisure Time

Figure 2.3 shows the percentage of students of the VIBA centers who during the week prior to the survey were physically active for a period of approximately 20 minutes or

more each day. The graph also shows the number of hours during an average school day that students spent watching television and playing video games or computers. About 60% of students of the VIBA centers reported that they were physically active for at least 20 minutes on 3 or more days during the week prior to the survey. Overall, the male population reported to be more physically active compared to the female population. The percentage of students who reported having done any physical activity for 20 minutes or more each day, over a period of 5 or more days per week was at 40% among the male population versus 22% of the female population .

It is the case that on an average school day, more of the female population spends time watching television compared to the male population, who spends more time on video games and or using computers. Data collected indicates that 67% of the female population reported seeing 2 or more hours of television during an average school day compared to 55.5% of the male population. Data also indicates that 17% of the male population reported to have spent 2 or more hours each day playing video games and/or spending time on the computer compared to rates of 5% among the female population.

Chapter 3

The Health of Young People

3. The Health of Young People

This section presents information regarding the health of the students of the VIBA centers. The self-perception of health, the presence of symptoms associated with a disease, the severity level of the health problem and the seeking of medical help are some of the aspects described herein. This section also presents information on self-perception of body weight and the determination of fasting for weight control, together with the presence of symptoms of depression and suicidal thoughts.

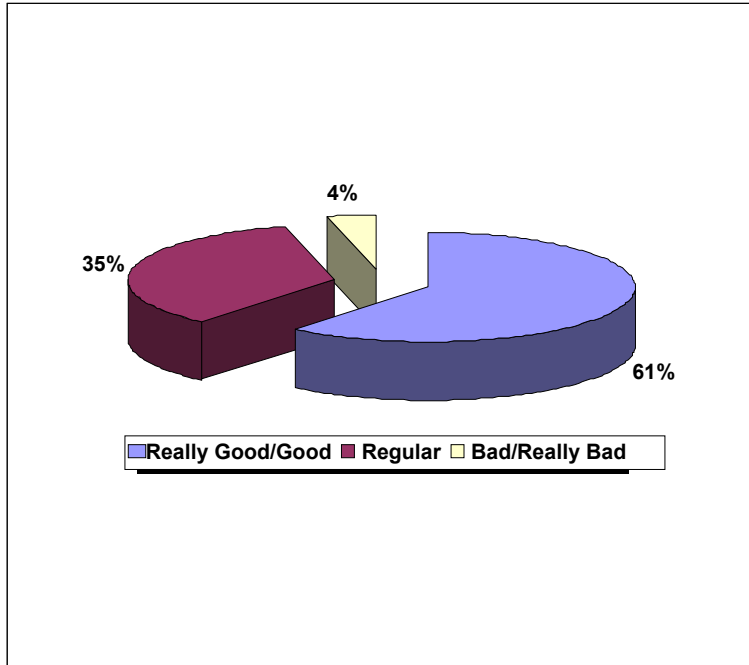


Figure 3.1 Distribution of health self-perception among students of the VIBA centers (n = 693)

Health and Disease

As shown in Figure 3.1 and taking in consideration the 30 days prior to implementing the survey as a time reference, data indicates that about 61% of the youth at the VIBA centers rated their health in the category of good to excellent compared to 4% of the youth who rated their health in the category of poor to very poor. With regards to the self-perception of health, men tended to rate their health higher compared to women. Figure 3.2 shows that while 53% of the women who responded rated their health from excellent to good, the percentage among men was 72 percent.

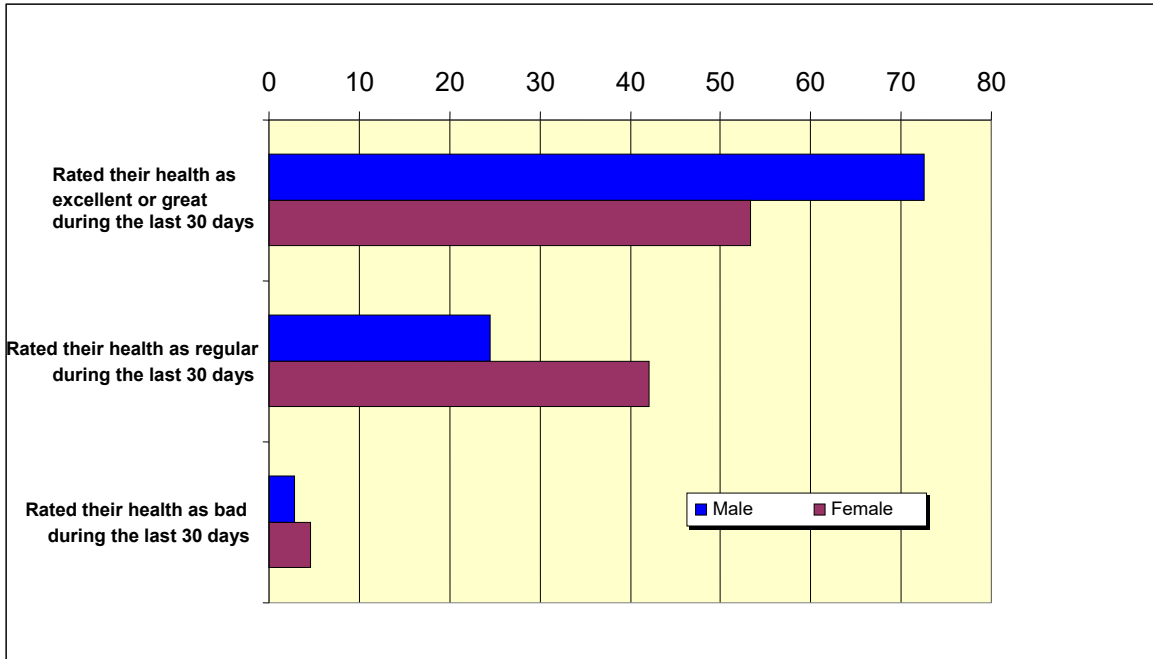


Figure 3.2 Distribution of health self-perception in the last 30 days as shown by sex (n = 693).

The prevalence of disease or accidents among students at the VIBA centers during the previous 6 months (Figure 3.3) shows that 70% of women reported having had a disease, discomfort and/or accident compared to reports of 65% among the male population. Figure 3.3 presents information on the severity level of health problems as reported by the students and whether they sought medical attention. As noted, 2 in 5 male students at the VIBA centers reported that the severity of their condition and/or accident was of regular concern while 4% rated it as serious concern. Among the female population it was found that almost 1 in every 3 women reported having a health problem of regular concern while 2.6% reported their health problem as a serious concern. The prevalence of respondents seeking medical attention in the past 6 months was 33% among the male population and at 40% among women.

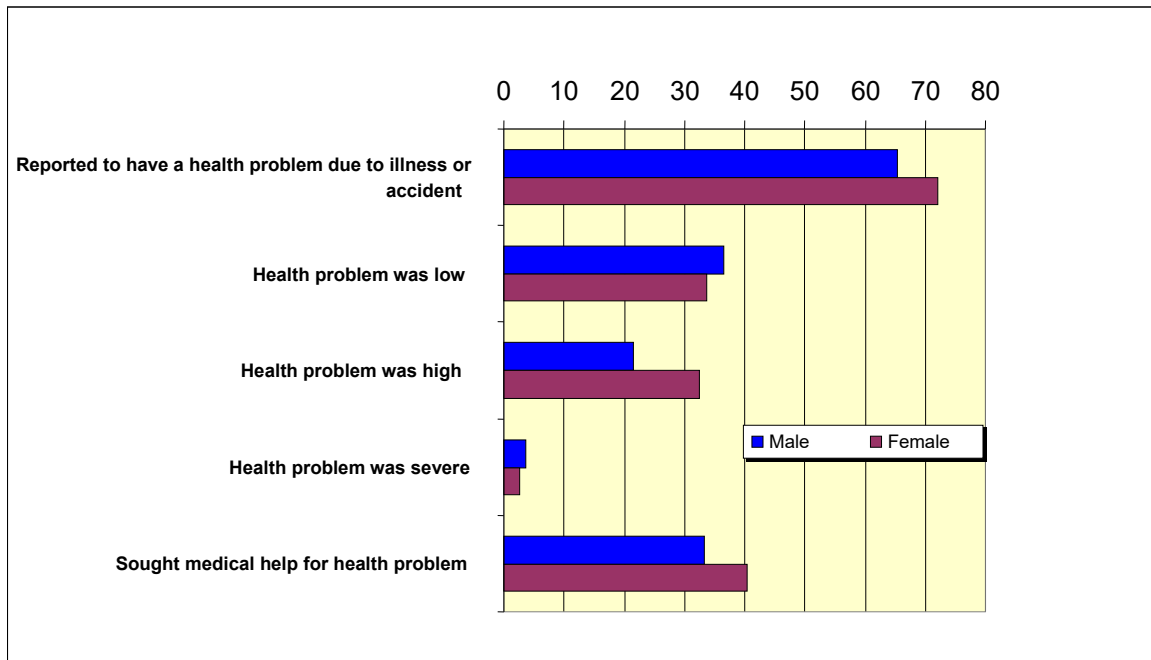


Figure 3.3 Prevalence of disease reporting and / or accidents during the past 6 months, severity of condition and / or accident and the seeking of medical care as shown by sex (n = 693)

Body Image and the Practice of Fasting

During adolescence, especially during puberty, the body is changing rapidly and the body image becomes the main focus of attention among teenagers. One of the highest perceptions valued by adolescents is their body weight, hence connecting it to their self-image. Figure 3.4 presents information on self-perception of body weight in the participant population. As can be seen approximately 1 in 3 students perceived their body weight as abnormal and rated it either low/very low (11%), high (19%) or very high (5%).

