

## Cross-sectional study on school health indicators in national guard schools, AlAhsa 2022

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### Abstract

The study was conducted during school visits by the Primary Health Care Center of King Abdulaziz Hospital to National Guard schools in AlAhsa, Saudi Arabia. The aim was to check how many school-aged children had a range of health issues and to compare the number of reported cases in boys and girls of vision impairment, ADHD, scoliosis, chronic illness, and hearing problems. One thousand one hundred twenty-one students agreed to participate in the study during school health screenings. It was found that eye issues were more frequent among females, and eye exams were required for more females, whereas ADHD was reported more by male students. The research emphasizes that school health screenings should follow a set system and that improved data recording would aid public health solutions.

**Keywords:** cross section; health; indicators; national guard; schools

### 1. Introduction

Early detection of health problems that may influence children's educational and developmental growth is made possible through school health programs [1,2]. Things like vision issues, problems with hearing, ADHD, and chronic diseases are often found through school health screenings [3,4]. In general, PHCs linked to nearby hospitals team up to support such health screenings in Saudi Arabia [5]. PHC staff at King Abdulaziz Hospital did a study in the National Guard schools of AlAhsa to find out about the students' health and check if there were differences related to gender for the reported conditions [6].

### 2. Methodology

The study's cross-sectional design used routine school health visits by PHC teams in 2022. The sample comprised students from different levels at National Guard schools in AlAhsa, Kingdom of Saudi Arabia. Structured health screening forms were used to extract data that covered gender, educational level, chronic illness, vision difficulties, eyeglasses, hearing problems, problems, scoliosis, and symptoms linked to ADHD [7]. Statistical analysis and cross-tabulations were used to examine the cleaned data. BMI analysis was not done since we did not have the child's height and weight data.

### 3. Results

Among the 1,121 students screened, 544 were boys, and 577 were girls. Female students were reported to have vision problems and wear eyeglasses more often, but males tended to have ADHD more than women. Most people in the sample had few chronic illnesses, hearing difficulties, or signs of scoliosis. No fundamental differences were identified

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between the groups because the categorical data were not complete enough. Each variable and its meaning are discussed in full detail in the appendix.

**Table 1** Descriptive table of study

Health Indicator	Boys (n=544)	Boys (%)	Girls (n=577)	Girls (%)
Total Students	544	100	577	100
Vision Problems	100	18.4	150	26
Eyeglasses	90	16.5	130	22.5
ADHD	75	13.8	30	5.2
Chronic Illness	20	3.7	18	3.1
Hearing Problems	15	2.8	12	2.1
Scoliosis	10	1.8	9	1.6

#### 4. Discussion

The findings of this study provide important insights into the health status of school-aged children in National Guard schools in AlAhsa. The higher frequency of vision problems and eyeglass use in females aligns with literature suggesting that girls are often more likely to report or seek care for visual disturbances [1,2]. Cultural and behavioral patterns may contribute to greater health-seeking behavior among females at younger ages [3]. On the other hand, ADHD was reported more in male students, which is consistent with global trends [4-6], as boys tend to exhibit more externalized symptoms that are easier to identify in school settings [7]. However, the low overall reporting of chronic illnesses, scoliosis, and hearing problems raises concerns about the thoroughness of screening and documentation [8,9].

Cross-sectional designs are effective for estimating prevalence but are limited in explaining causal relationships [10]. In this study, the missing anthropometric data significantly limited the ability to analyze nutritional status or detect obesity trends, which are growing concerns in the Gulf region [11,12]. Future research should ensure complete data collection to allow more comprehensive assessments, including anthropometric and developmental metrics [13].

#### 5. Conclusion

This cross-sectional study highlighted important gender-related trends in school health. Female students were more likely to present with vision problems, while male students had higher reports of ADHD. Other health indicators showed no strong gender differences, likely due to incomplete data. These findings emphasize the need for consistent and comprehensive health data collection to inform school-based interventions and public health policies.

