

Texas Risk Assessment for Type 2 Diabetes in Children

A Report to the Governor
and the 83rd Legislature of the State of Texas



The University of Texas-Pan American
College of Health Sciences and Human Services
Border Health Office





The University of Texas-Pan American Border Health Office

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Recent times have been difficult for many state programs who receive support from the State of Texas. The Texas Risk Assessment for Type 2 Diabetes in Children program was indeed significantly impacted by the funding cuts and brought about challenges in the way that services had previously been provided to school nurses and other certified assessors since the inception of the program 15 years ago. The University of Texas-Pan American College of Health Sciences and Human Services Border Health Office (BHO) would like to say “thank you” to all the school nurses for their commitment and care for the children of the State of Texas and for being so understanding and patient during these times of change for the Texas Risk Assessment for Type 2 Diabetes in Children program.

The University of Texas-Pan American Border Health Office appreciates the continued support of State Senator Eddie Lucio Jr., D-District 27 and his staff. We thank him for his commitment to reduce the burden of type 2 diabetes in children throughout the State of Texas.

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MESSAGE FROM THE EXECUTIVE DIRECTOR

In the late 1990s, it was visibly evident that the landscape of health was changing for our children in the State of Texas. At the time, the seriousness of childhood obesity and its associated risks could not have been anticipated to become one of the most significant challenges that our society now faces. But even then, it was apparent that some form of action needed to be taken. In 1999, the 76th Texas Legislature passed House Bill 1860 to create what is now known as the Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) program.

The program's purpose was to make parents aware of the risks associated with type 2 diabetes that could be present in their children...risk factors that were not necessarily obvious enough to prompt them to take action. One such risk factor is acanthosis nigricans (AN). AN usually appears on the back of the neck as a brown-to-black, velvety or rough marker and is considered the hallmark of insulin resistance. Prior to the implementation of the TRAT2DC program in 1999, this marker was often dismissed as a case of poor hygiene. Research had shown that this marker was indeed a risk factor for the development of type 2 diabetes, but there was an education and awareness lag. The TRAT2DC program changed that by providing education and awareness behind the significance of this risk factor. Other risk factors, like elevated blood pressure and body mass index, were also made known to parents. Equipped with the knowledge and awareness of what these risk factors meant, parents could now take action by consulting with a health professional to give their children, and possibly their families, the opportunity to make lifestyle changes that would decrease the chances to developing a devastating disease like type 2 diabetes.

The University of Texas-Pan American College of Health Sciences and Human Services Border Health Office (UTPA COHSBS BHO) TRAT2DC program has been providing this opportunity to parents for over 15 years. Over 1 million children in public and private schools were assessed annually for their risk of type 2 diabetes. As always, the most important aspect of the TRAT2DC program is to help those children who are identified as at-risk to follow their assessment with a health care professional. The 2010-2011 referral results indicate that 10,844 children were under the care of a health professional. The 2011-2012 referral results revealed 9,713 children in this category. Descriptive risk assessment information for the 2010-2011 and 2011-2012 school year is included in this report.

During the 82nd legislative session, the TRAT2DC program sustained budget cuts that impacted the training, services and support that it offers to over 6,000 school nurses and certified personnel that assess children who are at risk to develop type 2 diabetes. Pressing forward, the UTPA COHSBS BHO developed an online certification program and offered video teleconference trainings to keep with training demands and offset the loss of personnel. A budget summary of the TRAT2DC program and a description of the TRAT2DC online certification program are detailed in this report.

The Texas Risk Factor Assessment for Type 2 Diabetes in Children program continues to support the Texas Diabetes Council's state plan for diabetes prevention and control and provides school administrators with risk assessment results that can assist with other school health initiatives and improve the school health environment.

There is a well-known proverb that puts the purpose of the TRAT2DC program into perspective: "Some people make things happen, some watch things happen and some wonder what happened". The TRAT2DC program is making things happen and we are proud to provide this service to the State of Texas, its' parents and their children.

Doreen D. Garza, MPH
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Texas Risk Assessment for Type 2 Diabetes in Children

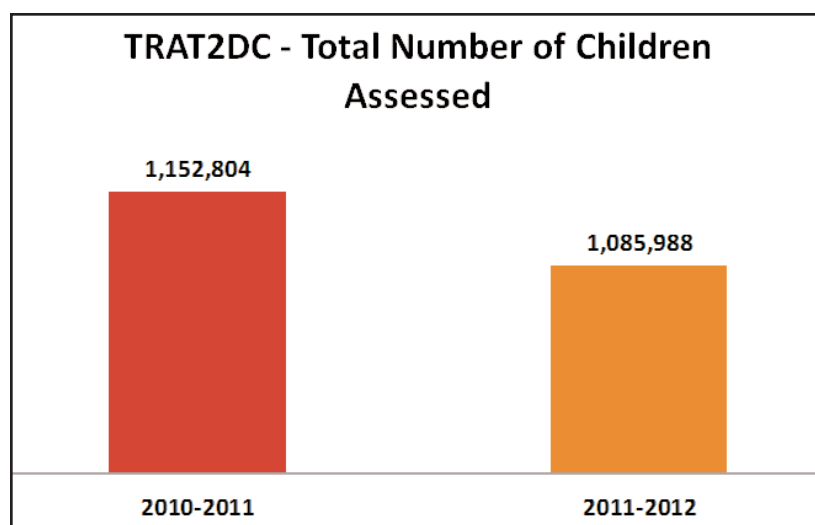
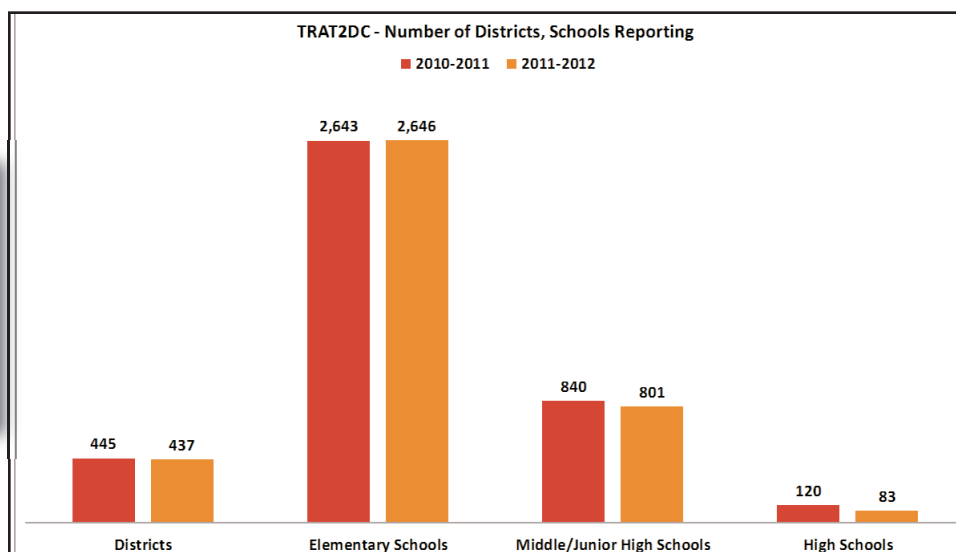
The Texas Risk Assessment for Type 2 Diabetes in Children (TRAT2DC) is a state mandated program developed, coordinated, and administrated by The University of Texas Pan-American Border Health Office. This program helps assess children who may be at high risk to develop type 2 diabetes. This assessment is conducted by certified individuals in public and private schools during vision/hearing and scoliosis screenings.

During these vision/hearing and scoliosis screenings, children are assessed for the acanthosis nigricans marker - a skin marker that signals high insulin levels. Children who are identified with the marker are also assessed to determine body mass index (BMI) and blood pressure.

Risk assessments are issued to the parents of these children, alerting parents of the child's risk factors and encouraging further evaluation from a health professional. The risk assessments appear to be effective in getting at-risk children to seek appropriate follow-up evaluation/testing from a health care provider to prevent or delay future health problems.

The program assesses children who may be at-risk to develop type 2 diabetes in Texas Education Agency Education Service Center Regions 1, 2, 3, 4, 10, 11, 13, 15, 18, 19, and 20.

The graph to the right indicates the number of school districts and schools participating in the TRAT2DC program that were conducted for the 2010-2011 and 2011-2012 reporting periods.



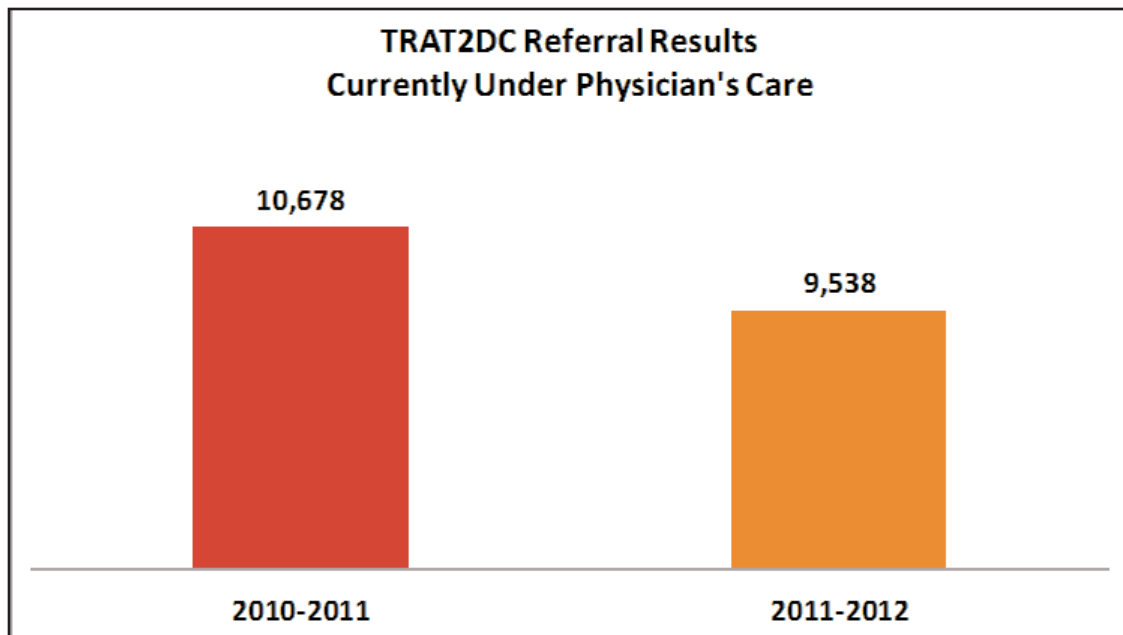
The graph to the left shows the number of children who were assessed in 1st, 3rd, 5th, and 7th grades for the reporting years 2010-11 and 2011-12. The TRAT2DC program impacts over 1 million children throughout the State of Texas each year.

Risk Assessment Referral

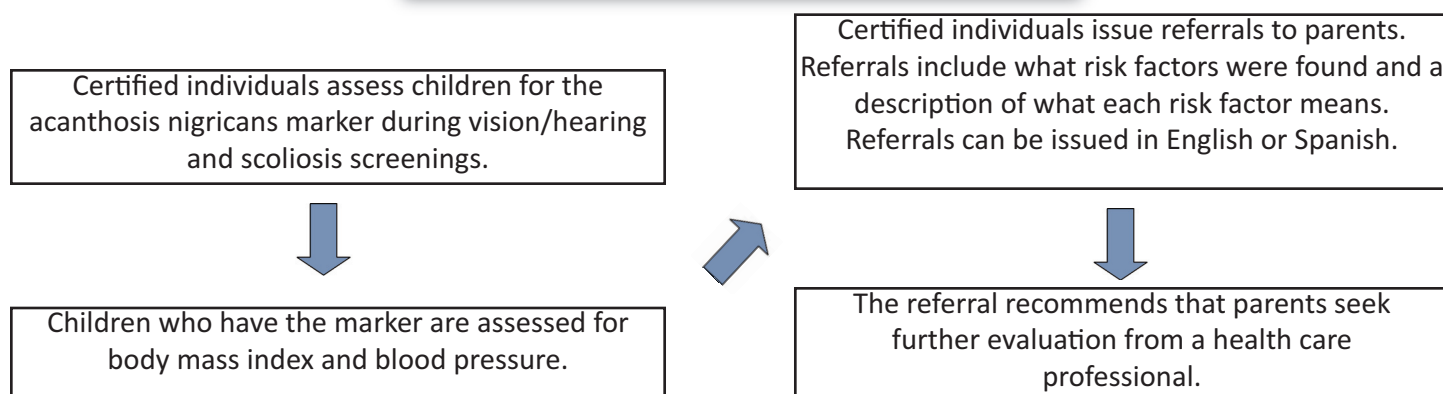
The Texas Risk Assessment for Type 2 Diabetes in Children program helps identify those children who may be at-risk to develop type 2 diabetes through simple, non-invasive assessments that have been identified as risk factors for the development of the disease and other complications. During vision/hearing and scoliosis screenings, certified individuals assess school children for these risk factors. If these risk factors are present, a referral is issued to the parents of the child explaining what was found and why it is of concern. The referral includes recommendations to seek further evaluation from a health professional.

Research shows that the origins of type 2 diabetes are firmly rooted in childhood and experts agree that the best chance to reduce the burden of diabetes is to identify those with pre-diabetes to prevent its onset. It is important then for children with these risk factors to be evaluated by a health care professional. This contact between child, parent, and physician is a significant first step to reduce the burden of diabetes in the State of Texas.