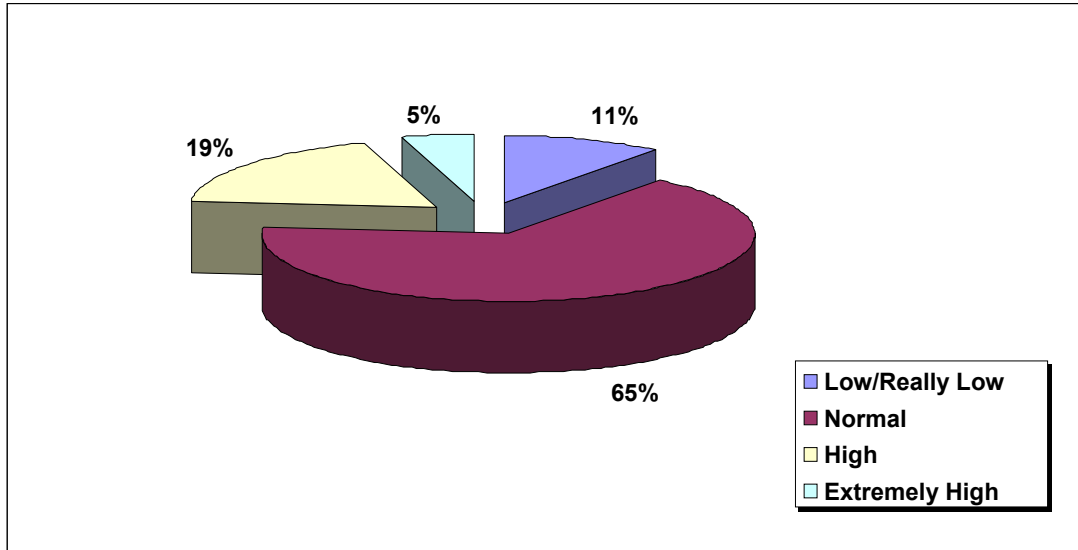


Figure 3.4 Relative distribution of body weight self-perception (n = 693).

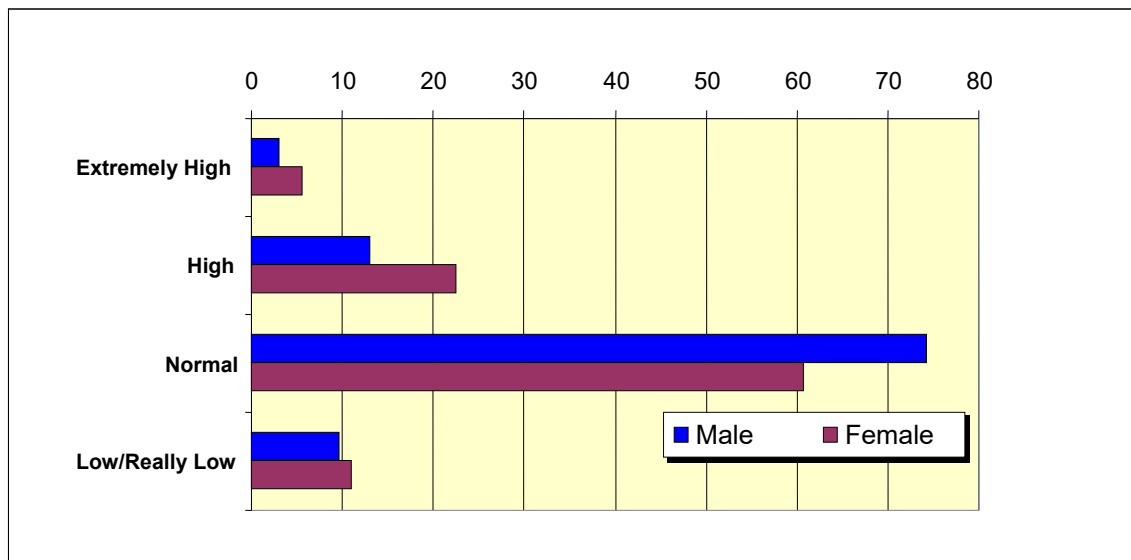


Figure 3.5 The distribution of body-weight self-perception according to sex of participants (n=693).

According to the data, a higher percentage of women tended to perceive their body weight outside the normal range. Figure 3.5 shows the self-perception of body weight among students at the VIBA centers according to the gender of the participants. As seen two of every 5 women perceived their weight as abnormal, whereas this ratio was 1 in 4 in males. The abnormality of the weight in both sexes was mainly associated with

overweight, although this proportion was higher in women (28% vs.16%, respectively). Almost 1 in 10 female and male students thought their weight was low or too low.

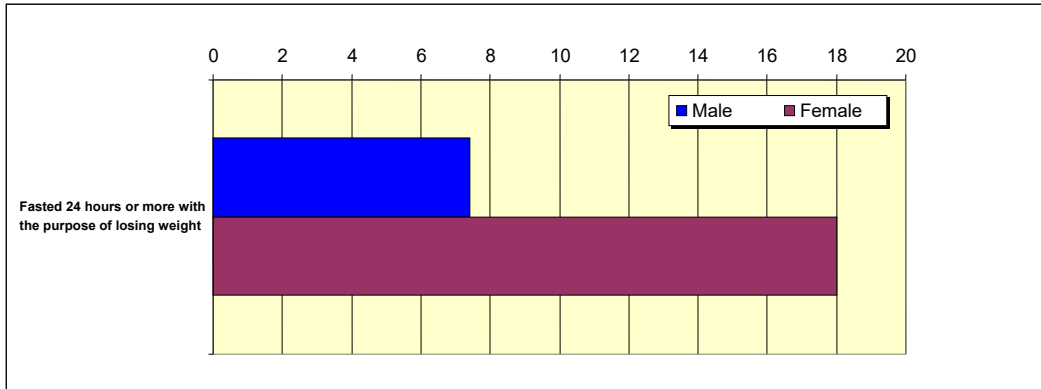


Figure 3.6 Prevalence of students that fasted for a period of 24 hours or more during the month prior to the survey.

A behavior that was found to have a connection with the desire to lose weight and change the body image was the practice of fasting. Figure 3.6 describes the percentage of adolescents during the month prior to the survey that fasted for a period of 24 hours or more. The prevalence of fasting in the study population was 14% with the practice more common among women (18%) than in men (7.4%).

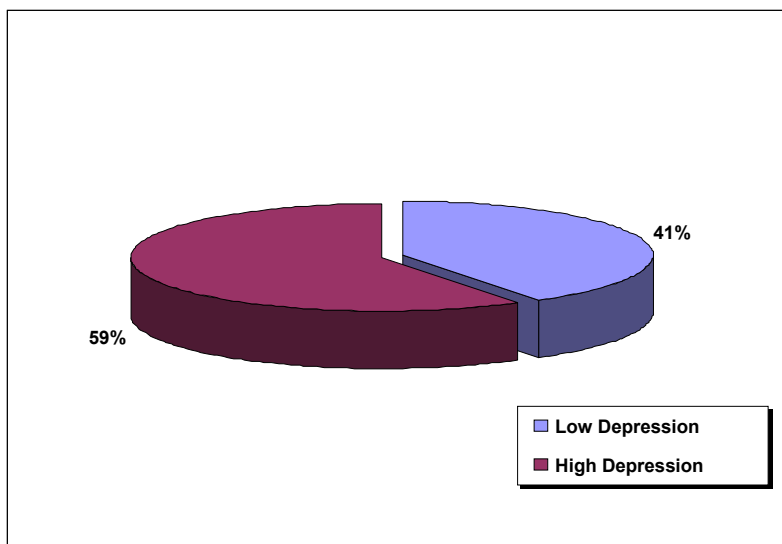


Figure 3.7 Depression symptoms according to CES-D scale among students of the participating VIBA centers (n = 693)

Depression and Suicidal Thoughts

Figure 3.7 presents information on the depression scale of the Center for Epidemiologic Studies of the United States (CES-D)⁸. A feature of this scale is that it describes the emotional relations of individuals, thereby allowing to measure mood among adolescents. This scale does not allow classifying the subjects within a specific stage of the disease, although elevated levels of the scale have been associated with high incidence of depression in some clinical studies⁸. According to the results of this scale, the week prior to the survey, 59% of students at the VIBA centers had elevated symptoms of depression.