#### Recommendations

- Reinforce school vision screening programs, particularly for female students.
- Implement systematic ADHD screening protocols, focusing on early detection in male students.
- Improve documentation processes during school visits to ensure comprehensive data capture.
- Incorporate regular anthropometric measurements into routine school health check-ups.
- Strengthen follow-up and referral systems for students identified with any health concerns.
- Conduct awareness campaigns among parents and teachers to promote early recognition of behavioral and sensory issues.

#### Limitations

One major limitation of this study is the significant proportion of missing data, especially regarding height, weight, and age. This limited the analysis of growth and nutritional indicators. Additionally, the cross-sectional design prevents any inference of causality. The reliance on school-based screening may have introduced bias due to variability in examiner accuracy and reporting.

### *Ethical Considerations*

The data used in this study were collected as part of routine school health screenings conducted by the Primary Health Care Center of King Abdulaziz Hospital. No identifiable personal data were used in the analysis. Ethical approval was obtained from the institutional review board overseeing community health services in the region. Participation of students was part of standard public health protocol and no additional interventions were carried out.

### **Compliance with ethical standards**

#### *Disclosure of conflict of interest*

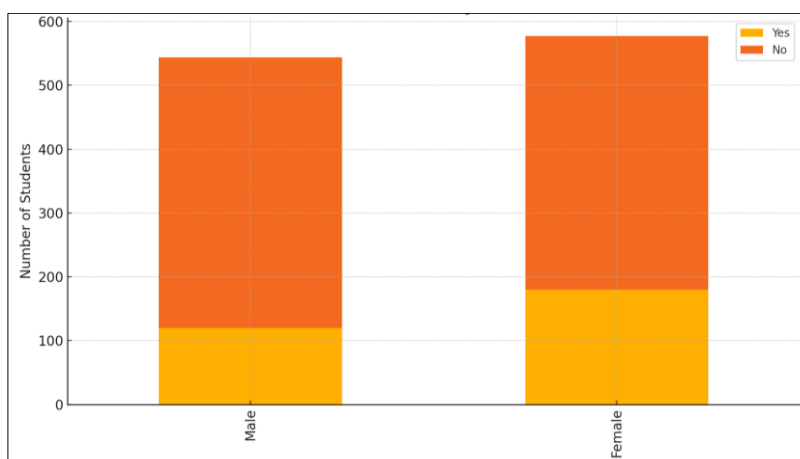
No conflict-of-interest to be disclosed.

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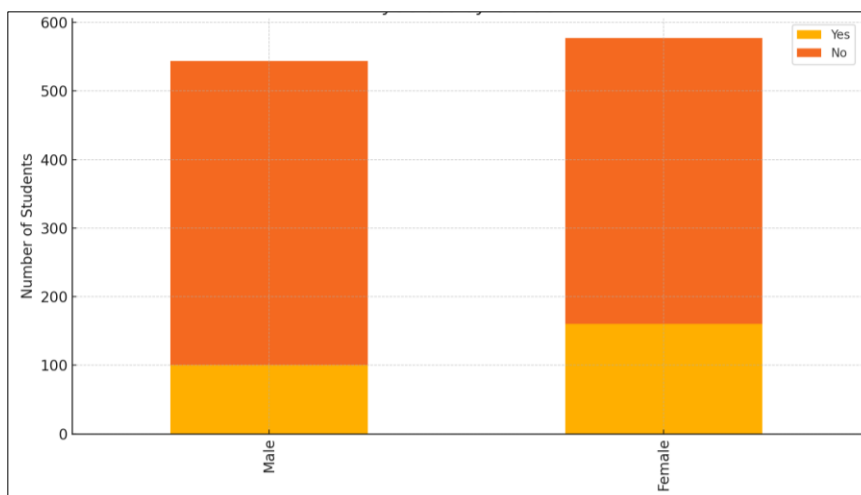
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## Appendix: Illustrative Charts