The 2010-2011 referral results indicate that 10,678 children were under the care of a health professional, while 9,538 children were reported in this category for the 2011-2012 reporting period.



TRAT2DC Assessment Process



Risk Assessments

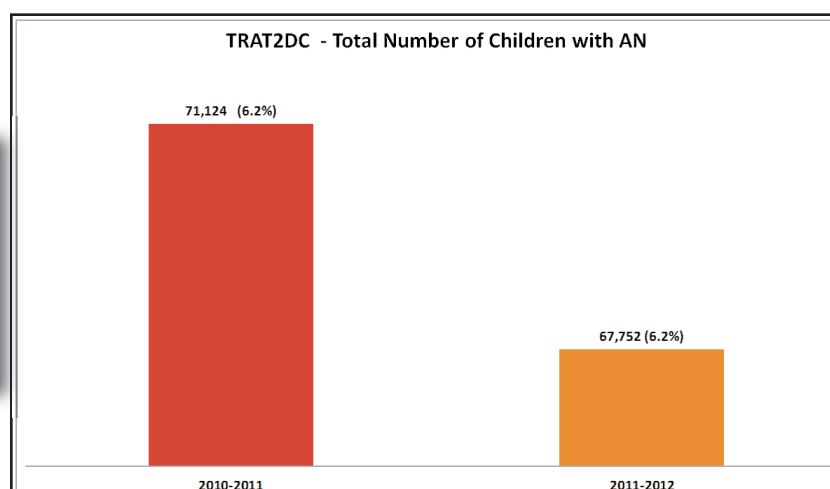
ACANTHOSIS NIGRICANS

Acanthosis nigricans (AN) is a cutaneous marker associated with hyperinsulinemia and insulin resistance and is considered a risk factor for type 2 diabetes and other chronic diseases. Because of the increasingly alarming rates of children developing type 2 diabetes, acanthosis nigricans assessments are important and can help identify children with high insulin levels who may be at risk for developing the disease.



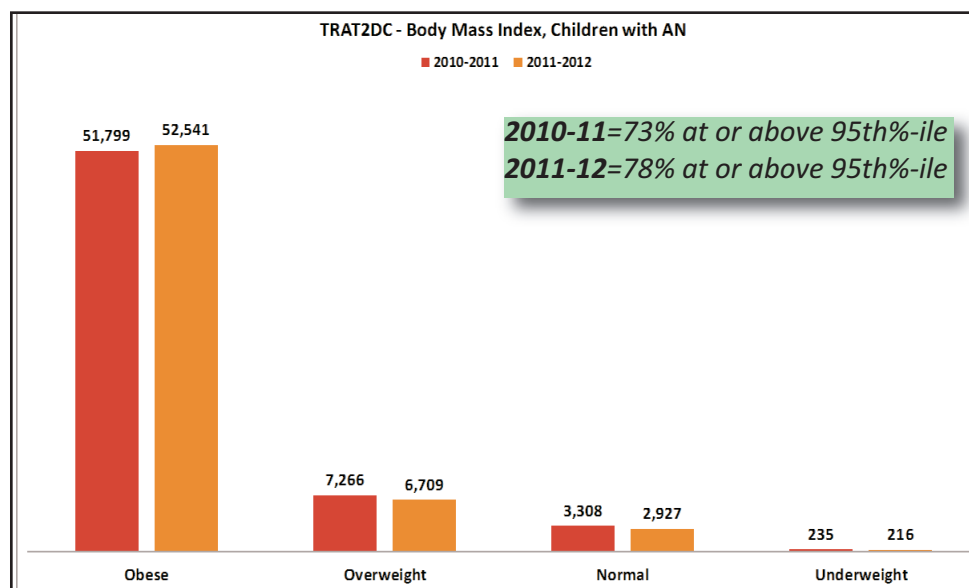
Acanthosis Nigricans(AN)

The number of children identified with the AN marker for the 2010-2011 reporting period was 71,124 or 6.2% of the student population that were assessed for that year. In the 2011-2012 reporting period, the number of children with a AN was 67,752, or 6.2% of that year's student population.



BODY MASS INDEX

Body Mass Index (BMI) is a measurement that helps determine overweight status by using a mathematical formula that takes into account a child's age, height, and weight. After BMI is calculated for children and teens with acanthosis nigricans, the BMI number is plotted on Center for Diseases Control and Prevention (CDC) BMI-for-age growth charts. BMI categories are identified as obese, overweight, normal, and underweight. A child with a BMI greater or equal to the 95th percentile is considered obese and has a greater chance of maintaining obesity into adulthood. This is also significant since studies have shown that BMI above the 95th percentile is associated with elevated blood pressure, hyperlipidemia, and obesity-related disease and mortality. A child whose BMI falls between the 85th and 94th percentile is considered overweight and should be evaluated carefully and should be given particular attention to secondary complications of obesity.



The graph to the left indicates the number of children with AN who were identified as obese, overweight, normal, or underweight for the 2010-2011 and 2011 and 2012 reporting periods. As the graphs illustrate, most children with AN were at or above the 95th percentile for BMI.

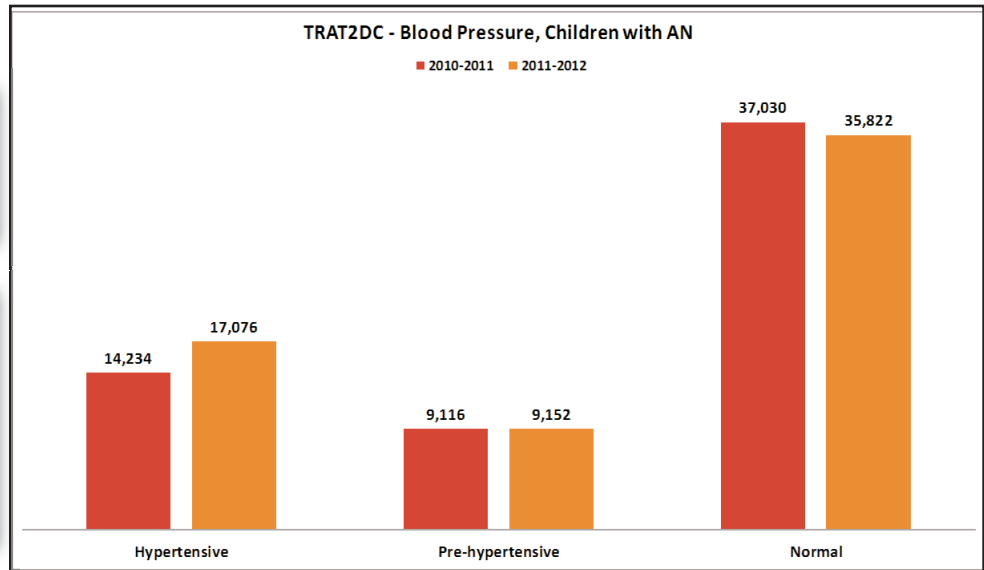
Risk Assessments

Blood Pressure

Hypertension increases the risk for cardiovascular disease and is a complication of obesity. Hypertension has also been associated with insulin resistance and hyperinsulinemia. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to track blood pressure in children. Certified personnel perform two blood pressure measures on children who have the AN marker. Blood pressure is taken on the child's right arm in a controlled environment, giving three to five minutes of rest in between each reading as recommended by the National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents. The blood pressure categories are identified as hypertensive, prehypertensive, or normal.

The graph to the right indicates the number of children with AN identified as hypertensive, prehypertensive, or normal.

For the 2010-2011 reporting period, 33% of children with AN were identified as either hypertensive and pre-hypertensive. The percentage increased to 39% during the 2011-2012 reporting period.



Texas Risk Assessment for Type 2 Diabetes Educational Material

The TRAT2DC program provides educational materials to school nurses/certified individuals who take part in the risk assessments. These materials are an excellent resource for parents.

A colorful foldout easy-to-read bilingual brochure is available for comprehensible use by school nurses to assist in educating parents and the community-at-large about TRAT2DC program and the risk factors assessments.

Most recently, a poster has been developed that includes helpful tips on how to identify and assess for the acanthosis nigricans marker.

Over 100,000 TRAT2DC brochures and over 1,000 TRAT2DC AN posters were distributed between the 2010-2012 reporting periods.



TRAT2DC Brochure



TRAT2DC Acanthosis Nigricans Assessment Poster

Texas Risk Assessment for Type 2 Diabetes in Children Budget & Support Services

The Texas Risk Assessment for Type 2 Diabetes in Children program provides training and certification to school nurses or other certified individuals in conducting risk assessments. This service is provided by health education coordinators that are assigned, but not restricted to, certain Texas Education Agency Regional Education Service Centers. Requests for materials and training and technical support for the Risk Factor Electronic System is also provided by these coordinators. Providing these services is pertinent to the success of the program.

During the 82nd legislative session, the TRAT2DC program sustained budget cuts that impacted the training, services and support that it offers to over 6,000 school nurses and certified personnel that assess these children who are at risk to develop type 2 diabetes.

The decrease in program funding during the 82nd Legislative session posed a serious logistical and workforce problem for the BHO. These budget cuts which resulted in reduction of personnel and travel funds, negatively impacted the BHO's capacity to train and re-certify over 6,000 users. The TRAT2DC program is funded in the amount of \$158,65 of which 76% is allocated for personnel, 18% allocated for maintenance and operation, and the remaining 6% for travel.

Although risk assessment certification is valid for five years, training and certification is an important on-going activity as new nurses are hired by districts every year due to growth or turnover. In response to the significant budget reductions, the BHO developed an online certification training. This online certification training is offered as an option through the Risk Factor Electronic System. The BHO estimates that over 50% of individuals needing certification will be trained online during the 2012-2013 school year. The BHO also offers training via videoconference and face-to-face trainings on a limited basis.

The TRAT2DC online certification training is offered through the Risk Factor Electronic System. It is estimated that over 50% of individuals needing certification will be trained online during the 2012-2013 school year.

Texas Risk Assessment For Type 2 Diabetes in Children

Module 2: Acanthosis Nigricans

Acanthosis nigricans (AN) can appear as a brown-to-black, rough or velvety marker.

It is considered a clinical surrogate for hyperinsulinemia, suggesting that a blood analysis of someone who has AN would most likely yield high insulin levels.

AN is most commonly found on the nape of the neck. AN can also be found on the axillae, knuckles, elbows, and knees but is less common.

Fast Fact: It is recommended that individuals certified to conduct risk assessments only assess the nape of the neck for Acanthosis Nigricans.

[Previous](#) [NEXT](#)

Acanthosis nigricans body regions

■ Most common
■ Common
□ Uncommon
□ Rare

Source: Skin Disease: Diagnosis and Treatment, Habif, T. et al. Mosby, 2004

UTPA

Sample of TRAT2DC Online Certification Module

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**TEXAS RISK ASSESSMENT FOR TYPE 2 DIABETES IN CHILDREN PROGRAM
TEXAS EDUCATION AGENCY REGIONAL EDUCATION SERVICE CENTER
2010-2011/2011-2012 FACT SHEETS**

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 1

2010-2011

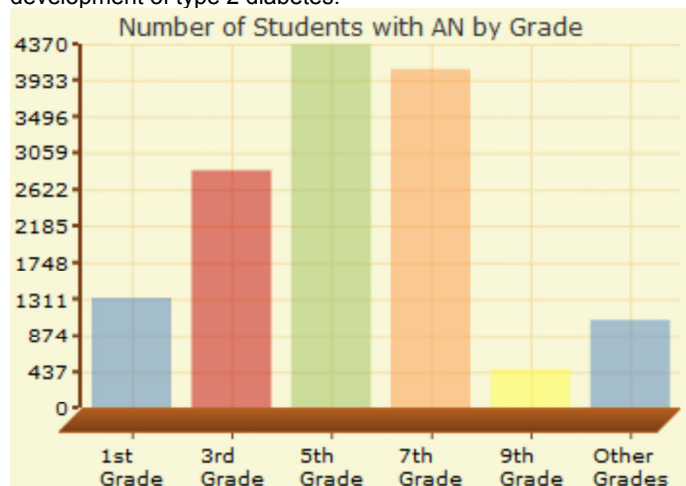
The Risk Assessment for the Type 2 Diabetes in Children is a legislatively mandated program developed, coordinated, and administered by The University of Texas-Pan American Border Health Office (BHO). The program assesses children who may be at high risk of developing type 2 diabetes. During vision/hearing and scoliosis screenings of 1st, 3rd, 5th and 7th graders in public and private schools, certified individuals assess children for the acanthosis nigricans (AN) marker, a skin condition that signals high insulin levels. Children who are identified with the marker undergo additional assessments of body mass index (BMI), BMI percentile, and blood pressure. Referrals are issued to the parents of these children, alerting each parent of what the risk factors are and what changes will be necessary to prevent or delay future health problems for children at risk of developing type 2 diabetes and other health conditions.