Figure 3.8 shows comparative data by gender on depression levels of the participating student population. As noted, adolescent females (68%) were more likely to report symptoms associated with high levels of depression compared to the male population (45.2%).

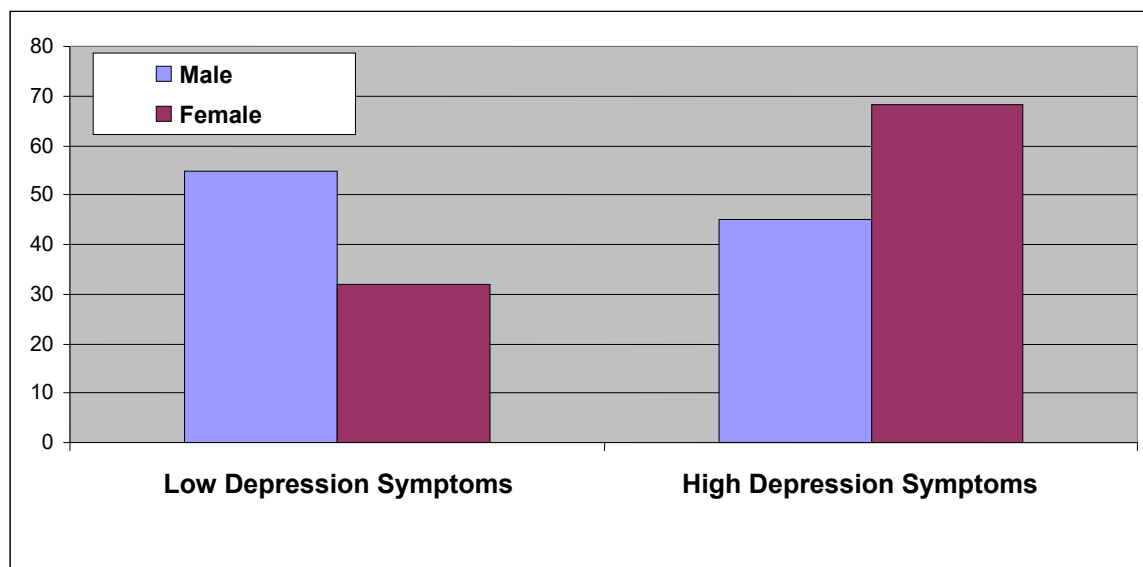


Figure 3.8 Symptoms of depression according to CES-D scale between male and female student population of the VIBA centers (n = 693)

Suicidal ideation is a psychological concept that has been strongly associated with the attempt to commit suicide⁷. In this regard Figure 3.9 shows the relative frequency to four

questions related to suicidal ideation such as, thoughts of no longer continuing with their lives, thoughts about death, feelings that their families would be better if they were not alive and thoughts of killing themselves. As can be seen during the week prior to the survey, 2 in 5 students reported having feelings of not being able to move forward, while one in 3 had thoughts about death. Just over 10 percent of the students of both genders thought about killing themselves during the 7 days prior to the survey. The feeling of not being able to get ahead and the feelings that their family would be better off if they were not alive were mostly associated among the female population (46% and 35.6% respectively).

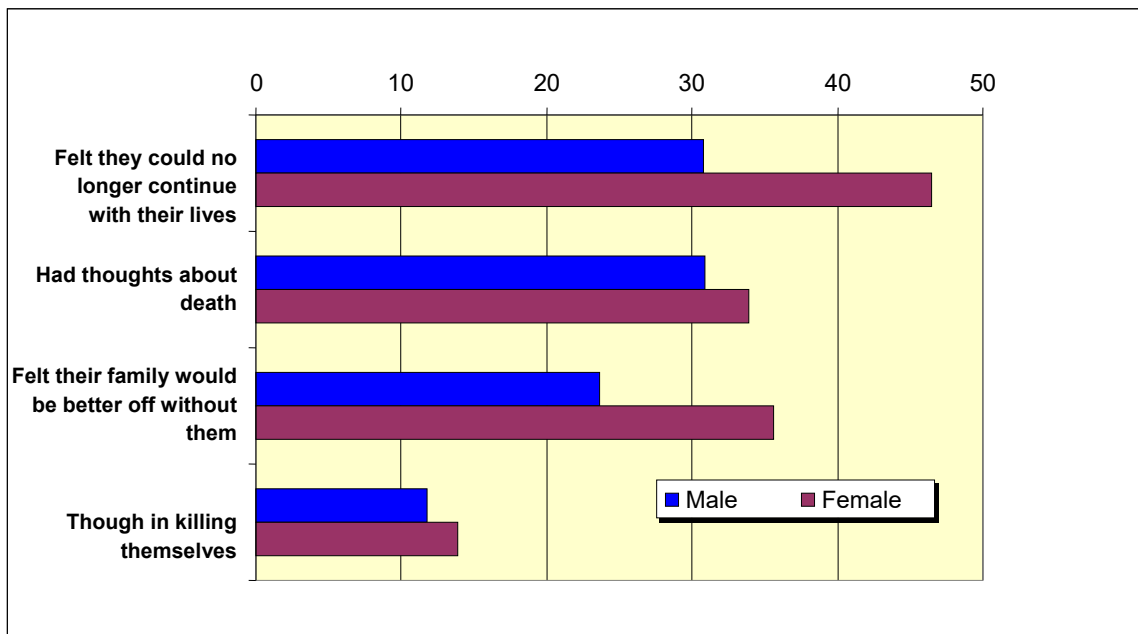


Figure 3.9 Suicidal ideation the in the last 7 days among the male and female student population of the VIBA centers (n = 693)

The above results need to be examined very carefully as these levels of depression may negatively impact the mental and physical health of students.

Chapter 4

Sexual and Reproductive Health

4. Sexual and Reproductive Health

This section reports on indicators of reproductive health among the students at the VIBA centers. The prevalence of sexual activity, number of sexual partners adolescents have had throughout their lives, the age of first sexual activity, use of protection to avoid pregnancy and use of alcohol or drugs during last sexual intercourse were among the issues addressed in this section. Other topics included: exposure to physical violence of the student by their partner and the prevalence of sexual violence. The last component addressed in this section describes the needs of information regarding reproductive health as expressed by student's opinion at the VIBA centers.

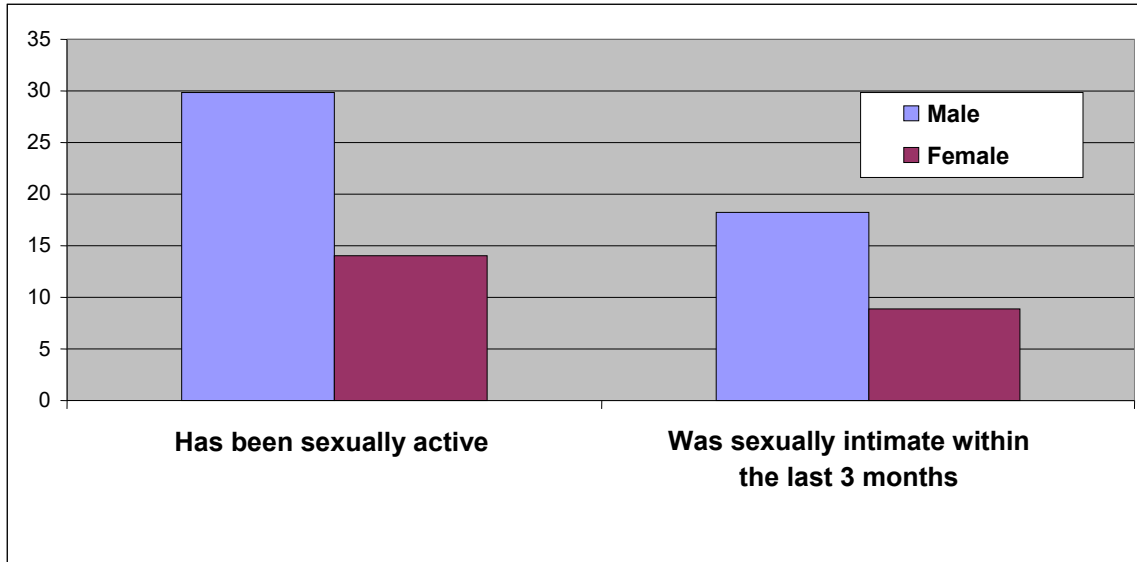


Figure 4.1 Prevalence of sexual activity between male and female student population of VIBA centers (n = 693)

Figure 4.1 shows the prevalence of sexual activity among adolescents at the VIBA centers in the past 3 months prior to the survey and throughout their lives. Overall, about 1 in 5 students reported having sex during their lifetime. The event was reported by 30% of males and 14% of female adolescents. The prevalence of sexual activity in the past 3 months was 18% among males and 9% among the female population.