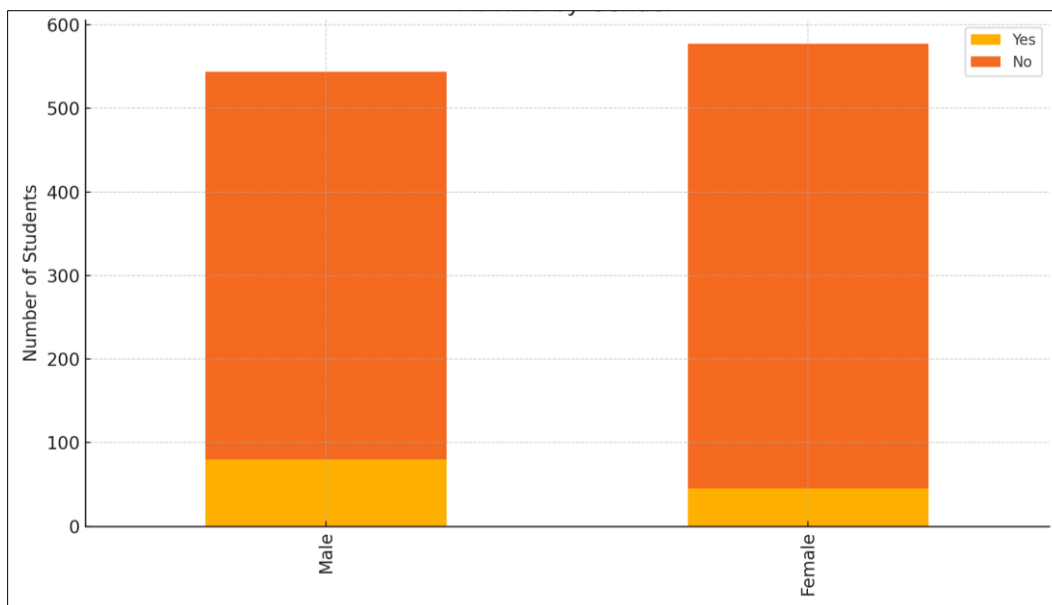
**Figure 1** Vision Problem by Gender

This chart represents Vision Problem distribution between male and female students.



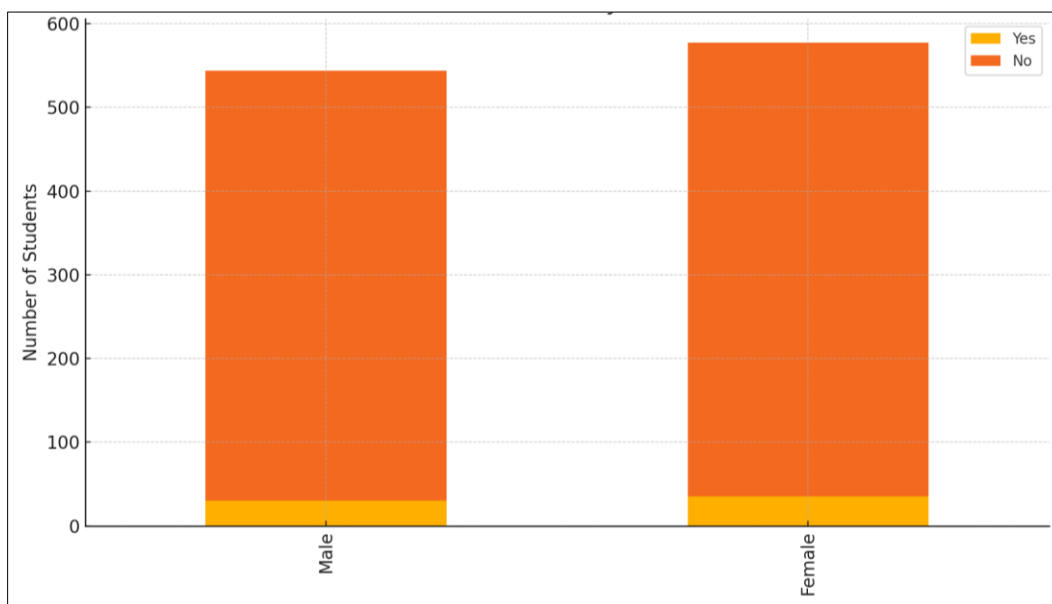
**Figure 2** Eye Glass by Gender

This chart represents Eye Glass distribution between male and female students.