The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 131995	Already under care: 2705	Referral not issued: 83
Acanthosis Nigricans: 14138	Seen by Physician: 368	Referral not returned: 9430
		Not Seen by Physician: 122

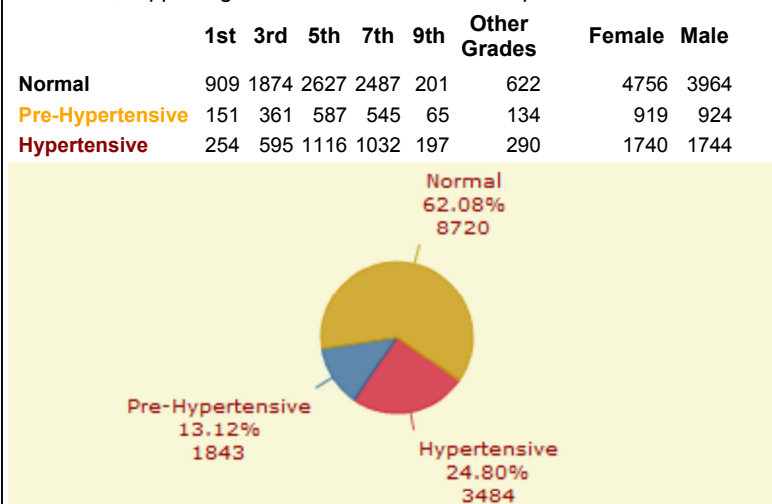
Acanthosis Nigricans

Acanthosis nigricans is a skin condition that is frequently seen on the nape of the neck. It appears as a dark/black, rough, or velvety area on the surface of the skin. The AN marker is important because it most often signals high insulin levels circulating within the body. The AN marker is considered a risk factor in the development of type 2 diabetes.



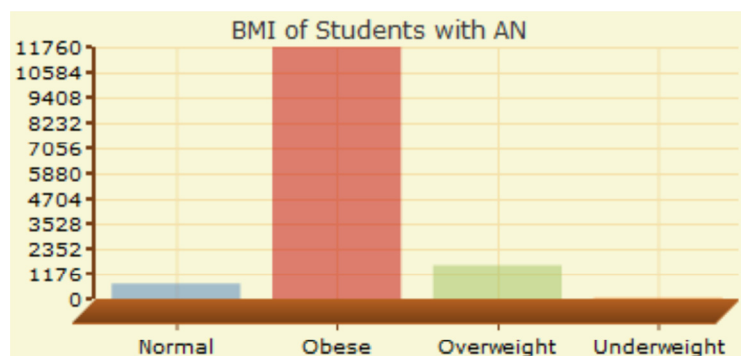
Blood Pressure

Hypertension has also been associated with insulin resistance and hyperinsulinemia, which is important for children with the AN marker. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to measure blood pressure in children.



Body Mass Index

A high Body Mass Index (BMI) for age percentile is also considered a risk factor for the development of type 2 diabetes. BMI is calculated using the student's sex, age, height, and weight. The BMI percentiles are determined by the Centers for Disease Control BMI for age percentile growth charts. The percentiles are separated into four categories: Underweight, Normal, Overweight, and Obesity. In the development of type 2 diabetes, special emphasis is placed on the Overweight and Obesity categories.



	1st	3rd	5th	7th	9th	Other Grades
Normal	77	119	211	211	42	40
Obesity	1134	2457	3588	3317	340	922
Overweight	97	252	545	519	84	85
Underweight	11	15	15	22	0	6

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 1

2011-2012

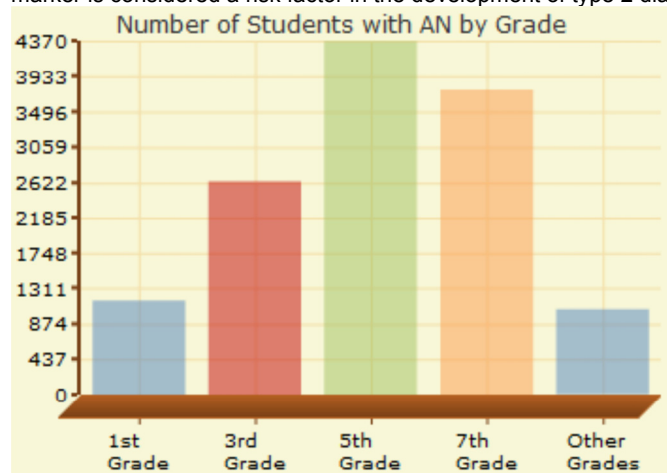
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 125072	Already under care: 2111	Referral not issued: 59
Acanthosis Nigricans: 12976	Seen by Physician: 290	Referral not returned: 8920
		Not Seen by Physician: 101

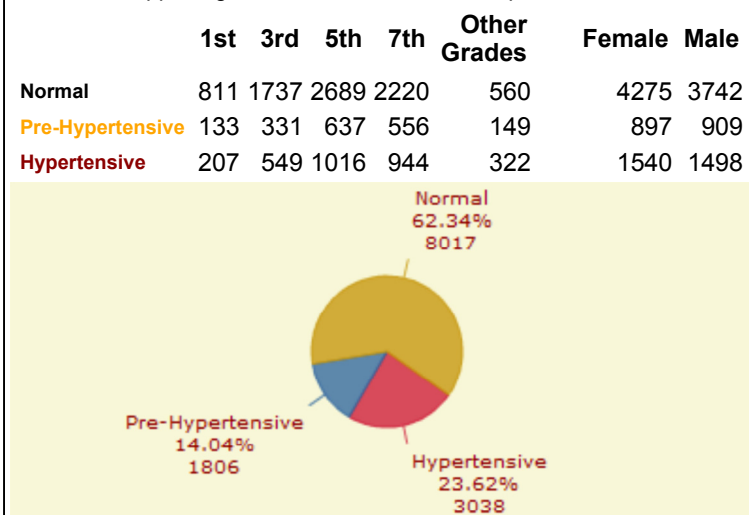
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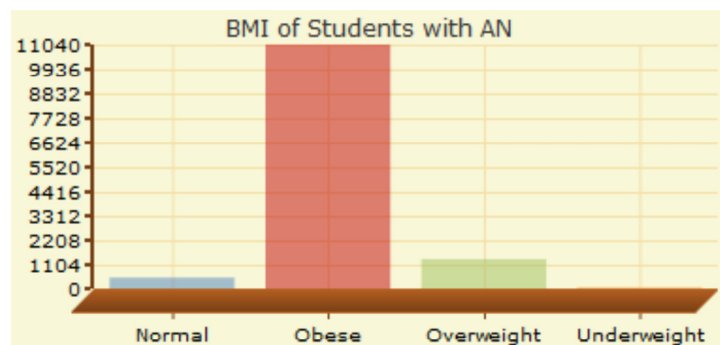
Blood Pressure

Hypertension has also been associated with insulin resistance and hyperinsulinemia, which is important for children with the AN marker. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to measure blood pressure in children.



Body Mass Index

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	1st	3rd	5th	7th	Other Grades
Normal	49	71	168	166	40
Obesity	1048	2346	3664	3102	876
Overweight	50	206	510	483	114
Underweight	6	13	19	10	15

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 2

2010-2011

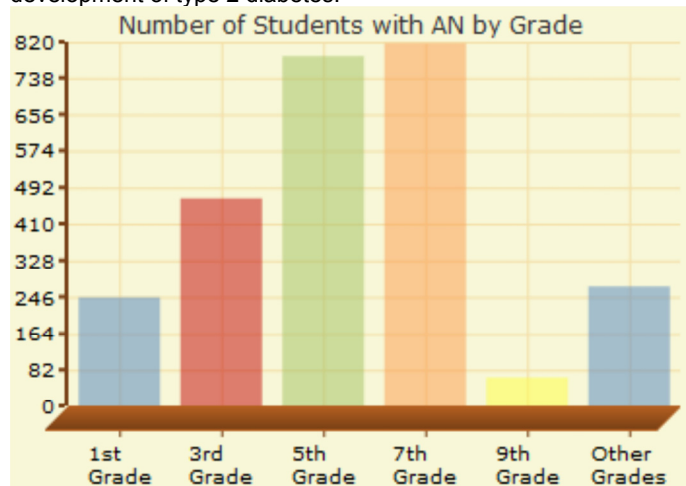
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 33998	Already under care: 280	Referral not issued: 64
Acanthosis Nigricans: 2650	Seen by Physician: 81	Referral not returned: 1854
		Not Seen by Physician: 21

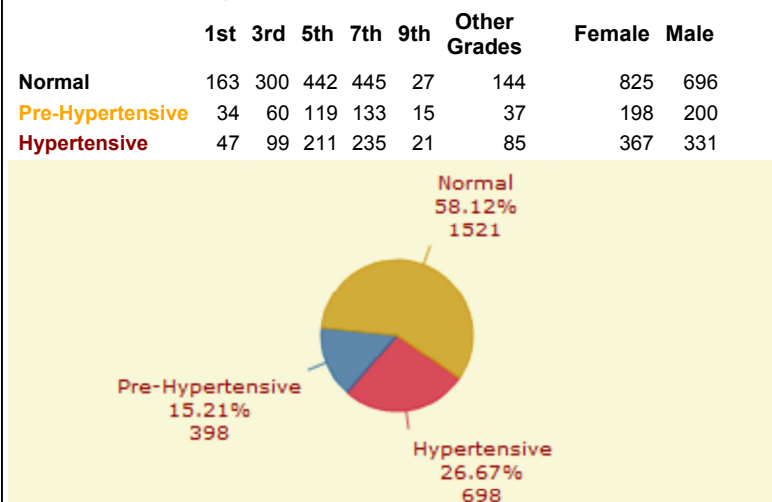
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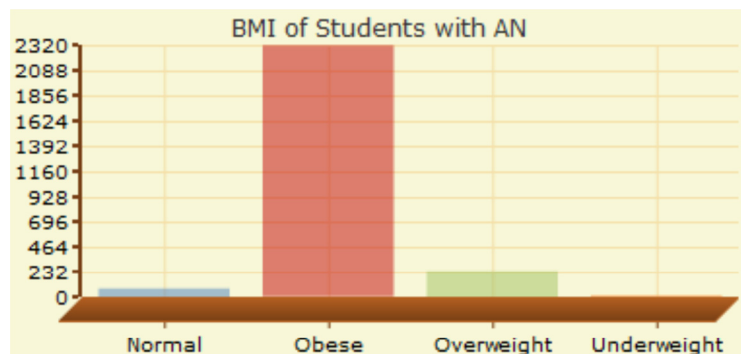
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	1st	3rd	5th	7th	9th	Other Grades
Normal	7	10	20	22	7	10
Obesity	222	424	685	701	52	229
Overweight	11	29	76	90	4	25
Underweight	5	4	4	1	0	4

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 2

2011-2012

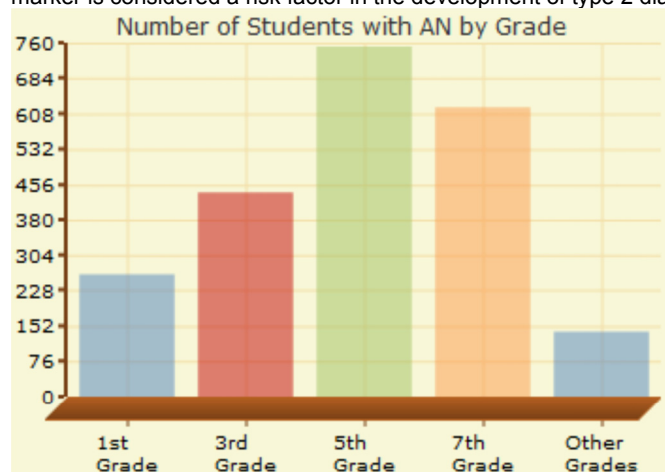
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 29713	Already under care: 281	Referral not issued: 5
Acanthosis Nigricans: 2213	Seen by Physician: 52	Referral not returned: 1787
		Not Seen by Physician: 4

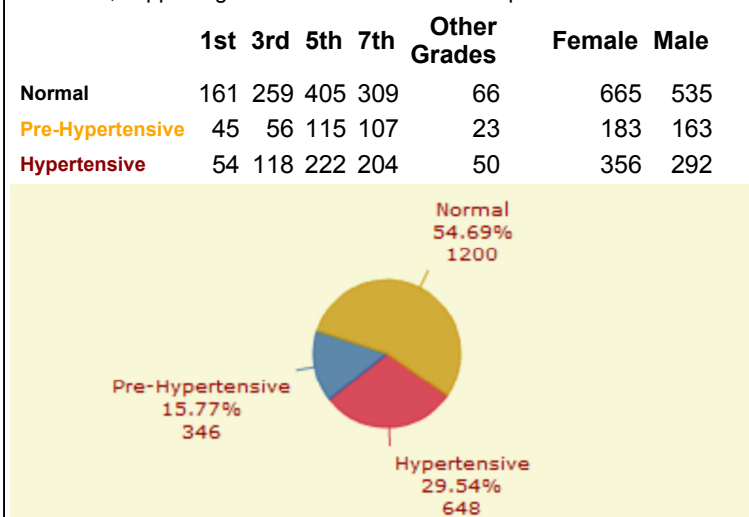
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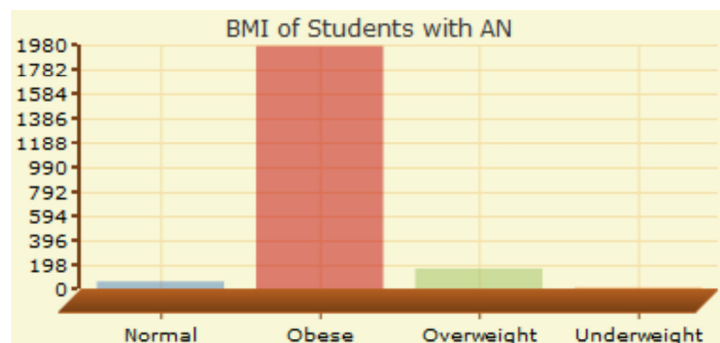
Blood Pressure