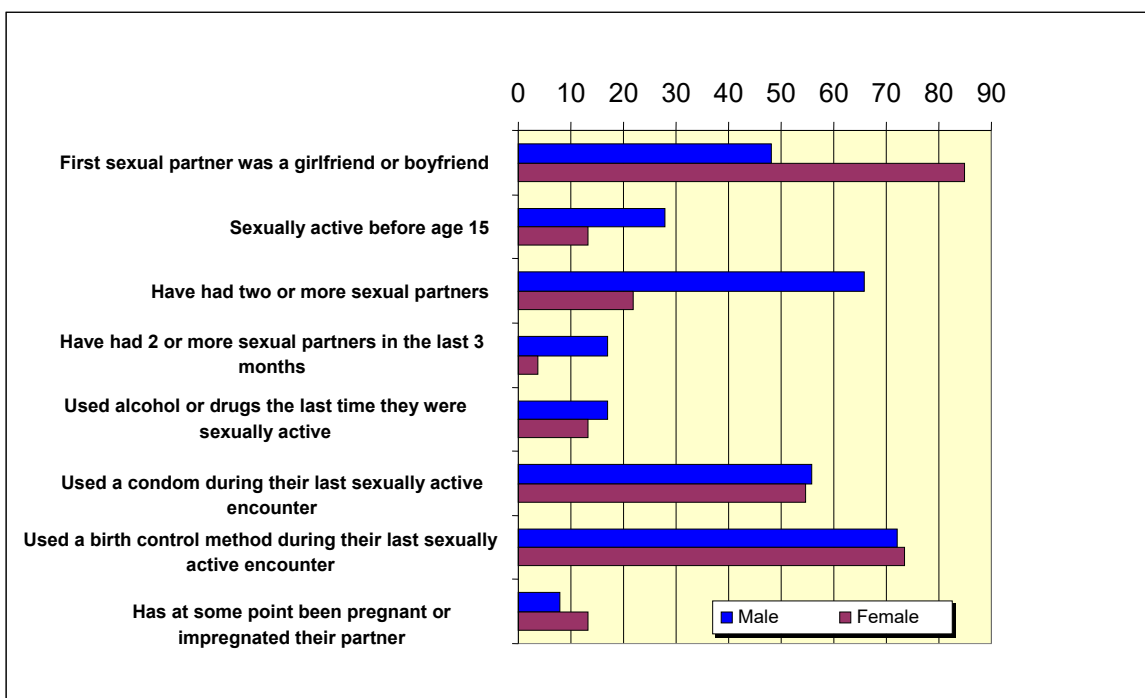


Figure 4.2 Percentage distribution of sexually active characteristics among the student population of the VIBA centers as compared by sex (n=134)

Figure 4.2 shows the percentage distribution of some characteristics by gender of sexually active adolescents. Among the sexually active male population, about 50% of adolescents had their first sexual relationship with their sentimental partner, in 28% of the cases the first sexual act occurred before age of 15 years. Among sexually active males 66% reported having more than one sexual partner during their lifetime while 17% of these reported having more than one sexual partner in the past 3 months. Among the sexually active female population 85% had their first sexual experience with their sentimental partner, in 13% of the cases the first sexual act occurred before age of 15 years. 1 in 5 teens reported having had more than one sexual partner during their lifetime while 4% of them reported having had more than one sexual partner in the past 3 months. Just over 10% of sexually active adolescents reported having been pregnant at least once in their lives while 8% of male adolescents reported that their girlfriend had been pregnant at some point.

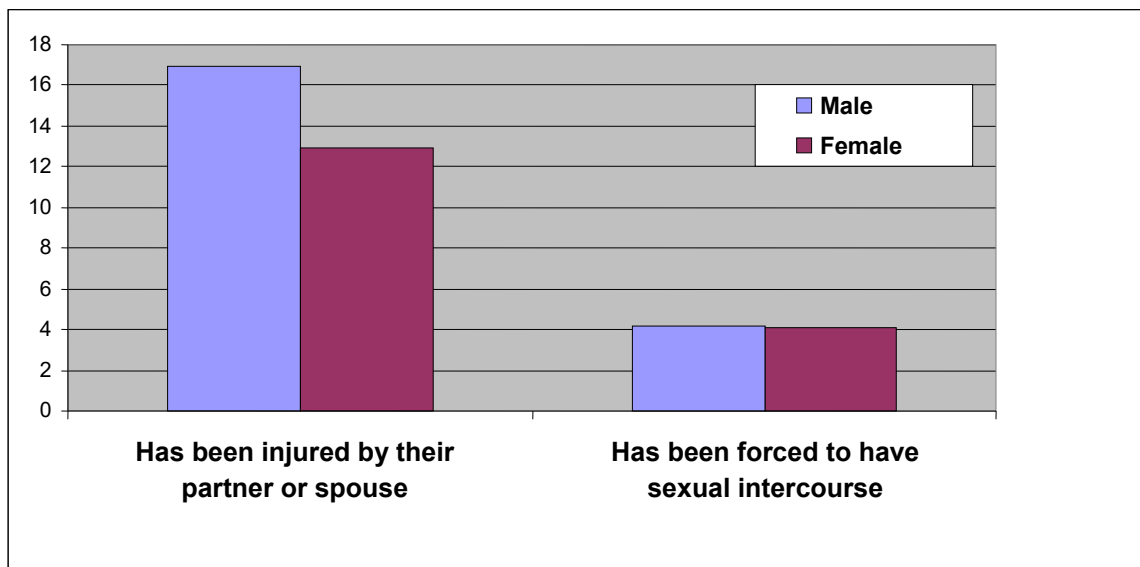


Figure 4.3 Percentage of students who have been injured by their partner or spouse and who have been forced at some time in their lives to have sexual intercourse (n = 693)

Physically Abusive Relationships and Sexual Violence

Figure 4.3 presents the prevalence of physical abuse in adolescents by their partner, and the prevalence of sexual violence. Relationships involving physical abuse among adolescents appear to be an event shared by both genders. In the case of our study population, the male population reported a level slightly higher than the female population. According to the data, 17% of male adolescents reported being physically hurt once in their life by their partner or spouse compared to the female population at 13%. It was found that the percentages (4%) were similar for both genders when it came to the proportion of students who reported to have been forced to be sexually active.