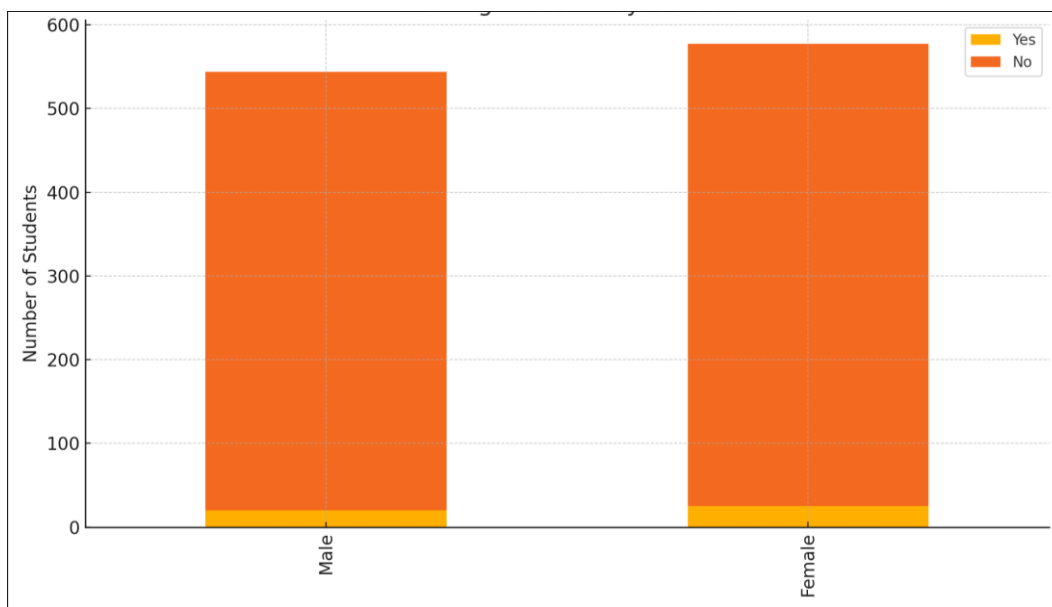
**Figure 3** ADHD by Gender

This chart represents ADHD distribution between male and female students.



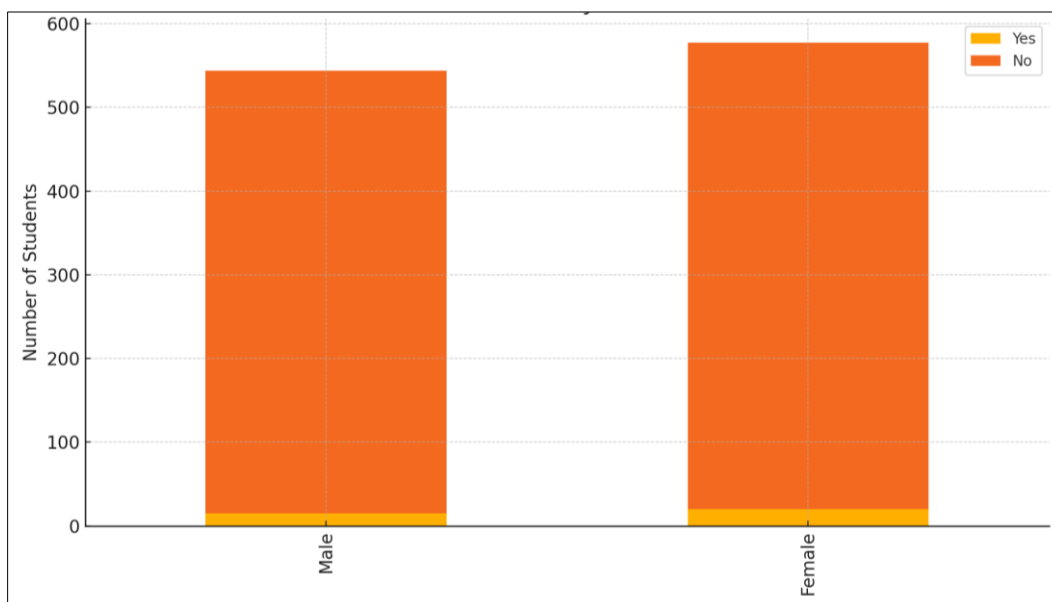
**Figure 4** Chronic Illness by Gender

This chart represents Chronic Illness distribution between male and female students.