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Body Mass Index

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	1st	3rd	5th	7th	Other Grades
Normal	6	12	20	16	3
Obesity	238	397	650	562	124
Overweight	15	25	79	43	7
Underweight	2	3	2	0	4

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 3

2010-2011

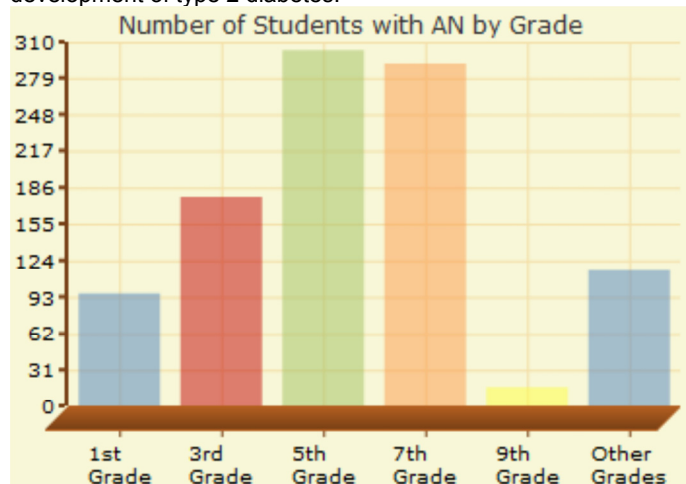
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 16225	Already under care: 127	Referral not issued: 2
Acanthosis Nigricans: 1001	Seen by Physician: 48	Referral not returned: 771
		Not Seen by Physician: 2

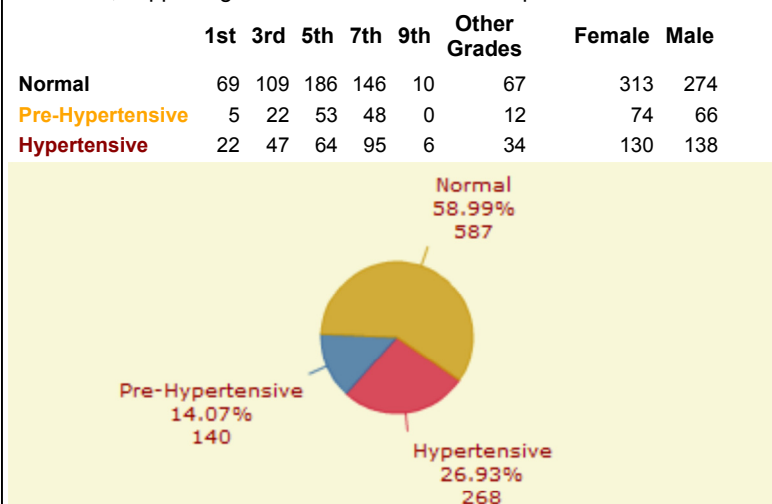
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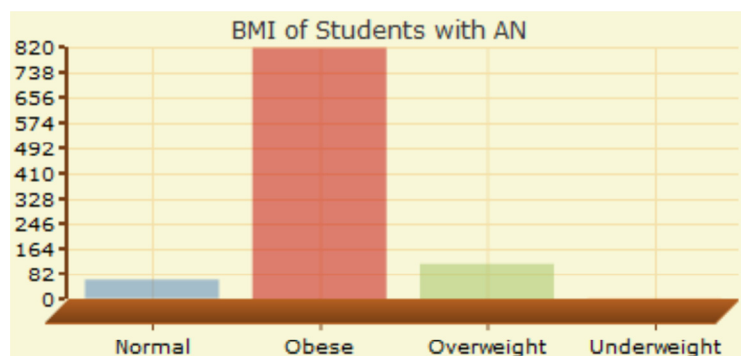
Blood Pressure

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	1st	3rd	5th	7th	9th	Other Grades
Normal	11	17	13	13	0	7
Obesity	79	143	254	238	13	90
Overweight	5	18	36	38	3	16
Underweight	1	0	0	0	0	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 3

2011-2012

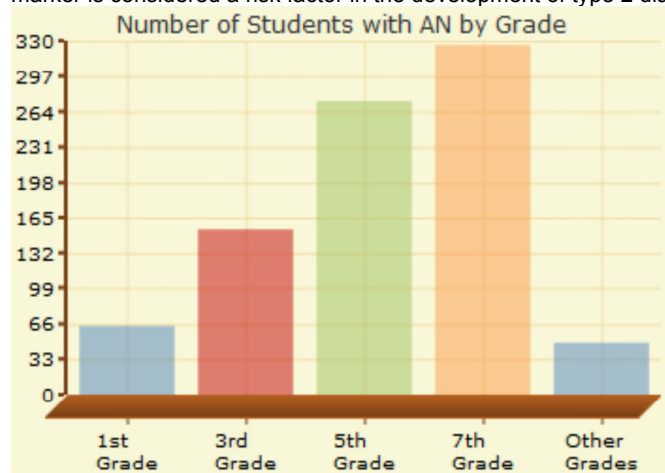
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 12888	Already under care: 107	Referral not issued: 4
Acanthosis Nigricans: 866	Seen by Physician: 11	Referral not returned: 669
		Not Seen by Physician: 2

Acanthosis Nigricans

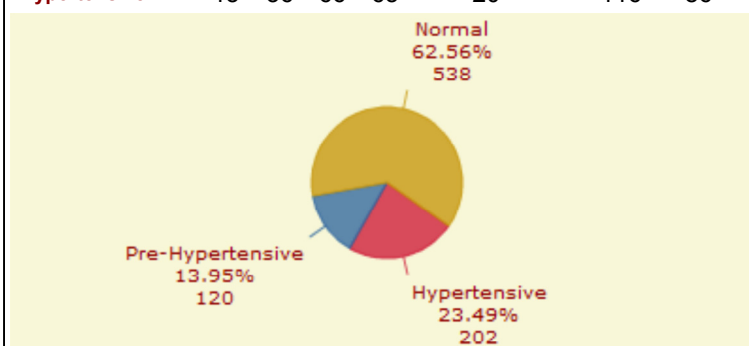
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Blood Pressure

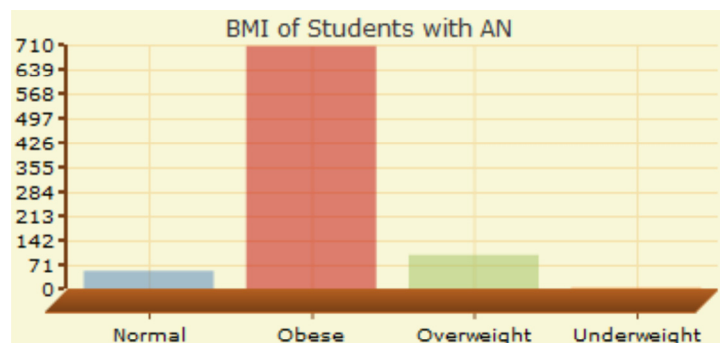
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	1st	3rd	5th	7th	Other Grades	Female	Male
Normal	38	95	165	222	18	322	216
Pre-Hypertensive	11	22	41	37	9	71	49
Hypertensive	15	36	66	65	20	116	86



Body Mass Index

A high Body Mass Index (BMI) for age percentile is also considered a risk factor for the development of type 2 diabetes. BMI is calculated using the student's sex, age, height, and weight. The BMI percentiles are determined by the Centers for Disease Control BMI for age percentile growth charts. The percentiles are separated into four categories: Underweight, Normal, Overweight, and Obesity. In the development of type 2 diabetes, special emphasis is placed on the Overweight and Obesity categories.



	1st	3rd	5th	7th	Other Grades
Normal	2	8	13	30	0
Obesity	58	134	226	246	42
Overweight	4	11	33	47	5
Underweight	0	1	1	2	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 4

2010-2011

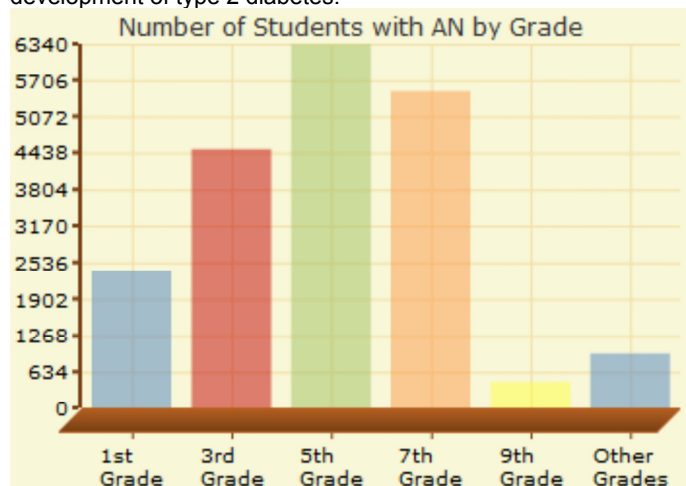
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 316000	Already under care: 2318	Referral not issued: 79
Acanthosis Nigricans: 20144	Seen by Physician: 212	Referral not returned: 16126
		Not Seen by Physician: 130

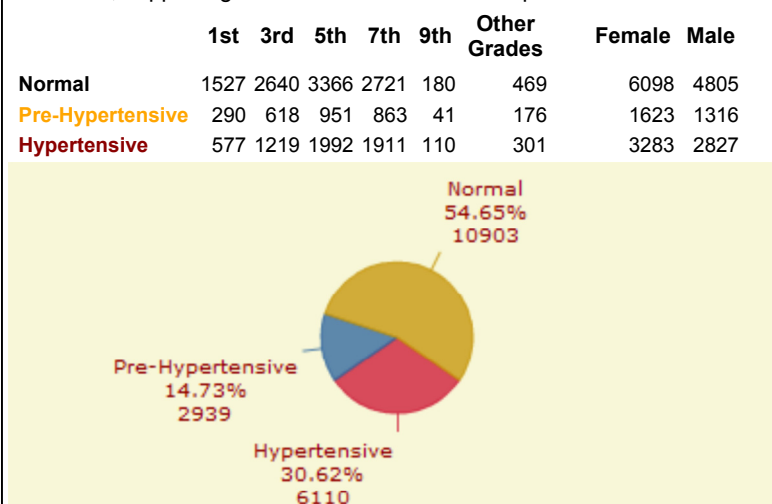
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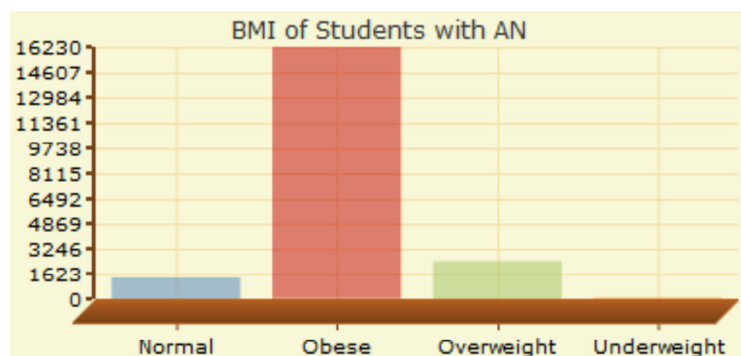
Blood Pressure

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	1st	3rd	5th	7th	9th	Other Grades
Normal	273	274	332	406	36	60
Obesity	1915	3715	5146	4289	356	799
Overweight	192	478	818	798	58	83
Underweight	16	24	26	17	2	4

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 4

2011-2012

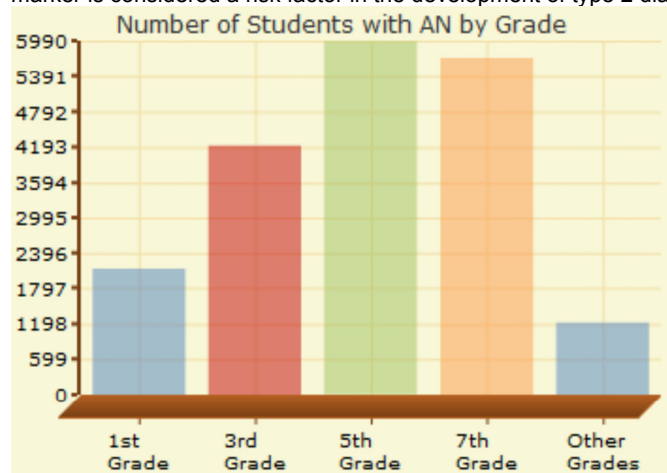
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 282387	Already under care: 2081	Referral not issued: 92
Acanthosis Nigricans: 19239	Seen by Physician: 378	Referral not returned: 15238
		Not Seen by Physician: 148