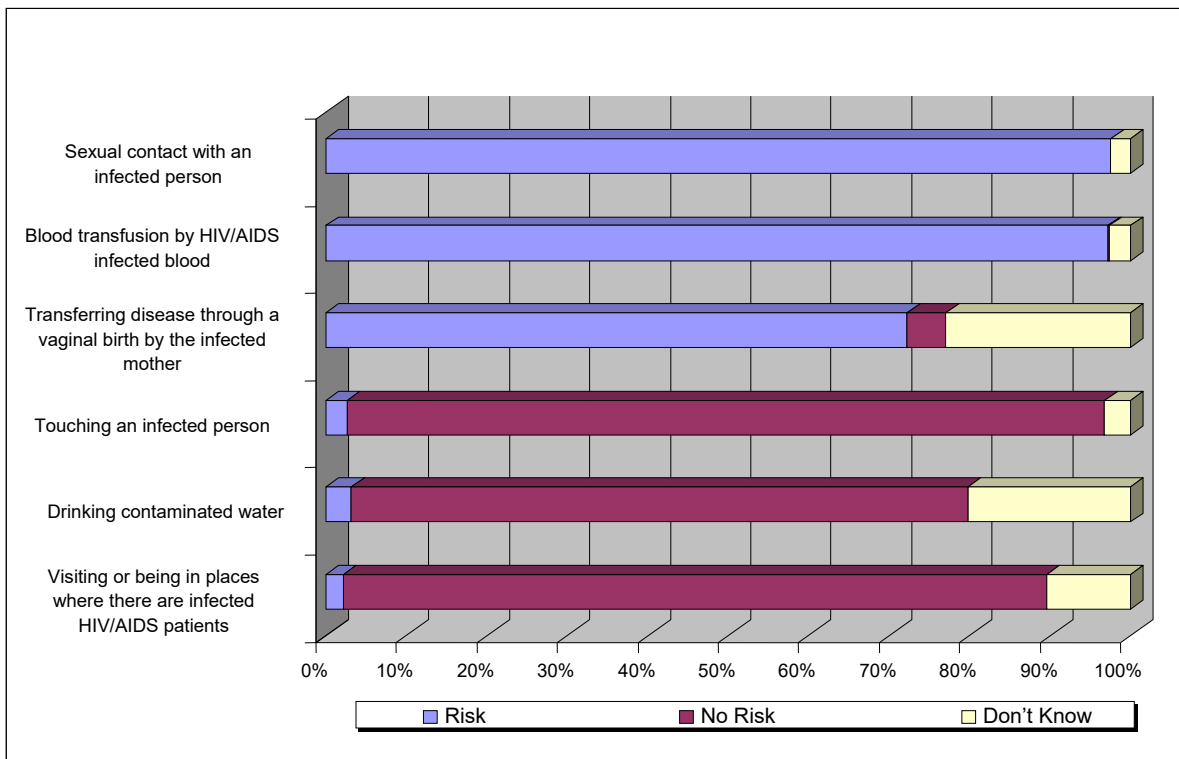


Chart 4.4a. Perceived risk of contracting HIV/AIDS among the female population.

Sexual and Reproductive Health the Need for Information

We analyzed the level of information available to students at the VIBA centers on factors associated with the risk of transmission of the Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS). The charts 4.4a and 4.4b

show the perception of male and female students on six possible scenarios and their association with the transmission of HIV/AIDS. Overall, 9 out of every 10 students had available information about the risk of contracting HIV/AIDS through sexual contact with an infected person and the transmission via blood transfusions. 1 of every 4 students did not know if HIV could be transmitted from mother to child through the placenta or during childbirth. Also, 1 in every 5 students did not know if the virus could be transmitted through the consumption of infected water or attending sites where there were patients with AIDS.

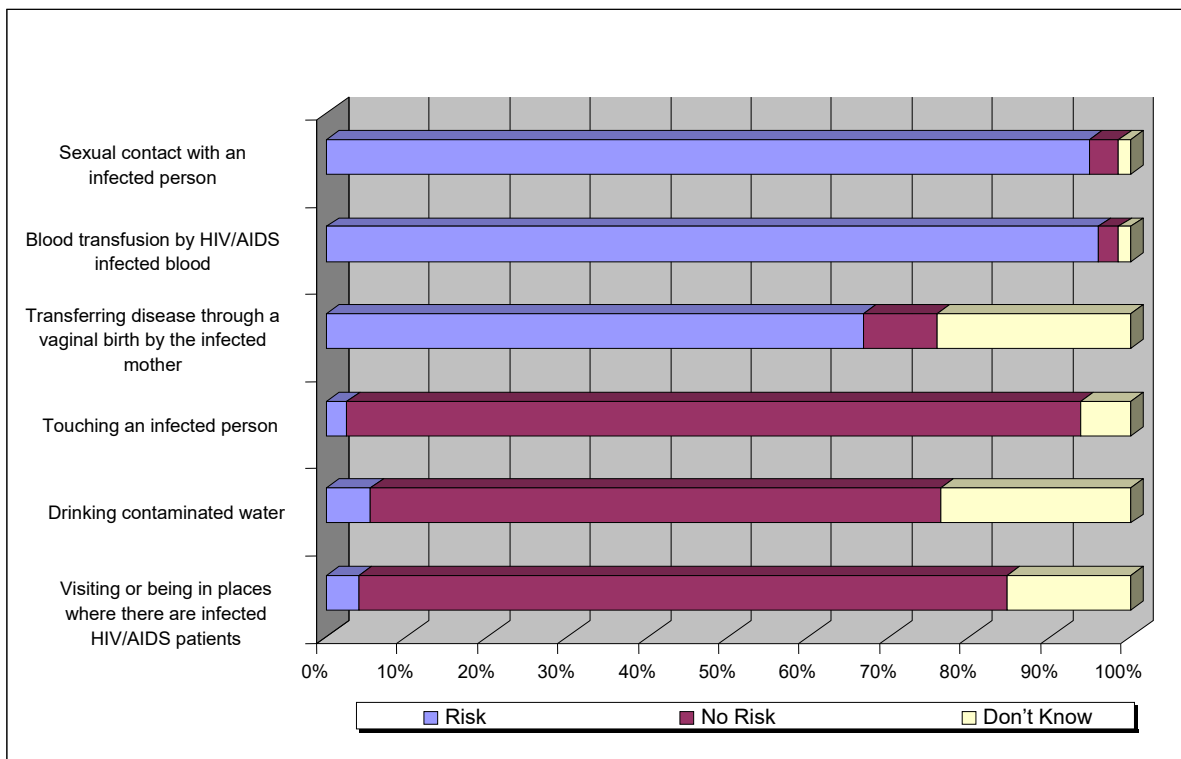


Chart 4.4b Perceived risk of contracting HIV / AIDS among the male population.

Participants were also asked their interest for health information on certain topics of reproductive health. Although participants expressed an overwhelming desire to receive information about sexuality, sex, pregnancy and dating relationships it is important to also note that nearly 8 in 10 students reported a desire in also receiving information about contraceptive methods and sexually transmitted diseases (Figure 4.5).

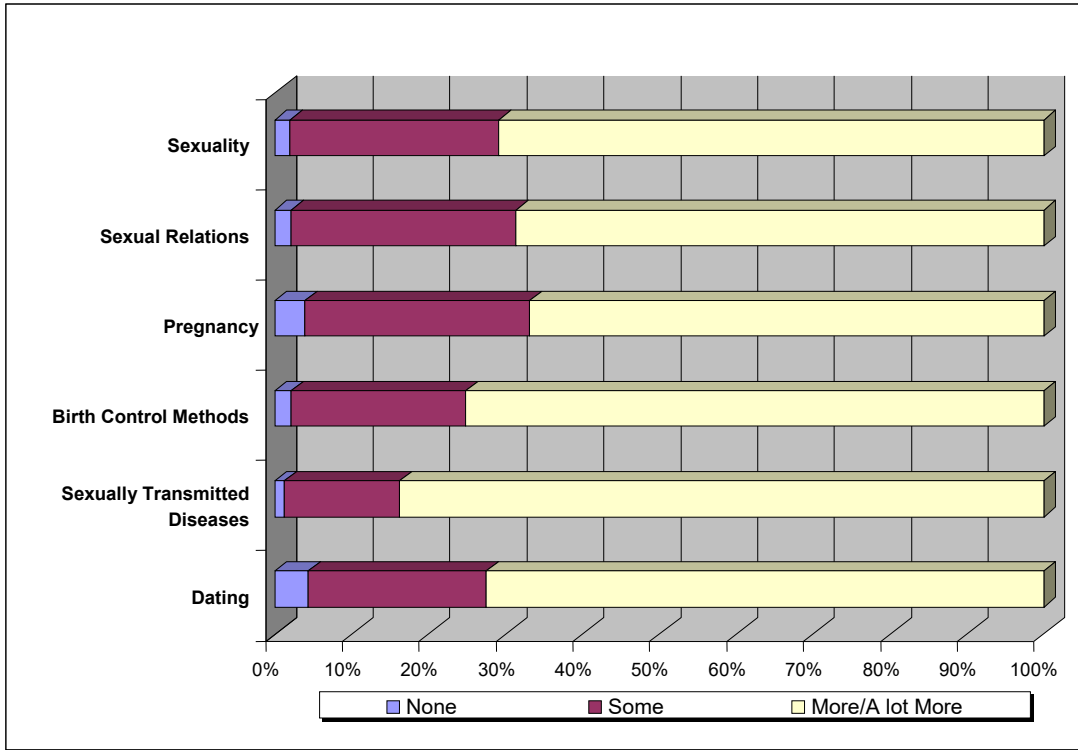


Figure 4.5 Percentage of participants who want to receive information about reproductive health.