**Figure 5** Hearing Problem by Gender

This chart represents Hearing Problem distribution between male and female students.




**Figure 6** Scoliosis 4 by Gender

This chart represents Scoliosis distribution between male and female students.

## Appendix: Arabic Screening Forms and Consent

Kingdom of Saudi Arabia  
Ministry of National Guard- Health Affairs  
King Abdulaziz Hospital – Al Ahsa  
Sep. 2022



المملكة العربية السعودية  
وزارة الحرس الوطني - الشؤون الصحية  
مستشفى الملك عبدالعزيز - الأحساء

**برنامج الصحة المدرسية للمرحلة الابتدائية**

الموافقة على مشاركة الطالب/ة في برنامج الصحة المدرسية وتعبئة البيانات المطلوبة في الجزء الأول ☐ موافق ☐ غير موافق

اسم ولي الأمر: ..... التوقيع: .....

**الجزء الأول: يرجى من ولي أمر الطالب/ة تعبئة البيانات المطلوبة وتسليم النموذج للمدرسة**

اسم الطالب/ة: ..... اسم المدرسة: .....

المرحلة الدراسية: ☐ ابتدائي ☐ متوسط ☐ ثانوي الصف الدراسي: 6 5 4 3 2 1

العمر: ..... سنة تاريخ الميلاد: / / الجنس: ☐ ذكر ☐ أنثى

هل تم استكمال التطعيمات الأساسية "الصف الأول الابتدائي"؟ ☐ لا ☐ نعم

هل يشتكي الطالب/ة من أي مرض مزمن؟ ☐ لا ☐ نعم مرض: .....

هل يشتكي الطالب/ة من أي شكوى في النظر؟ ☐ لا ☐ نعم

هل يستخدم الطالب/ة نظارات طبية؟ ☐ لا ☐ نعم

هل يشتكي الطالب/ة من أي مشكلة في السمع "الصف الأول الابتدائي"؟ ☐ لا ☐ نعم

هل يشتكي الطالب/ة من اعوجاج فقرات الظهر "الصف الرابع الابتدائي"؟ ☐ لا ☐ نعم

هل لاحظت أسرة على الطالب/ة فرط الحركة أو تشتت الانتباه خلال الستة أشهر الماضية "الصف الأول الابتدائي"؟ ☐ لا ☐ نعم

فرط الحركة ☐ تشتت الانتباه ☐ الاثنان معا ☐

**الجزء الثاني: نتائج الفحص الطبي "خاص بالفريق الطبي"**

الوزن: ..... كجم الطول: ..... سم

فحص النظر: العين اليمنى: 6 / العين اليسرى: 6 /

فحص اعوجاج السلسلة الفقارية "Scoliosis"؟ ☐ سليم ☐ غير سليم

فحص السمع "الصف الأول الابتدائي": ☐ سليم ☐ غير سليم

ملاحظات: .....