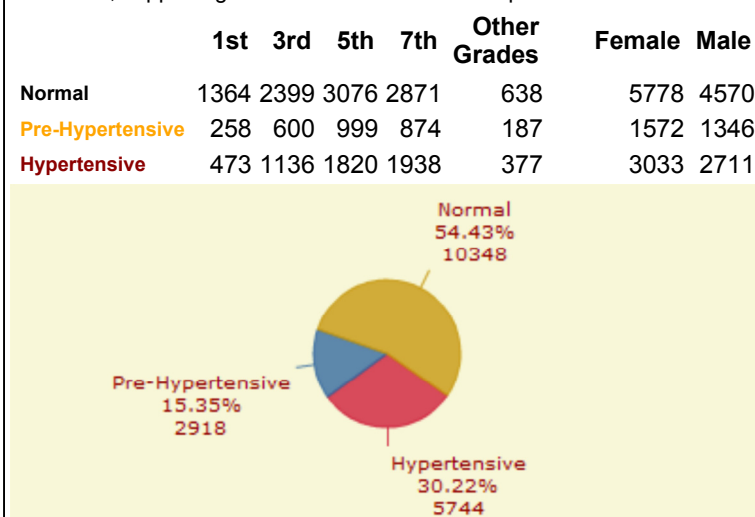
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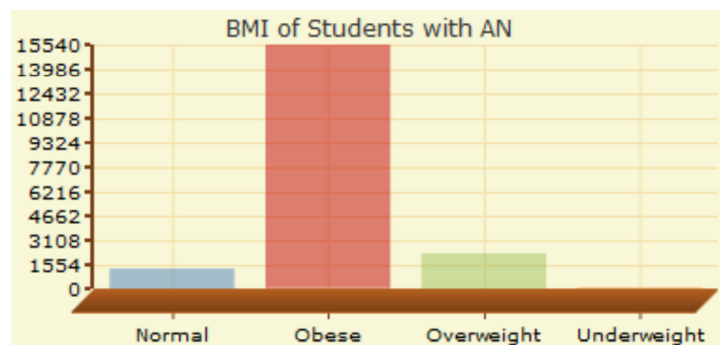
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	1st	3rd	5th	7th	Other Grades
Normal	231	241	269	481	77
Obesity	1705	3524	4881	4406	1015
Overweight	168	426	774	784	119
Underweight	15	13	27	14	1

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 10

2010-2011

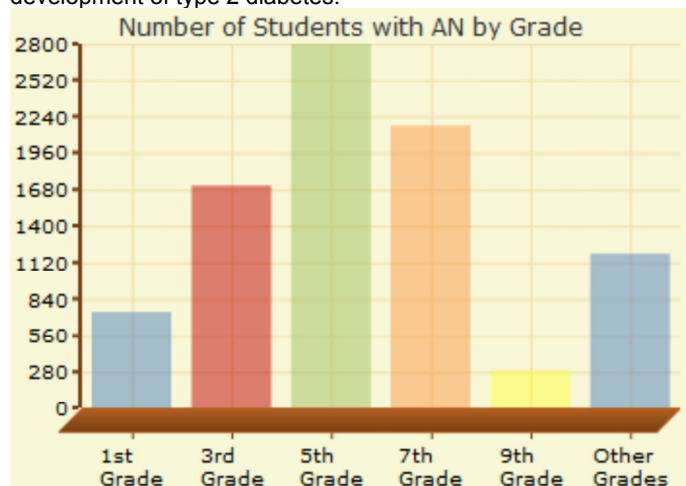
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 190464	Already under care: 1179	Referral not issued: 43
Acanthosis Nigricans: 8894	Seen by Physician: 107	Referral not returned: 6418
		Not Seen by Physician: 49

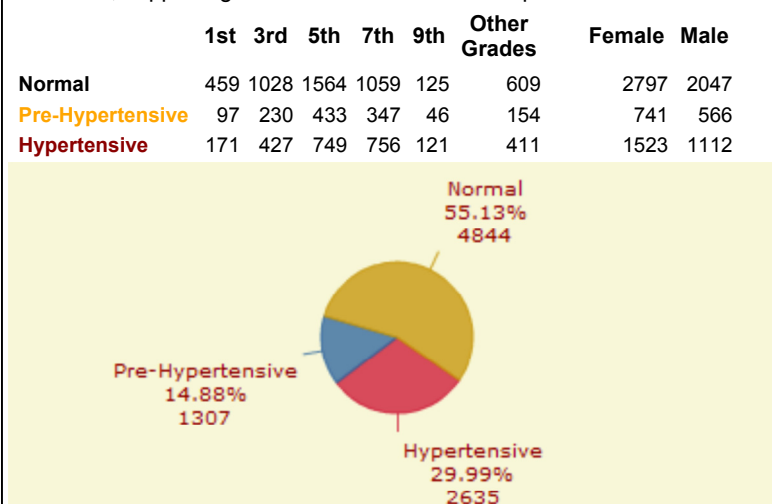
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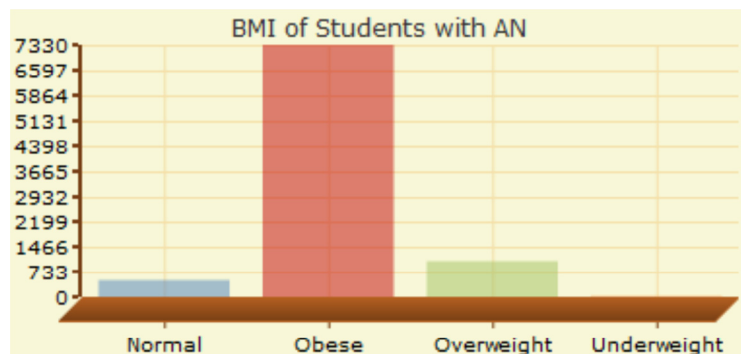
Blood Pressure

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Body Mass Index

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	1st	3rd	5th	7th	9th	Other Grades
Normal	54	59	141	138	29	55
Obesity	626	1493	2275	1722	213	999
Overweight	55	146	370	301	48	122
Underweight	1	5	6	2	2	8

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 10

2011-2012

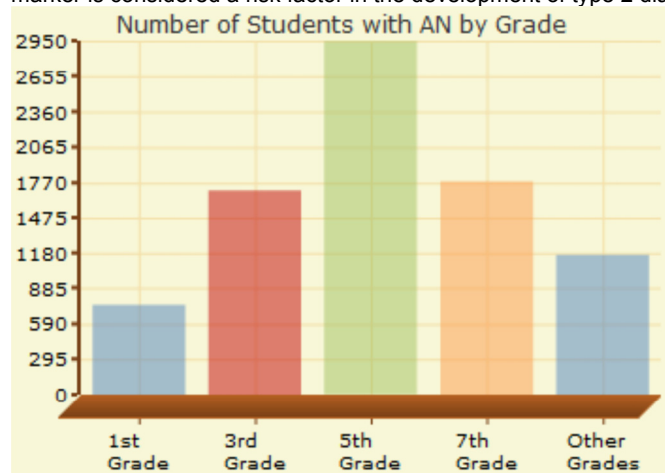
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 190983	Already under care: 1184	Referral not issued: 43
Acanthosis Nigricans: 8340	Seen by Physician: 118	Referral not returned: 5417
		Not Seen by Physician: 107

Acanthosis Nigricans

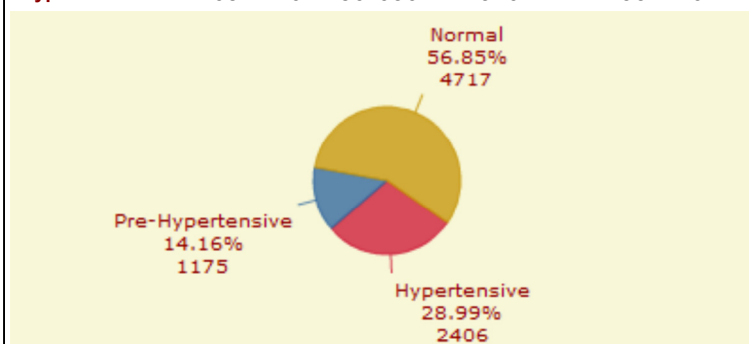
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Blood Pressure

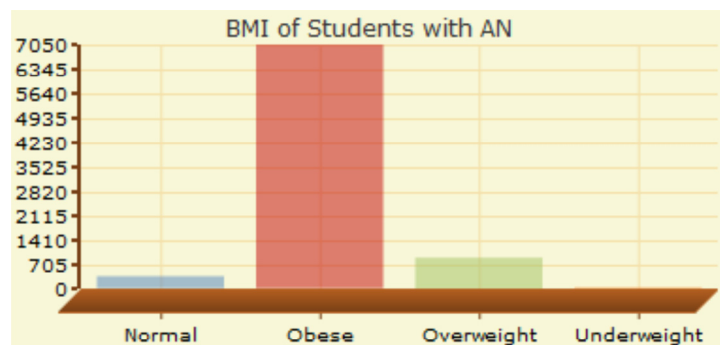
Hypertension has also been associated with insulin resistance and hyperinsulinemia, which is important for children with the AN marker. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to measure blood pressure in children.

	1st	3rd	5th	7th	Other Grades	Female	Male
Normal	492	1063	1692	837	633	2744	1973
Pre-Hypertensive	81	218	449	276	151	652	523
Hypertensive	168	420	786	656	376	1332	1074



Body Mass Index

A high Body Mass Index (BMI) for age percentile is also considered a risk factor for the development of type 2 diabetes. BMI is calculated using the student's sex, age, height, and weight. The BMI percentiles are determined by the Centers for Disease Control BMI for age percentile growth charts. The percentiles are separated into four categories: Underweight, Normal, Overweight, and Obesity. In the development of type 2 diabetes, special emphasis is placed on the Overweight and Obesity categories.



	1st	3rd	5th	7th	Other Grades
Normal	21	65	122	78	58
Obesity	672	1480	2454	1469	965
Overweight	43	149	347	228	132
Underweight	7	11	17	2	4

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 11

2010-2011

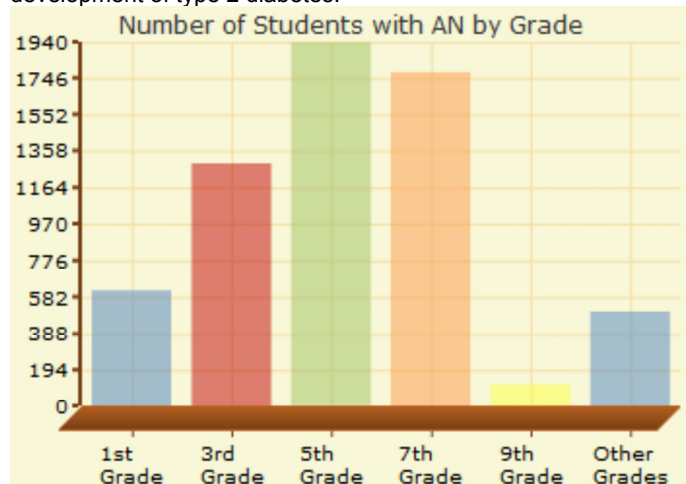
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 158863	Already under care: 789	Referral not issued: 36
Acanthosis Nigricans: 6242	Seen by Physician: 71	Referral not returned: 4990
		Not Seen by Physician: 47

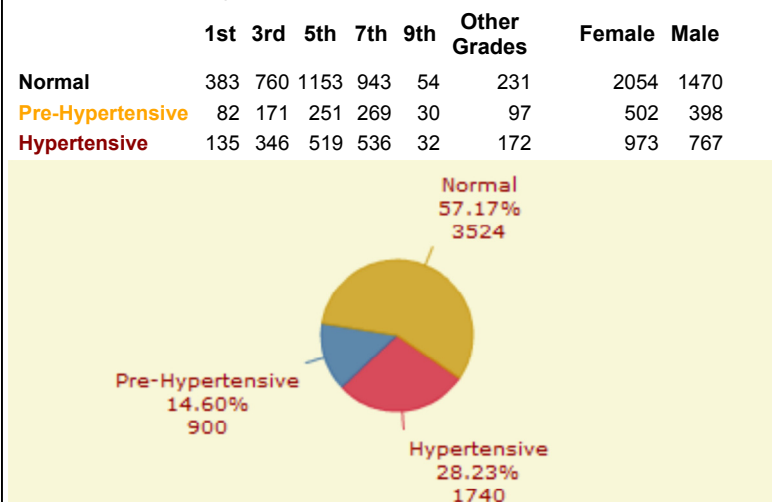
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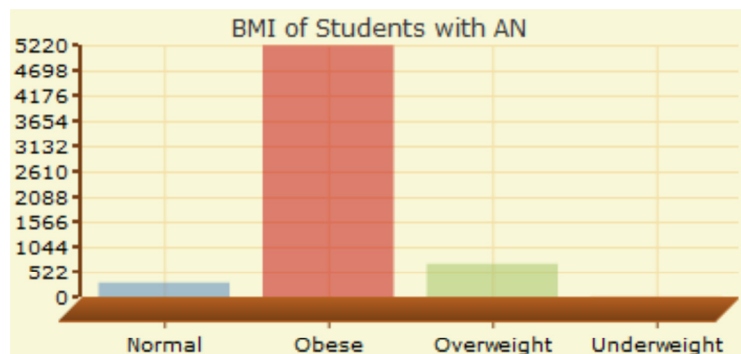
Blood Pressure

Hypertension has also been associated with insulin resistance and hyperinsulinemia, which is important for children with the AN marker. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to measure blood pressure in children.