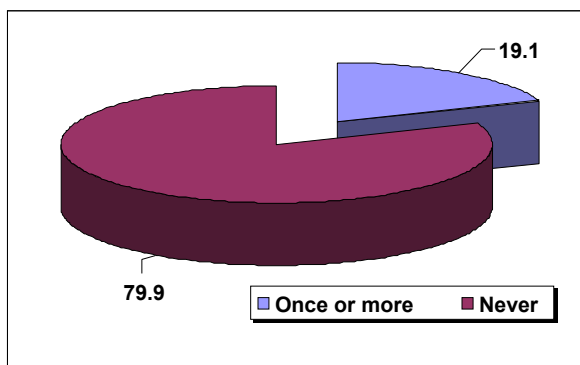
Chapter 5

Personal Safety and Violence

5. Personal Safety and Violence

In this section we examined some of the risk factors associated with the personal safety of adolescents and the risk of violence they face in the community and schools. Some of the indicators included in the study assessed situations such as traveling as a passenger in a motor vehicle driven by someone who had consumed alcohol, driving a motor vehicle after having consumed alcohol, the availability of firearms in the community and perception that young people had on the level of accessibility to them. Other variables included in the study were being threatened and/or having been injured with a firearm, knife, or other dangerous weapon, being involved in a fight where they were beaten by someone, or where he or she assaulted another on school grounds. Domestic violence was another of the variables described in this section.

Female Population



Male Population

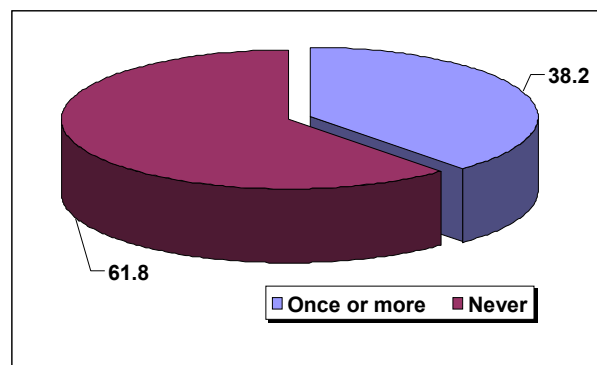


Figure 5.1 Percentage of adolescents who reported that 30 days prior to the survey they had been a passenger in a vehicle in which the driver had consumed alcohol.

Accident Associated Risk Factors

Figure 5.1 shows the percentage of students who reported that in the past 30 days they traveled as a passenger in a motor vehicle driven by someone who had consumed alcohol. As shown in the graphs a higher percentage of male participants (38%) reported having traveled as a passenger in a motor vehicle driven by someone who had consumed alcoholic beverages. This percentage was 19% among women. Also, 1 in 5 male students reported driving a motor vehicle after consuming alcohol (Figure 5.2), While 6% of the female student population reported having been involved in a similar situation in the past 30 days.

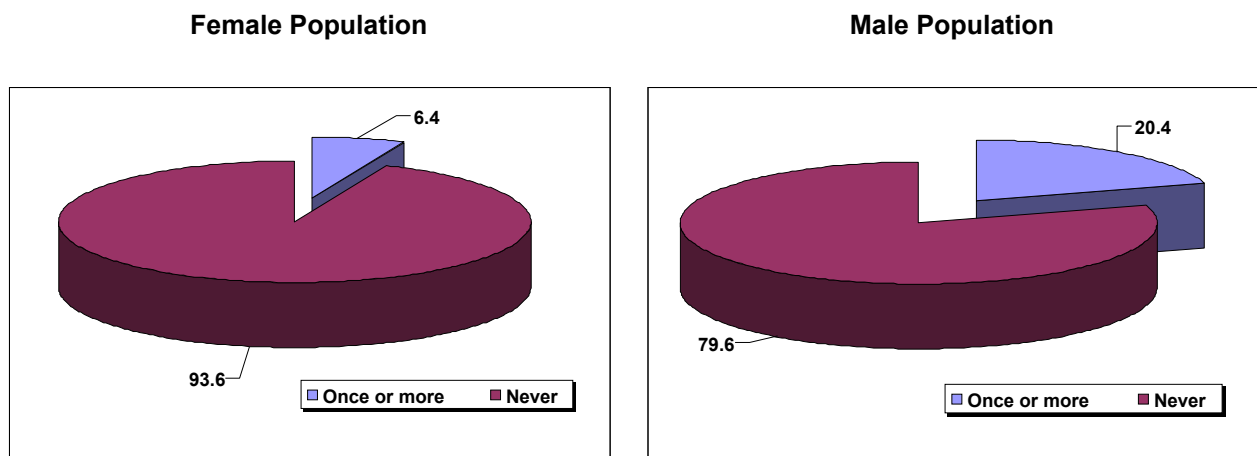


Figure 5.2 Percentage of adolescents that reported to have conducted a motor vehicle under the influence of alcohol 30 days prior to the survey.

Figure 5.3 shows the students perception about accessibility of firearms in the community among both gender for the past 12 months prior to the survey. Twenty-four percent of the male population reported they felt it would be easy or very easy to obtain a gun (pistol, rifle, etc.) within their community. This perception was much lower among the female population (9%). Although 2 out of 5 teenage males and 1 in 5 adolescent females reported a relative, salesperson or other place as the sources where they could

go to get a gun, 5% of the students of both genders reported they could have access to a gun or rifle in their home.

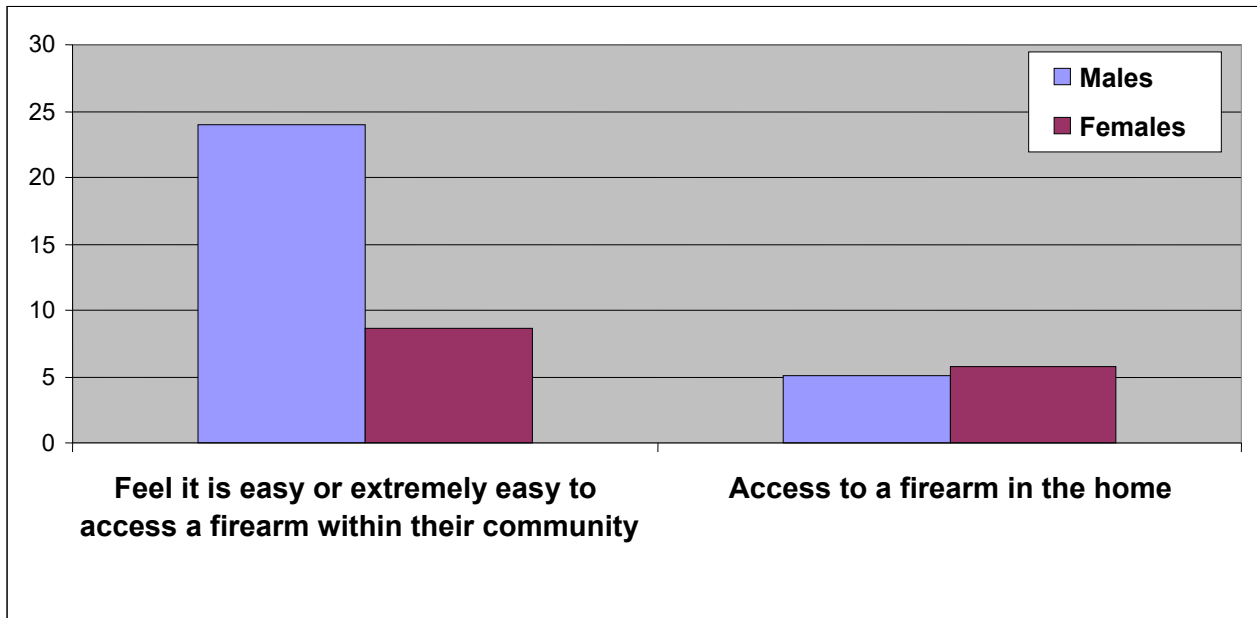


Figure 5.3 Percentage of participants 12 months prior to the survey who reported access to a firearm.