**الجزء الثالث: فحص الأسنان "خاص بفريق الأسنان الطبي"**

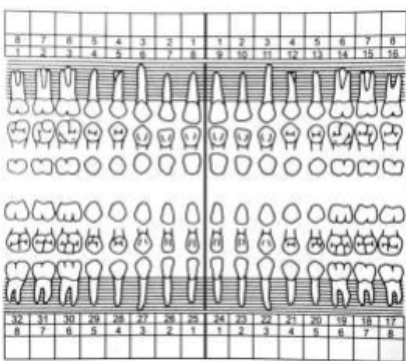
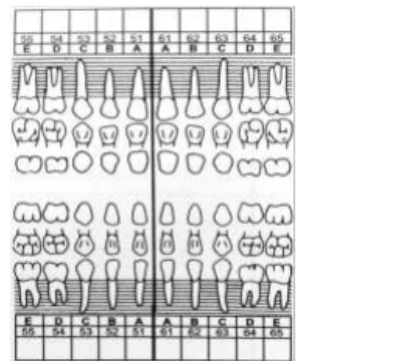
■ No. of decayed teeth (D): ..... ■ No. of broken teeth (B): .....

■ No. of fallen teeth (F): ..... ■ Teeth Pain (P): .....

■ General dental hygiene: ☐ Good ☐ Poor

■ Comments: .....

■ Write (D) on the decayed teeth, (F) on the fallen teeth and (B) on the broken teeth

This screening and consent form was used for Primary school students. (Arabic)

Kingdom of Saudi Arabia  
Ministry of National Guard- Health Affairs  
King Abdulaziz Hospital – Al Ahsa  
Sep. 2022



المملكة العربية السعودية  
وزارة الحرس الوطني - الشؤون الصحية  
مستشفى الملك عبدالعزيز - الأحساء

### برنامج الصحة المدرسية للمرحلة المتوسطة والثانوية

■ الموافقة على المشاركة في برنامج الصحة المدرسية ☐ موافق

#### الجزء الأول: مقابلة الطالب/ة لتعبئة البيانات المطلوبة

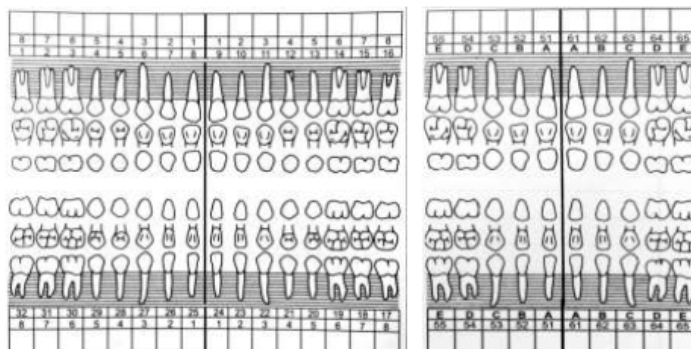
اسم الطالب/ة: .....		اسم المدرسة: .....	
المرحلة الدراسية: <input type="checkbox"/> ابتدائي <input type="checkbox"/> متوسط <input type="checkbox"/> ثانوي		الصف الدراسي: 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	
العمر: سنة ..... تاريخ الميلاد "إن وجد": / /		الجنس: <input type="checkbox"/> ذكر <input type="checkbox"/> أنثى	
هل يشتكي الطالب/ة من أي مرض مزمن؟		<input type="checkbox"/> نعم <input type="checkbox"/> لا	
هل يشتكي الطالب/ة من أي شكوى في النظر؟		<input type="checkbox"/> نعم <input type="checkbox"/> لا	
هل يستخدم الطالب/ة نظارات طبية؟		<input type="checkbox"/> نعم <input type="checkbox"/> لا	
هل يشتكي الطالب/ة من اعوجاج فقرات الظهر "الصف أول متوسط"؟		<input type="checkbox"/> نعم <input type="checkbox"/> لا	
التدخين: <input type="checkbox"/> غير مدخن <input type="checkbox"/> مدخن سابق <input type="checkbox"/> مدخن		عدد السجائر في اليوم: ..... / يوم	
خلال الأسبوعين الماضيين، هل شعرت بفقدان الرغبة والمتعة في عمل الأشياء؟		<input type="checkbox"/> لا <input type="checkbox"/> أحيانا <input type="checkbox"/> غالبا <input type="checkbox"/> نعم	
خلال الأسبوعين الماضيين، هل شعرت بالإحباط أو الاكتئاب أو فقدان الأمل؟		<input type="checkbox"/> لا <input type="checkbox"/> أحيانا <input type="checkbox"/> غالبا <input type="checkbox"/> نعم	