Body Mass Index

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	1st	3rd	5th	7th	9th	Other Grades
Normal	29	59	96	80	7	18
Obesity	535	1097	1581	1471	95	431
Overweight	41	126	248	214	14	51
Underweight	5	1	1	4	0	2

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 11

2011-2012

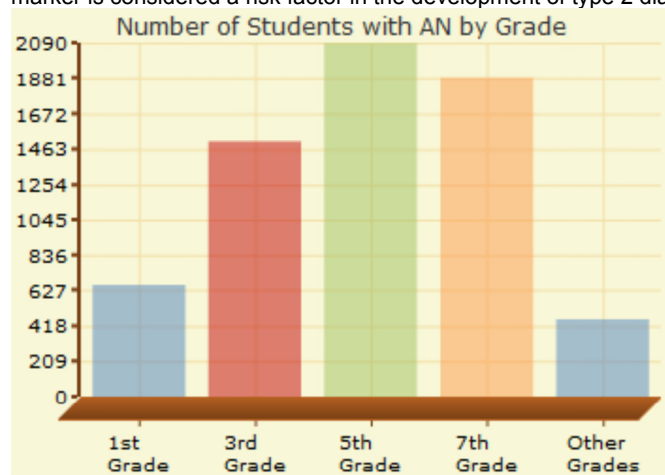
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 149551	Already under care: 749	Referral not issued: 44
Acanthosis Nigricans: 6585	Seen by Physician: 56	Referral not returned: 5290
		Not Seen by Physician: 33

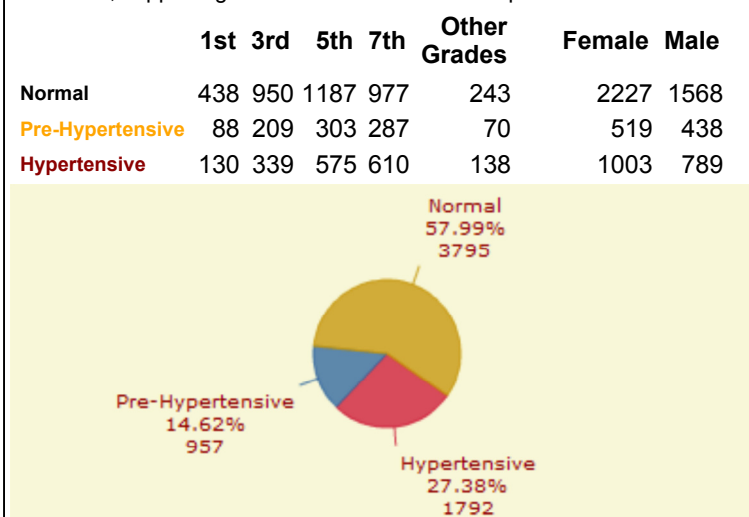
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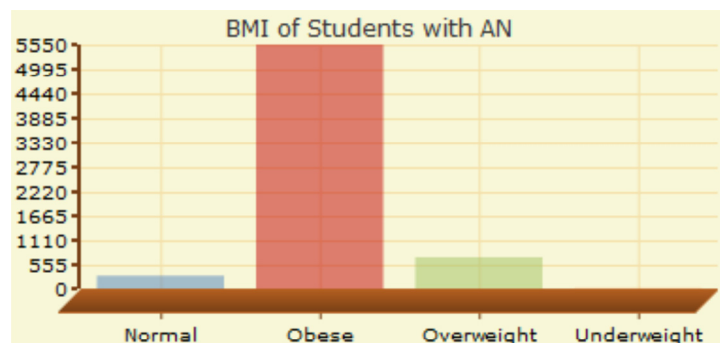
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	1st	3rd	5th	7th	Other Grades
Normal	39	62	99	68	13
Obesity	570	1288	1727	1559	405
Overweight	44	150	244	246	35
Underweight	4	0	3	3	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 13

2010-2011

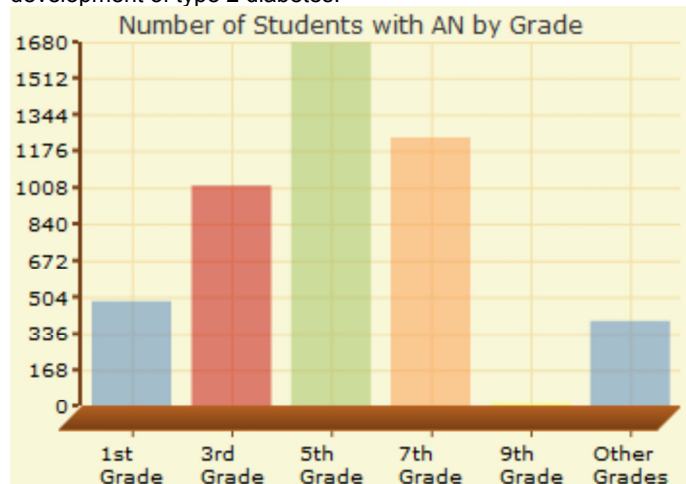
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 110282	Already under care: 438	Referral not issued: 29
Acanthosis Nigricans: 4819	Seen by Physician: 50	Referral not returned: 3937
		Not Seen by Physician: 53

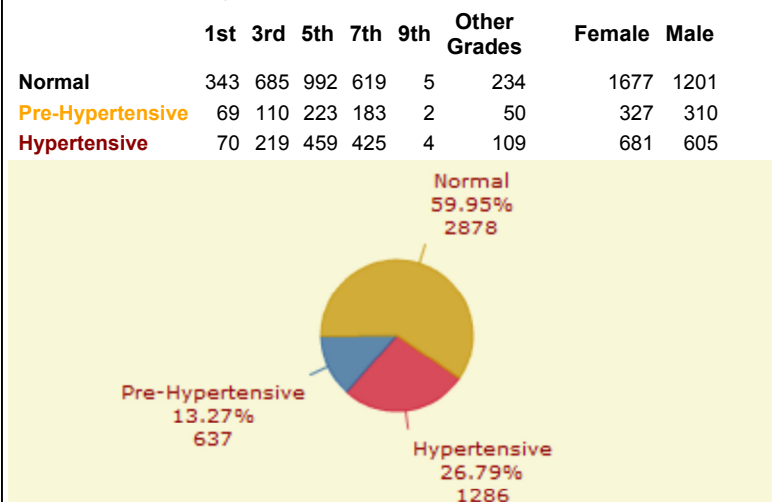
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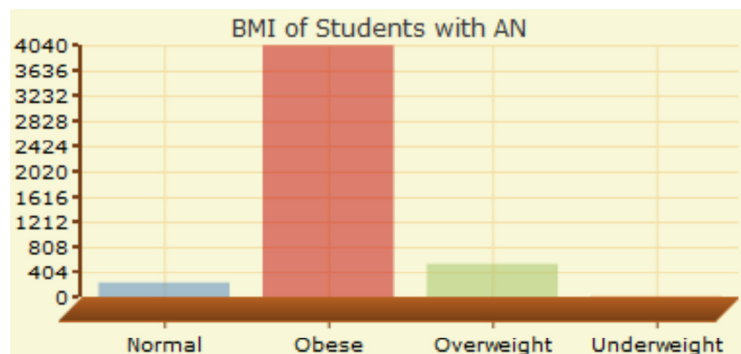
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	1st	3rd	5th	7th	9th	Other Grades
Normal	32	44	72	57	0	18
Obesity	421	878	1381	997	11	345
Overweight	28	87	215	172	0	30
Underweight	3	6	7	1	0	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 13

2011-2012

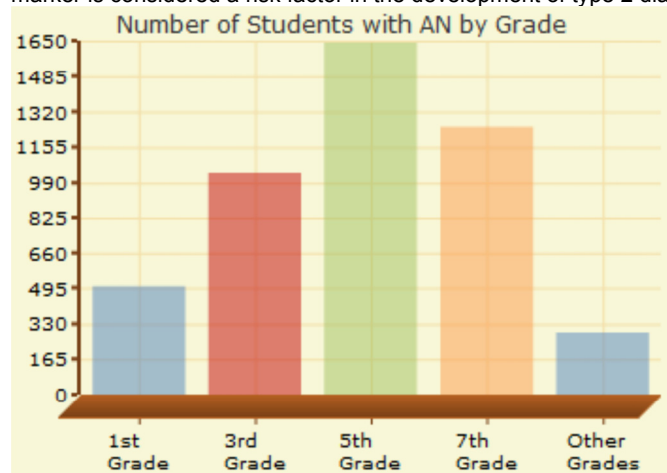
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 109236	Already under care: 373	Referral not issued: 49
Acanthosis Nigricans: 4723	Seen by Physician: 70	Referral not returned: 3950
		Not Seen by Physician: 21

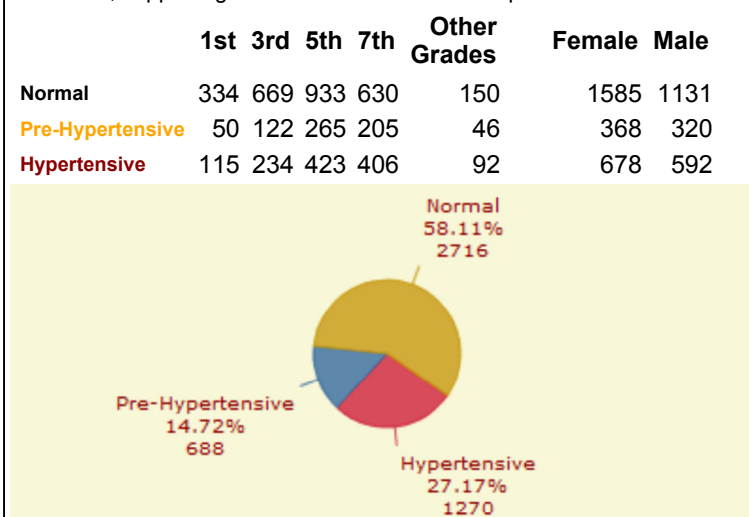
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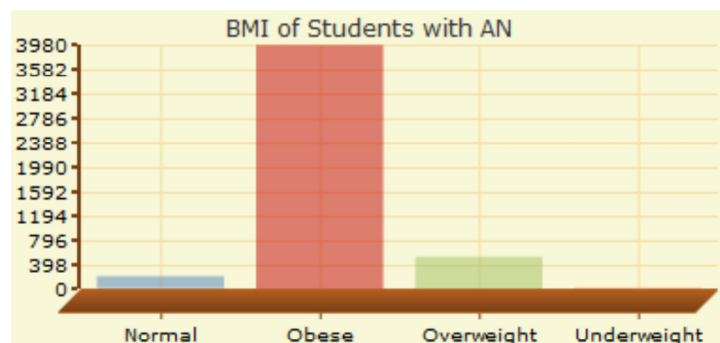
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	1st	3rd	5th	7th	Other Grades
Normal	25	45	59	59	6
Obesity	434	905	1361	1026	247
Overweight	39	80	213	158	36
Underweight	3	2	2	3	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 15

2010-2011

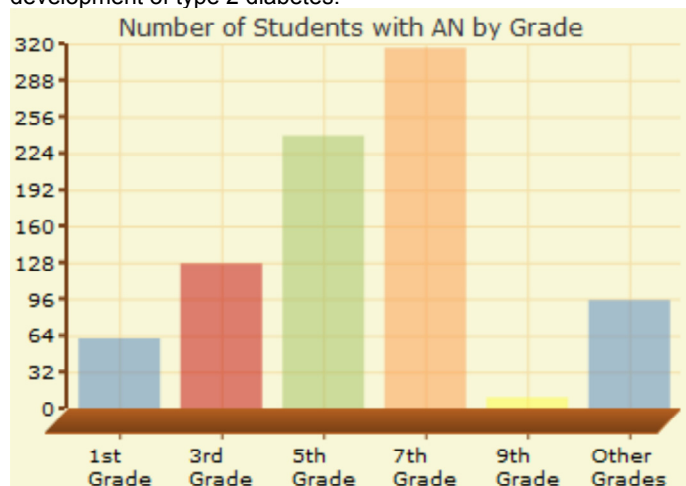
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 12660	Already under care: 121	Referral not issued: 1
Acanthosis Nigricans: 848	Seen by Physician: 9	Referral not returned: 653
		Not Seen by Physician: 2

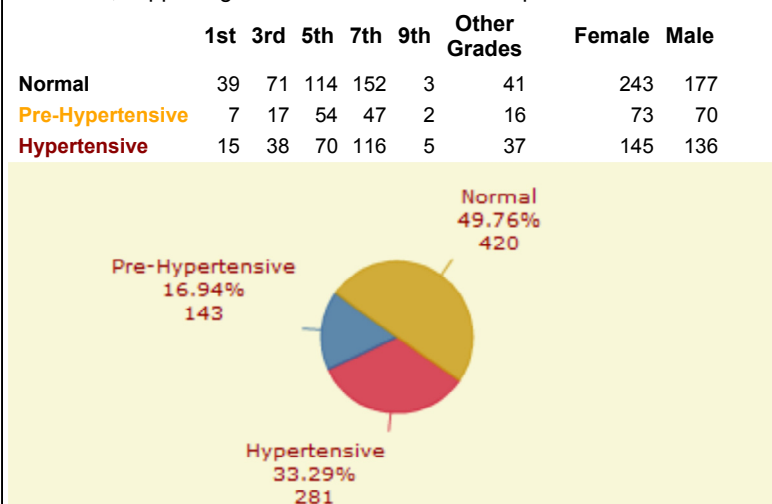
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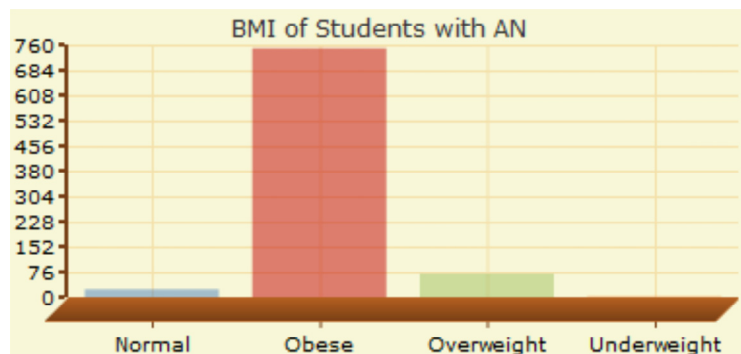
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	1st	3rd	5th	7th	9th	Other Grades
Normal	0	4	3	12	0	3
Obesity	59	118	207	273	10	83
Overweight	2	4	28	28	0	9
Underweight	0	0	0	2	0	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 15