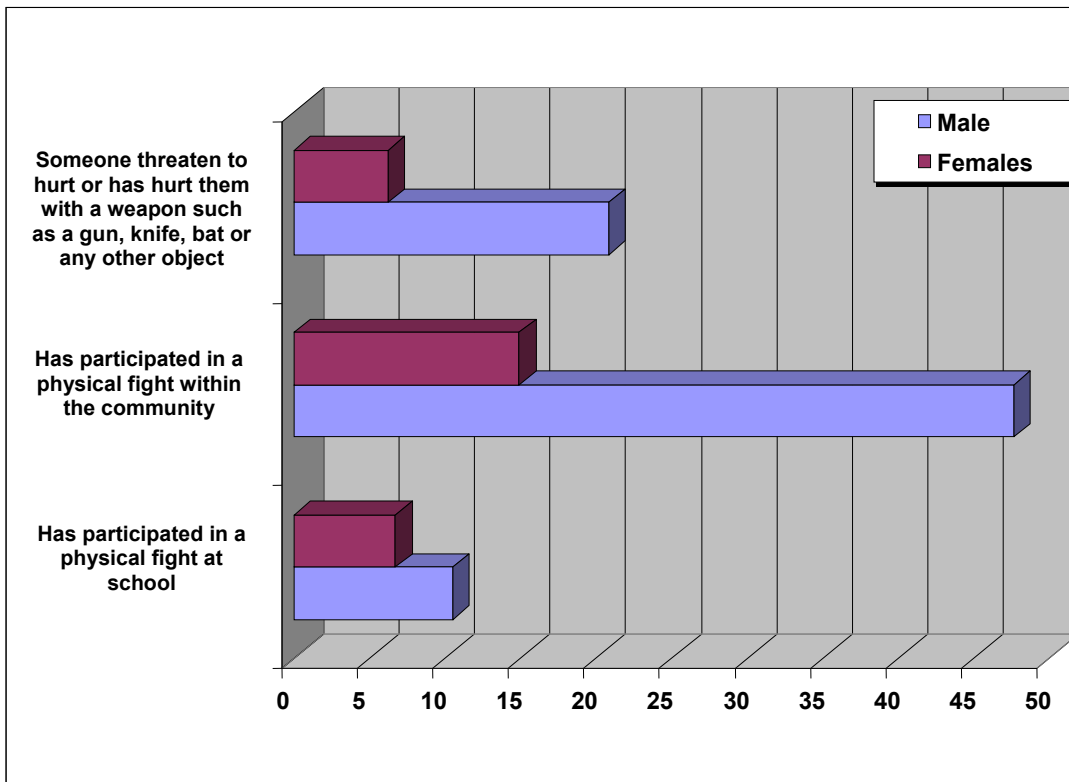


Figure 5.4 Percentage of adolescents that reported to have been subject to threats and / or had been beaten, participated in a physical fight within the community or in school facilities 12 months prior to survey.

Figure 5.4 shows the percentages of students that within the past 12 months were threatened or injured with a gun, knife or other weapon in their community, as well as the percentages of those who participated in a fight in the community or at school and/or was beaten by someone or had beaten someone up. According to the data collected 21% of males reported being threatened and/or injured during the past 12 months, with a gun or knife. Among the female population this percentage was 6%. Data on community violence shows that in the past 12 months, 48% of males and 15% of females participated in a physical fight where they assaulted someone else or were assaulted by someone. With regards to fights on school grounds this proportion was at 10% among males and 7% among the female population.

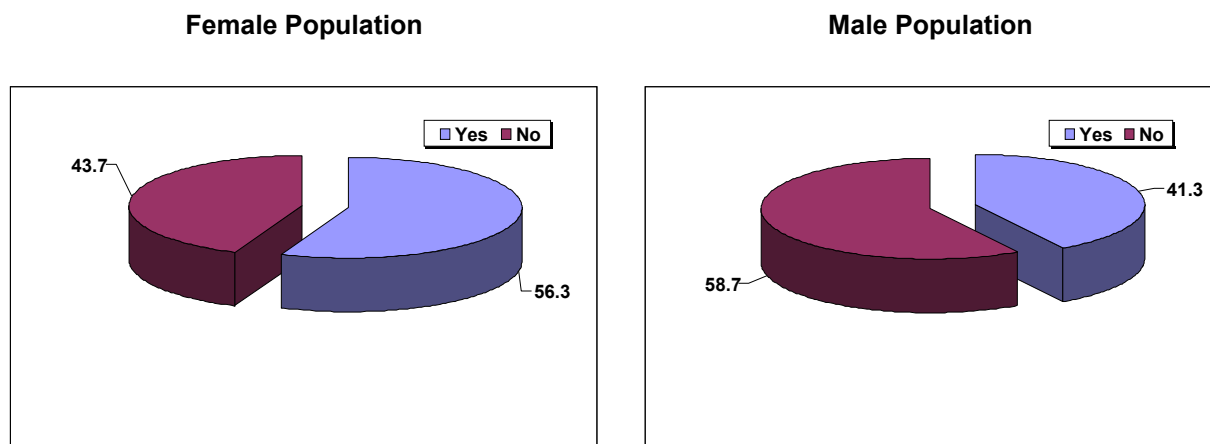


Figure 5.5 Percentage of adolescents who experienced domestic violence

Domestic Violence

In addition to exploring the prevalence of violence in the community and school, we assessed students' exposure to domestic violence throughout their lives. As shown in Figure 5.5, this phenomenon was reported by 40% of the male population and 56% of the female population. In this study, a student experienced domestic violence at some

point during their lives as being pinched or hit by a parent and/or siblings.

Conclusion

Conclusion

The information in this report looks at characteristics of physical and mental health of the adolescent population of the centers belonging to the Videobachillerato Subsystem (VIBA) in the state of Guanajuato. In this report we describe issues related to health habits, recreation and exposure to violence.

As expected, the participants in the study population consisted of young individuals, mostly unmarried and living with one or both parents. Among the study population there was a disproportion between the number of male and female students, with a female predominance. This disproportion in the gender distribution of our study population is not different from the distribution keeping the total student population of the 252 centers that make up the VIBA Subsystem in the state of Guanajuato. In those centers, the ratio between men and women was 68.9 males per 100 females, whereas in our study this ratio was 66 males per 100 females. The particular characteristics of the population VIBA subsystem serves and the geographical distribution of schools may be factors that explain the male-female gap in the schools. It is possible that the gender disproportion is a result of the absence of males in rural communities due to the phenomenon of internal and international migration.

In Mexico the use of tobacco, alcohol and other illegal drugs among the adolescent population are a serious public health problem¹³⁻²⁰. In our study population the lifetime prevalence in the use of tobacco was around 70% among men and 46% among women, while the prevalence of alcohol use was 86% and 72% among male and female population. This data is very high when compared to other studies among adolescents in Mexico. In a study of 13,293 students in rural and urban public schools in areas of the

state of Morelos, reported lifetime prevalence for tobacco use of 21.1% and 10.4% among men and women¹⁴. Another study of adolescents (12-15 years) in marginalized urban areas, reported a prevalence of tobacco use of 22% among men and 8.9% among women²¹. Several studies report prevalence for alcohol use among adolescents to be more than 50%. For instance, a study of the student population in the Federal District (DF) reported a prevalence of alcohol use 62.2% among men and 60.2% among women²². Another study reported that students in Pachuca had levels of alcohol use of 47.9% in individuals of both genders^{23, 24}. Similar previously mentioned results were reported by a study of the urban student population in Monterrey. In this study, the prevalence of tobacco and alcohol use was 65% and 63% respectively in both substances⁶. Data from the World Health Survey (2003) for Mexico reported a prevalence of abstinence from alcohol during the past year of 43.5% among the male adolescent population and 71.5% among the female adolescent population²³.

Referring to the use of illegal drugs, marijuana appears to be the most widely used drug among adolescents at the VIBA centers followed by inhalants, cocaine and psychotropic pills. Other studies show a pattern of similar use to that observed in the VIBA centers. Data from a survey of adolescents in the Federal District identified tranquilizers/stimulants as the most widely used drug among adolescents after marijuana¹⁵. Students at the VIBA centers showed a prevalence of illegal drug use very high when compared to other student populations in the country. For instance, the use of inhalants was 2.3% as reported by survey results in Pachuca, Hidalgo, while cocaine use was 9.3% among the male population and 4% among the female population of the participating VIBA centers. The prevalence of marijuana use among VIBA center students was just over 18% in males and 2.2% in females, whereas in Pachuca this prevalence was at 1.7% for both genders. For specific details in which there would be a need to investigate specific situations, the youth of the VIBA centers seem to be more exposed to all types of addictive substances that increase the potential risk for use. Among both genders, youth at the VIBA centers seemed to have experimented with alcohol, tobacco and other drugs at higher levels than those reported in other schools.