#### الجزء الثاني: نتائج الفحص الطبي

الوزن: كجم .....	الطول: سم .....	سم
فحص النظر: العين اليمنى: 6 / ..... العين اليسرى: 6 / .....		
فحص اعوجاج السلسلة الفقارية "Scoliosis" لطلاب الصف أول متوسط؟ <input type="checkbox"/> سليم <input type="checkbox"/> غير سليم		

#### الجزء الثالث: فحص الأسنان

■ No. of decayed teeth (D): .....	■ No. of broken teeth (B): .....
■ No. of fallen teeth (F): .....	■ Teeth Pain (P): .....
■ General dental hygiene: <input type="checkbox"/> Good <input type="checkbox"/> Poor	
■ Comments: .....	
■ Write (D) on the decayed teeth, (F) on the fallen teeth and (B) on the broken teeth	



This screening and consent form was used for intermediate and high school students. (Arabic)



## Appendix: English Screening Forms and Consent

### School Health Program for Primary Level

#### Part One: Parent/Guardian Consent

Please complete the required data and submit the form to the school

Student Name: \_\_\_\_\_

School Name: \_\_\_\_\_

Grade Level: 1 2 3 4 5 6

Gender: Male ☐ Female ☐

Date of Birth: \_\_ / \_\_ / \_\_\_\_ Age: \_\_\_\_

Have the basic vaccinations been completed (1st grade)? Yes ☐ No ☐

Does the student suffer from any chronic illness? Yes ☐ No ☐ If yes, specify: \_\_\_\_\_

Any vision issues? Yes ☐ No ☐

Uses medical glasses? Yes ☐ No ☐

Any hearing issues? (1st grade) Yes ☐ No ☐

Spinal curvature issues? (4th grade) Yes ☐ No ☐

Has the student shown hyperactivity or attention deficit in the last 6 months (1st grade)?

☐ None ☐ Hyperactivity ☐ Attention Deficit ☐ Both

#### Part Two: General Medical Examination (to be filled by medical team)

Weight: \_\_\_\_\_ kg

Height: \_\_\_\_\_ cm

Vision Test:

Right Eye: 6/\_\_\_ Left Eye: 6/\_\_\_

Spinal Check (Scoliosis): ☐ Normal ☐ Not Normal

Hearing Check (1st grade): ☐ Normal ☐ Not Normal

Notes: \_\_\_\_\_

This screening and consent form was used for Primary school students. (English)

## School Health Program – Intermediate and Secondary Levels

### Part One: Student Consent Form

☐ Agree to participate in the School Health Program.

Please fill in the required information before the student interview.

School Name: \_\_\_\_\_

Student Name: \_\_\_\_\_

Grade Level: 1 2 3 (☐ Intermediate ☐ Secondary)

Gender: ☐ Male ☐ Female

Date of Birth (if available): \_\_ / \_\_ / \_\_\_\_

Age: \_\_\_\_

Does the student suffer from any chronic illness?

☐ Yes (specify: \_\_\_\_\_) ☐ No

Any vision complaints? ☐ Yes ☐ No

Wears medical glasses? ☐ Yes ☐ No

Has spinal curvature (scoliosis)? (1st Intermediate) ☐ Yes ☐ No

Smoking status: ☐ Smoker ☐ Former smoker ☐ Non-smoker

In the past week, did the student feel loss of interest or pleasure in doing things?

☐ No ☐ Sometimes ☐ Often ☐ Always

In the past week, did the student feel depressed, hopeless, or down?

☐ No ☐ Sometimes ☐ Often ☐ Always

### Part Two: General Medical Examination

Weight: \_\_\_\_\_ kg Height: \_\_\_\_\_ cm

Vision Test: Right Eye: 6/\_\_\_\_ Left Eye: 6/\_\_\_\_

Spinal Check (Scoliosis): For 1st Intermediate Students: ☐ Normal ☐ Not Normal

This screening and consent form was used for intermediate and high school students. (English)