2011-2012

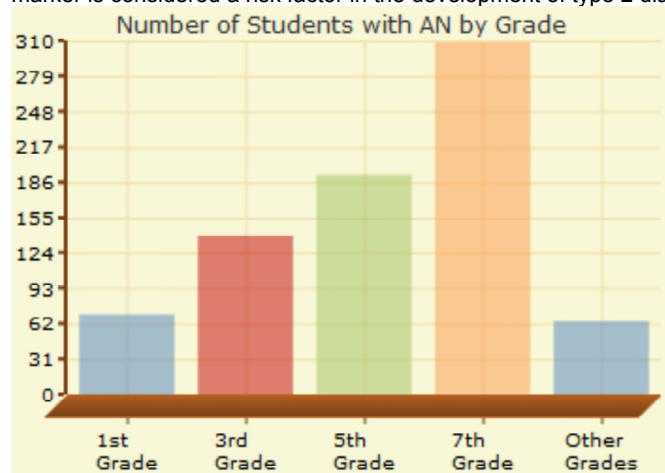
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 12321	Already under care: 123	Referral not issued: 1
Acanthosis Nigricans: 773	Seen by Physician: 3	Referral not returned: 616
		Not Seen by Physician: 8

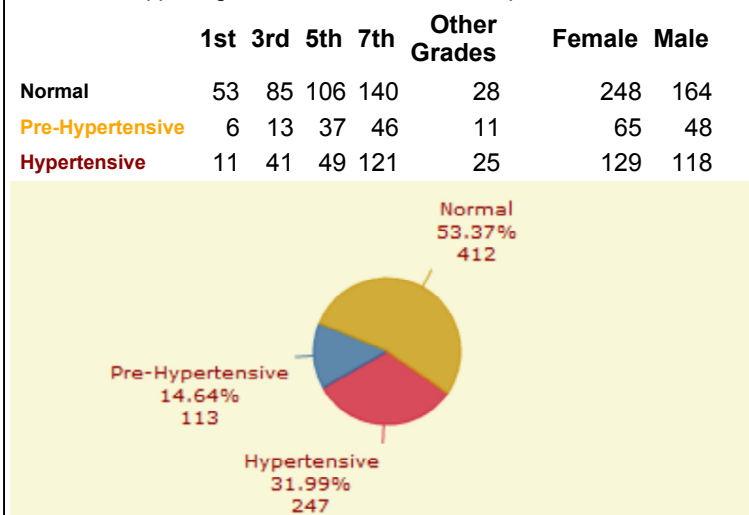
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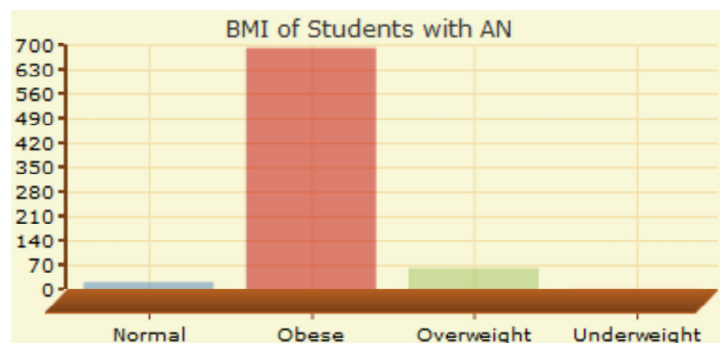
Blood Pressure

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	1st	3rd	5th	7th	Other Grades
Normal	0	3	9	7	1
Obesity	68	128	163	276	55
Overweight	2	8	20	23	8
Underweight	0	0	0	1	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 18

2010-2011

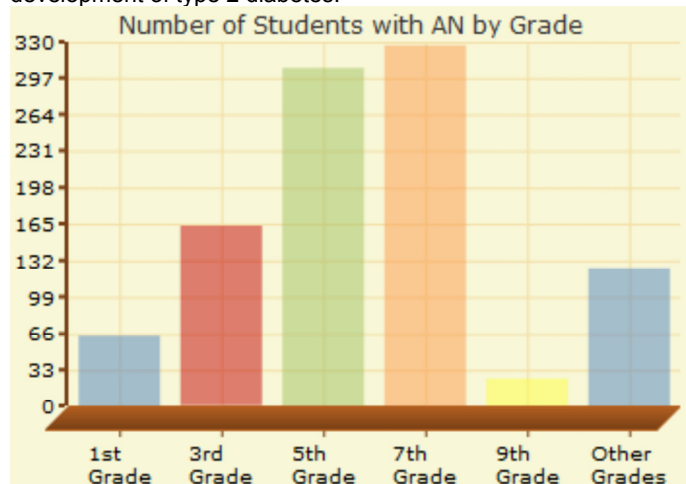
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 19216	Already under care: 90	Referral not issued: 2
Acanthosis Nigricans: 1011	Seen by Physician: 14	Referral not returned: 881
		Not Seen by Physician: 2

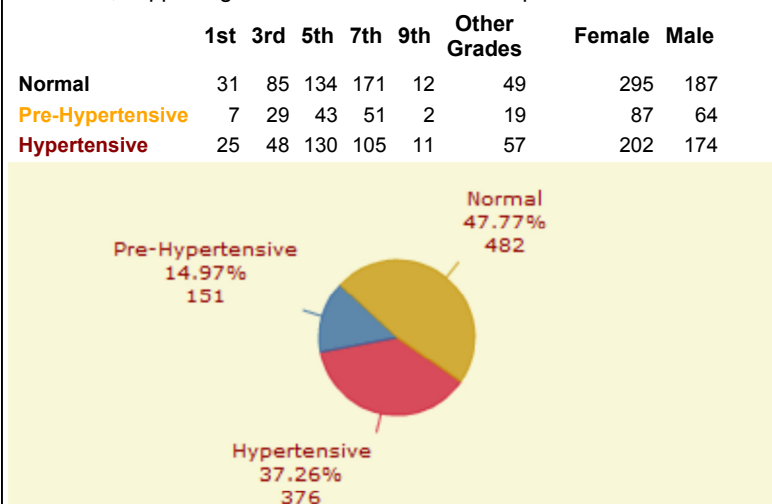
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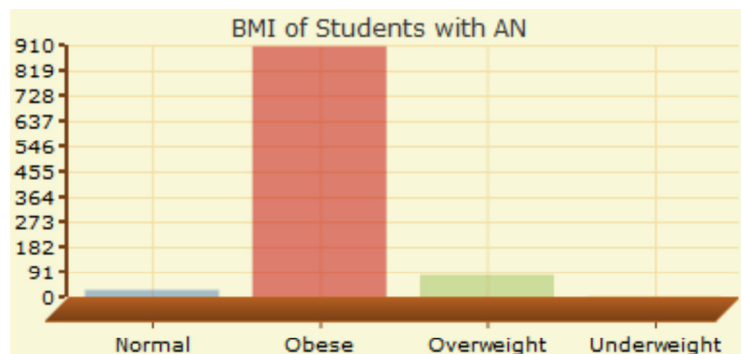
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	1st	3rd	5th	7th	9th	Other Grades
Normal	0	4	10	3	1	7
Obesity	61	139	280	296	21	108
Overweight	3	19	17	28	3	9
Underweight	0	0	0	0	0	1

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 18

2011-2012

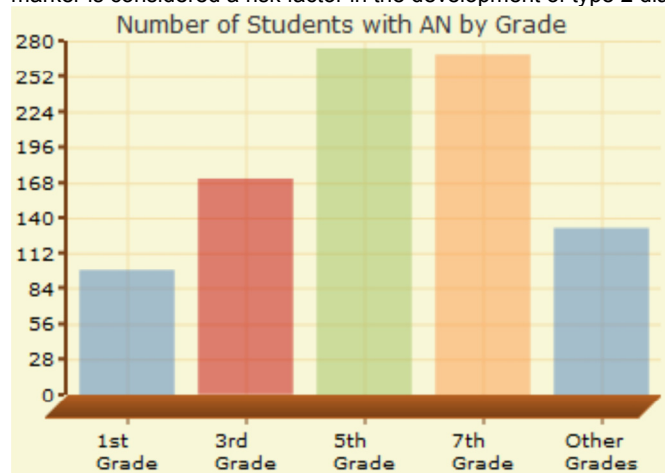
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 20686	Already under care: 74	Referral not issued: 4
Acanthosis Nigricans: 944	Seen by Physician: 7	Referral not returned: 761
		Not Seen by Physician: 2

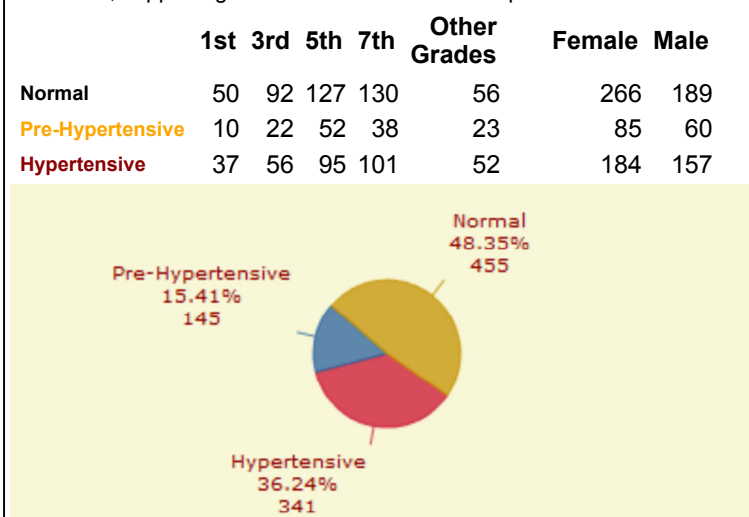
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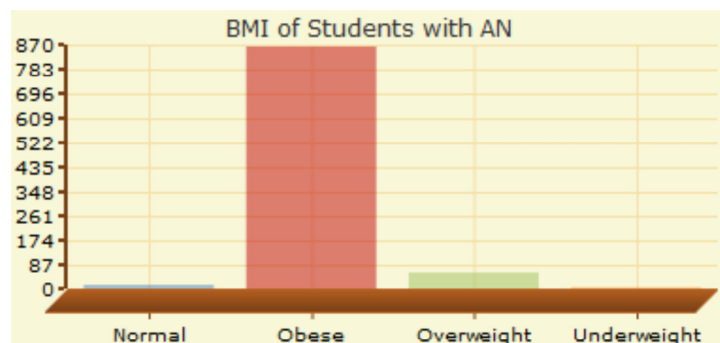
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	1st	3rd	5th	7th	Other Grades
Normal	2	2	3	4	3
Obesity	93	155	252	248	115
Overweight	1	12	17	17	12
Underweight	1	1	2	0	1

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 19

2010-2011

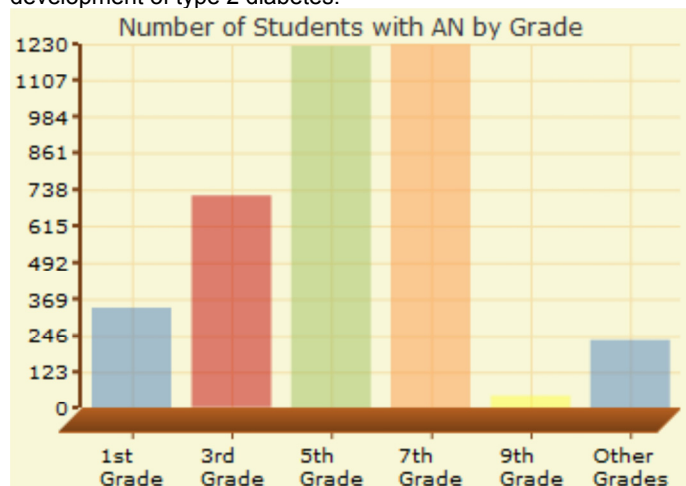
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 49269	Already under care: 549	Referral not issued: 12
Acanthosis Nigricans: 3783	Seen by Physician: 45	Referral not returned: 3040
		Not Seen by Physician: 18

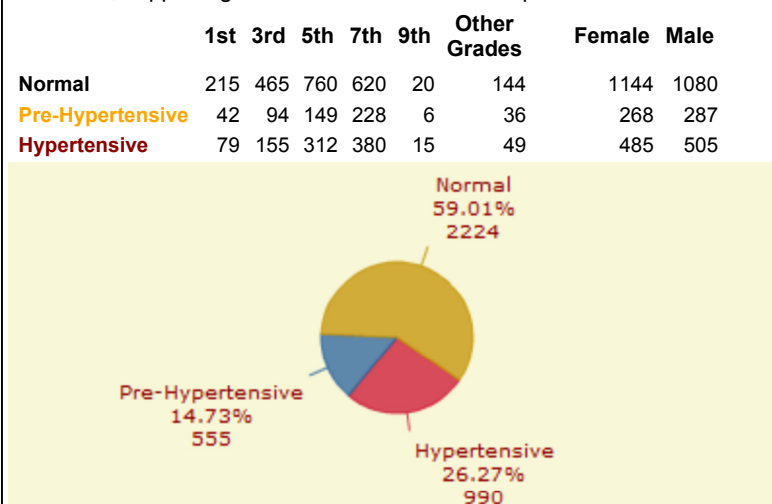
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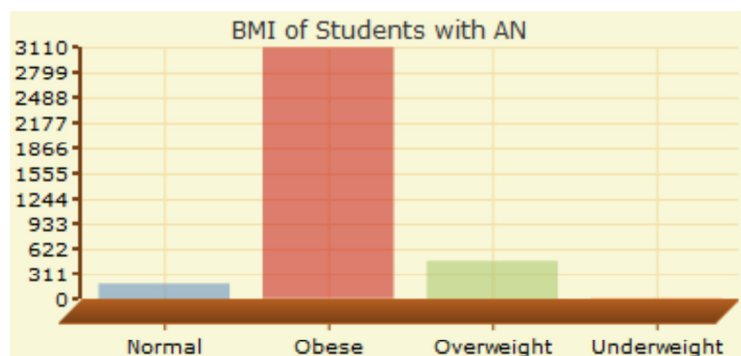
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	1st	3rd	5th	7th	9th	Other Grades
Normal	28	26	63	63	1	6
Obesity	285	620	971	993	30	202
Overweight	19	64	188	171	9	22
Underweight	5	4	0	1	1	0