Many of the activities in which teens of today's generation are involved are promoters of inactivity. Watching television for long periods of time, music, computer, video games or cell phones contribute to increased physical inactivity²⁵. The evaluation of time devoted to the development of physical activity and time spent watching television or playing video games tells us the recreational habits of students at the VIBA centers. It was noted that approximately 40% of the youth at the VIBA centers did not practice any physical activity. Comparing this data to the time spent watching television, we found that on an average school day 2 of every 3 youth invest 2 or more hours watching television. A large group of male students (17%) spent 4 hours or longer watching television on an average school day. The data above mentioned suggest that factors there are community factors that among a significant segment of students, that stimulate physical inactivity, thus eliminating the positive health effects that sports can have on the individual.

The assessment of adolescent health according to the objective factors (illness) and subjective factors (perceived health) allowed us to have a broader picture of the youth's health at the VIBA centers. It is important to note that almost 2 of every 5 students at the VIBA centers rated their health as fair, poor or very poor during the 30 days prior to the survey. This perception of health was much more of a common event among the female population. They were also more likely to report health problems and/or accidents in the past 6 months prior to the survey and have considered their health problems to be something beyond "mild." On a similar note this population was also more likely to seek medical attention during the past 6 months.

Self-perception of body weight appears to be a valuable indicator of mental health due to its connection with image and self-esteem among adolescents^{26, 27}. When compared to the male adolescent population, the female population was found to have reported a higher body weight. Therefore, it was not surprising to find that the female population was more likely to undergo periods of fasting for 24 hours or more with the intention of losing weight (18%). When comparing our data of risky eating behaviors (diet and fasting) with those reported by the National Survey of Health and Nutrition 2006, we

observed the prevalence of these behaviors was at a 3.2% among Mexican adolescent population²⁸. According to the survey, the female population was also the likeliest to follow risky eating behaviors.

The feelings of sadness and/or unhappiness are events to which any teenager can be exposed to during an average school week and the reasons may be related to conflict situations that occur in the home, school, in the community or may even be connected with all the physiological changes that young people experience during puberty. It is important to distinguish feelings of sadness associated with incidental events to those feelings provoked by the presence of clinical symptoms of depression. Such symptoms have a disruptive effect on the individual's life and may require professional help in order to cope. In this study, we found that more than half of the teens at the VIBA centers showed elevated symptoms of depression according to the use of the CES-D29 scale. The similarity again was that female adolescents had greater reports of elevated symptoms of depression compared to those of the male population. In addition to this phenomenon, it was observed that 3 out of 10 youth at the VIBA centers had suicidal thoughts (suicidal ideation) at some time during the week prior to the survey, of which 10% had thoughts about committing suicide. Adolescent females again appear as the group most prone to suicide ideation. The data for depression and suicidal ideation reported by participants are shown consistent with other studies reported in the country. For instance, Lazcano-Ponce and colleagues reported a prevalence of depression (moderate to severe) among adolescent high school and college youth of being more than 50%¹⁴. In this study, depression was an event that was more associated among men than that of the female population. In regards to suicidal ideation among Mexican adolescents Mondragon and colleagues³⁰ reported a variation in the prevalence of suicidal ideation from 1% to 40.7% while the prevalence of attempted suicide among adolescents ranged from 3% to 10.1% according to different sources³⁰.

Adolescence is a critical period of time for sexual and reproductive health among youth. Not only because during this period the individual is physically and biologically adapting to changes but to their sexuality as well. The change may also be accompanied by a

series of risky sexual and/or sentimental changes for both themselves as individuals and to their sexual/emotional partners. Unplanned pregnancies, abortion and sexually transmitted diseases are some of the reproductive health risks that teenagers face. According to our data 29.9% of male adolescents and 14% of the female population reported having had sex. These figures are very close to that reported by Lazcano-Ponce and colleagues in a study of Mexican adolescents (2003)¹⁴ of which 21.5% of adolescent males and 9.1% of adolescent females reported being sexually active. Similarly, the National Youth Survey 2000, reported that 54.8% of youth aged 15-29 reported being sexually active³¹. Multiple sex partners were reported more frequently among the male population of the VIBA centers (65.8%). This represents more than double the figure reported for the Central West, of the National Youth Survey 2005 of which Guanajuato is part of. Data from the surveys show that 25.9% of the sexually active male population reported having more than one sexual partner³². On the other hand, over 70% of the sexually active youth at the VIBA centers reported using contraception during their last sexual encounter. This seems consistent the reported data for the Central West region, which indicates that 86.7% of their male population used a contraceptive method during their last sexual encounter³².

The number of sexual partners among the youth and the appropriate use of condoms are two important factors that contribute to the prevention of sexually transmitted diseases. Condom use rather than the use of other contraceptive methods becomes greater importance for the prevention of such infections. According to our data, only half of the youth at the VIBA centers reported having used a condom during their last sexual encounter. This fact along with the presence of multiple sexual partners and possible misuse of condoms by the young population leaves to the conclusion that the youth at the VIBA centers could be at high risk for sexually transmitted infections, including AIDS and HIV.

Another important aspect of adolescent reproductive health is the conflicts that may arise during courtship. There is evidence that show that physical abuse occurs in a systematic manner during the integration phase of dating relationships^{33, 34}. In this

study, there was a slight difference in reported violence among genders, the male population was more likely to report physical violence by their partner. Other studies of dating violence show similar levels reported in this study^{33, 34}. An aspect that would need to be investigated is that related to physical and mental consequences of physical violence during the formative stage of the relationship, as the health consequences may be different among men and women. The young men and women should have relevant information on how to deal with such situation and especially the existence of health care providers and counseling services for those living under violent situations.

Death by trauma during adolescence is a serious public health problem in México³⁵. According to the evidence provided in this report, the youth at the VIBA centers are highly exposed to situations that could result in injury, disability and death. Such exposure to trauma are associated with risky events, including participation in physical fights (45% among men), having been threatened with guns, knives, or dangerous weapons (20% among men) or having traveled as a passenger in a motor vehicle driven by someone who under the influence of alcohol or in some cases being the driver while intoxicated. Aside from being a subject or participant of physical violence whether in the community or at school among the youth of the VIBA centers it was also found that such violence is exercised at home. Domestic violence was another component in the life of more than half of the youth of the VIBA centers and should be identified and reported as a possible impact on youth health.

Recommendations

Recommendations

School authorities should be very alert to the possible presence of drugs in the community and potential impact it has in the schools. A set structure of actions aimed at preventing the use of alcohol, tobacco and other drugs and the identification of treatment centers are some of the actions that education authorities may develop in the short term. Due to the high levels of access to drugs in the communities studied, the development of prevention programs is highly recommended. These programs should have effective strategies of resistance to drugs in order to keep the student population away from such risks.

The increase of obesity in the country demands a continuous assessment of the recreational patterns among adolescents to identify those behaviors that encourage and promote inactivity and lack of physical fitness. An importance of promoting physical activity during childhood and adolescence as a preventive factor for obesity and other chronic diseases later in adulthood have previously been documented¹⁴. Therefore it is important to encourage the youth at the VIBA centers the values associated with physical activity and sports. Creating communal gathering spaces that aim to promote the development of physical activity for adolescents is an activity that cannot be delayed any further. The school is the most valuable communal gathering for adolescents and therefore should aim at creating value in physical fitness. In order for the youth to reduce the time spent watching television community recreation alternatives should be available. Given the economic constraints of the VIBA centers in the short term it is inaccessible to provide sports facilities and therefore other options that can promote physical fitness would have to be considered. The creation of "dance clubs" could be

an option and classrooms could be the meeting places for such clubs. Other options could include walking clubs, marathons or the development of a street soccer tournament. The options are multiple and economic constraints should not be viewed as a constraint for the promotion of activities to improve physical and mental health among adolescents.

The relationship between eating risk behaviors and the development disorders such as anorexia and bulimia in adolescents have been previously documented³⁶⁻³⁹. Risk eating behaviors have been associated with other risk behaviors to health, such as alcohol consumption, tobacco, drugs, unprotected sexual practices, as well as increased levels of depression and suicide attempts⁴⁰. In this regard it is important to find simple collective ways to develop self-esteem among the adolescents at the VIBA centers, as this can help reduce levels of depression and suicide ideation.

The results of this report call for the development of immediate actions that can contribute to better health conditions and welfare of the adolescent population at the VIBA centers. Identifying the community based health care providers and possible alliances with these organizations are the key to finding short, medium and long term solutions to health problems described in this report. VIBA centers should use the opportunity of working with organizations and programs such as “Young People” with the Youth Integration Centers of MEXFAM, and with reproductive health related programs for adolescents offered through the Ministry of Health, the IMSS and ISSSSTE. The SABES Educational Psychology Department and the experienced team of psychologists that work with the institution will be crucial for the planning and development of preventive and treatment services for the adolescent population at the VIBA centers.

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