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 19

2011-2012

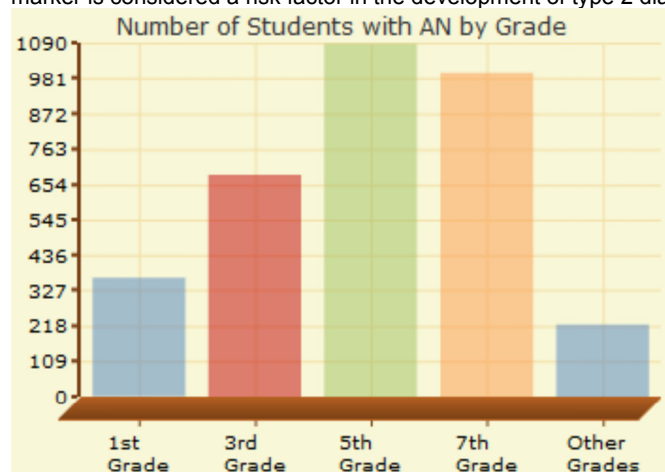
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 48362	Already under care: 499	Referral not issued: 13
Acanthosis Nigricans: 3353	Seen by Physician: 44	Referral not returned: 2677
		Not Seen by Physician: 18

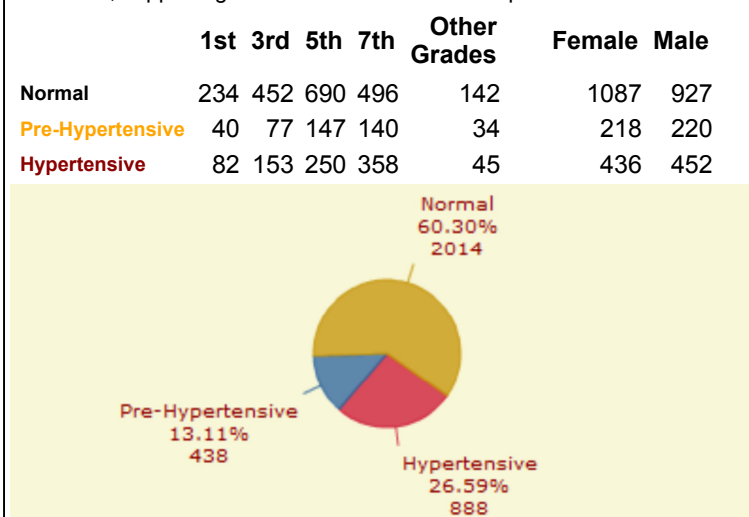
Acanthosis Nigricans

Acanthosis nigricans is a skin condition that is frequently seen on the nape of the neck. It appears as a dark/black, rough, or velvety area on the surface of the skin. The AN marker is important because it most often signals high insulin levels circulating within the body. The AN marker is considered a risk factor in the development of type 2 diabetes.



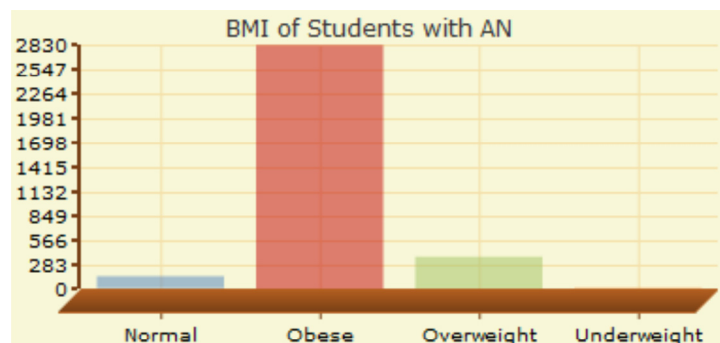
Blood Pressure

Hypertension has also been associated with insulin resistance and hyperinsulinemia, which is important for children with the AN marker. Elevated blood pressure in childhood correlates with hypertension in early adulthood, supporting the need to measure blood pressure in children.



Body Mass Index

A high Body Mass Index (BMI) for age percentile is also considered a risk factor for the development of type 2 diabetes. BMI is calculated using the student's sex, age, height, and weight. The BMI percentiles are determined by the Centers for Disease Control BMI for age percentile growth charts. The percentiles are separated into four categories: Underweight, Normal, Overweight, and Obesity. In the development of type 2 diabetes, special emphasis is placed on the Overweight and Obesity categories.



	1st	3rd	5th	7th	Other Grades
Normal	14	36	36	47	5
Obesity	330	587	893	819	194
Overweight	16	56	157	127	20
Underweight	2	3	1	3	2

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 20

2010-2011

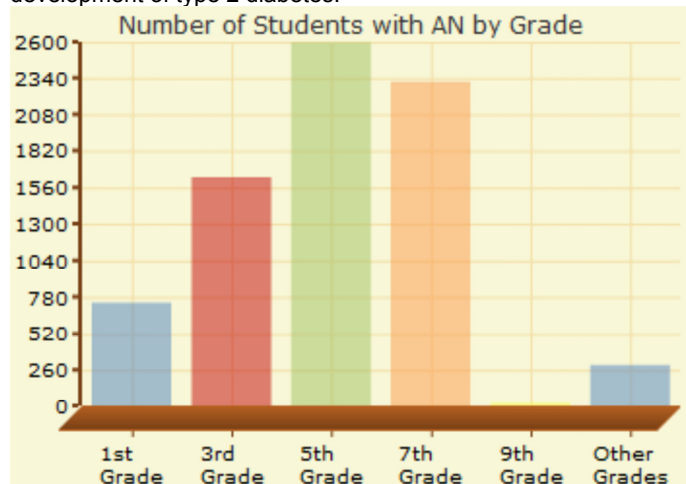
The Risk Assessment for the Type 2 Diabetes in Children is a legislatively mandated program developed, coordinated, and administered by The University of Texas-Pan American Border Health Office (BHO). The program assesses children who may be at high risk of developing type 2 diabetes. During vision/hearing and scoliosis screenings of 1st, 3rd, 5th and 7th graders in public and private schools, certified individuals assess children for the acanthosis nigricans (AN) marker, a skin condition that signals high insulin levels. Children who are identified with the marker undergo additional assessments of body mass index (BMI), BMI percentile, and blood pressure. Referrals are issued to the parents of these children, alerting each parent of what the risk factors are and what changes will be necessary to prevent or delay future health problems for children at risk of developing type 2 diabetes and other health conditions.

The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 113832	Already under care: 979	Referral not issued: 20
Acanthosis Nigricans: 7594	Seen by Physician: 98	Referral not returned: 5587
		Not Seen by Physician: 22

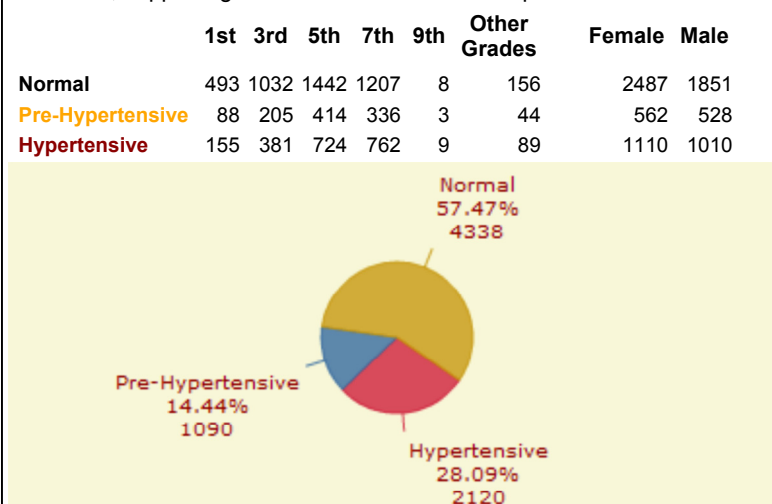
Acanthosis Nigricans

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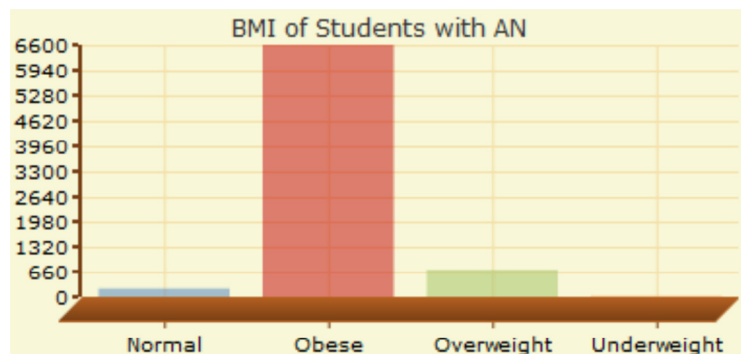
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	1st	3rd	5th	7th	9th	Other Grades
Normal	21	38	70	86	2	4
Obesity	682	1449	2240	1947	17	264
Overweight	27	132	266	265	1	20
Underweight	6	3	6	5	0	1

Risk Assessment for Type 2 Diabetes in Children Fact Sheet

REGION: REGION 20

2011-2012

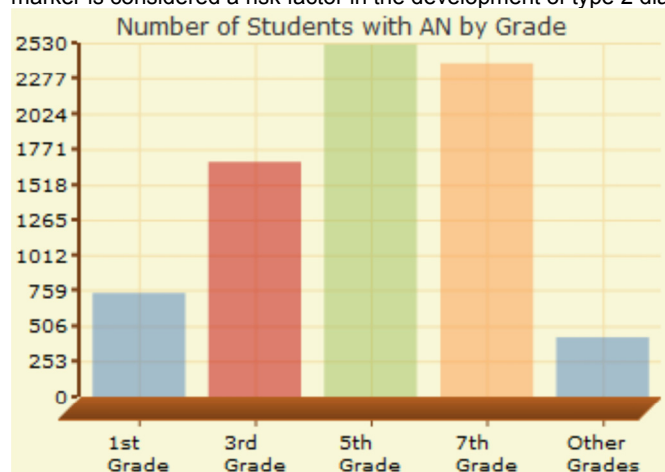
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The following results are for the assessments conducted in your Region:

Assessment Information	Assessment Outcomes	
Assessed: 104789	Already under care: 857	Referral not issued: 13
Acanthosis Nigricans: 7740	Seen by Physician: 70	Referral not returned: 5638
		Not Seen by Physician: 80

Acanthosis Nigricans

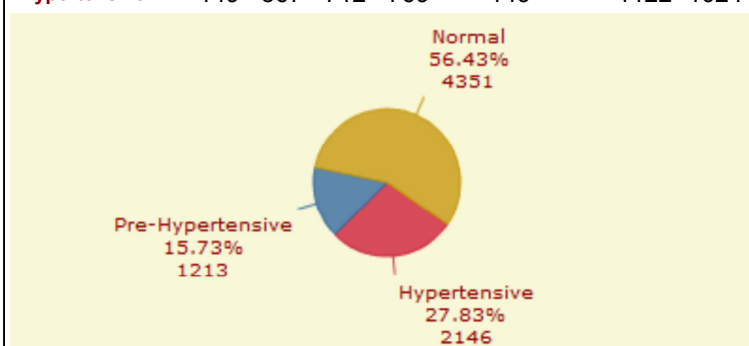
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Blood Pressure

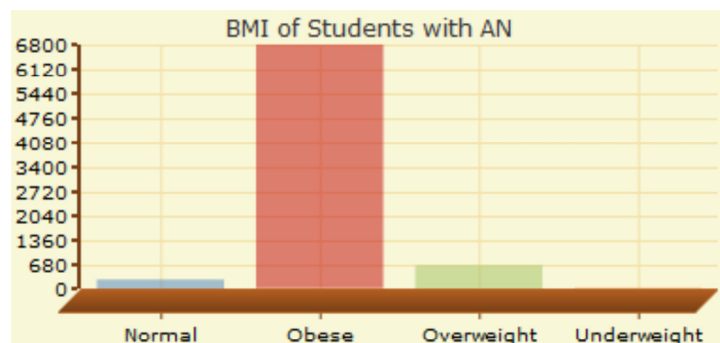
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	1st	3rd	5th	7th	Other Grades	Female	Male
Normal	480	1056	1398	1210	207	2449	1902
Pre-Hypertensive	105	242	404	405	57	655	558
Hypertensive	149	367	712	769	149	1122	1024



Body Mass Index

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	1st	3rd	5th	7th	Other Grades
Normal	18	41	75	105	11
Obesity	679	1501	2186	2031	393
Overweight	38	126	254	236	11
Underweight	0	1	4	12	3