



## Research Article

# Health Assessment among PAAET Students on Kuwait: A Retrospective Study

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**Citation:** Alkhalaf BN, Alammam FA (2024) Health Assessment among PAAET Students on Kuwait: A Retrospective Study. Rep GlobHealth Res 7: 198. DOI: 10.29011/2690-9480.100198

**Received Date:** 06 May, 2024; **Accepted Date:** 13 May, 2024; **Published Date:** 16 May, 2024

## Introduction

Student health encompasses a broad spectrum of elements extending beyond mere absence of illness to encompass physical, mental, and social well-being, crucial for academic achievement, personal growth, and life satisfaction [1]. Optimal health facilitates focused attention, consistent attendance, and active engagement in educational pursuits, while health issues can result in missed classes, hindered learning, and reduced overall well-being. Chronic health issues, if unmanaged, may persist into adulthood, affecting lifelong well-being [2]. Similarly, unaddressed mental health issues can impact relationships, career paths, and overall life satisfaction. Proactive student health management is not solely about immediate academic success but also about fostering long-term well-being and societal contribution potential.

While broader regional or international studies offer valuable insights, addressing the distinct needs of students within specific countries and educational settings requires localized research. This focused approach enables the identification of unique challenges and the formulation of interventions tailored to resonate effectively within the local context. Understanding the health profile of PAAET students is vital for crafting health promotion strategies suited to their specific needs and characteristics. In Kuwait, cultural and environmental factors exert significant influence on student health. Dietary habits, characterized by consumption of processed foods high in fats and sugars, contribute to escalating rates of obesity and chronic diseases [3]. Additionally, Kuwait's extreme heat presents distinct challenges, including heat-related illnesses and potential reluctance to engage in outdoor physical activities [4]. Social and cultural norms further shape health behaviors, impacting students both positively and negatively.

Despite the acknowledged significance of student health, there exists a notable scarcity of comprehensive and current

data concerning students within the Public Authority for Applied Education and Training (PAAET) in Kuwait. This deficiency in information poses challenges to effectively strategizing and executing health interventions customized to the specific needs of this student population. This research seeks to bridge this gap by conducting a thorough evaluation of the health status of PAAET students. It is widely recognized that certain student demographics may confront increased health vulnerabilities due to socioeconomic factors, limited healthcare accessibility, or systemic inequities [5-7]. Consequently, this study will carefully examine potential variations in health outcomes based on different demographic parameters. The insights gained from this assessment will be instrumental in shaping targeted interventions aimed at preventing, detecting early, and managing prevalent health challenges. By pinpointing trends, disparities, and areas of concern, this study can inform policy formulations and program initiatives geared towards cultivating a healthier educational milieu. Furthermore, the findings have the potential to influence curriculum enhancements, advocating for the integration of comprehensive health education, stress mitigation strategies, and tailored guidance on embracing healthy lifestyles, thus catering to the unique needs of the student community.

The principal objective of this investigation is to develop an intricate comprehension of the health dynamics among PAAET students in Kuwait. Concurrently, this study aims to pinpoint precise domains necessitating increased focus or customized assistance. Finally, the study will examine potential disparities in health outcomes across different demographics within the PAAET student body, highlighting any groups that may be at increased risk for health problems. To steer this inquiry, the following research questions will be addressed:

RQ1: What is the prevalence of various chronic illnesses among PAAET students?

RQ2: Are there significant differences in health outcomes based on gender, age range, or other demographic factors?

## Literature Review

This literature review examines the health status of school-aged and university-level students, with a focus on the Gulf region and contexts similar to Kuwait. This emphasis supports a nuanced understanding of health challenges faced by PAAET students. The review considers several interconnected themes. Firstly, the prevalence of chronic physical ailments among students, such as obesity, diabetes, cardiovascular risks, and asthma, will be probed, given their profound implications on young adults' overall well-being [8]. Second, the review dedicates significant attention to mental health. Anxiety, depression, and related issues are increasingly widespread in academic settings, making their analysis essential.

This review will explore the critical link between lifestyle choices and student health. It will examine modifiable habits like diet, exercise, sleep, and substance use, as these deeply impact both physical and mental well-being. Understanding the state of these behaviors among students is vital for designing targeted health initiatives. The review will also address health disparities and highlight at-risk student groups. Identifying areas of inequality is essential for providing fair healthcare and closing gaps within student support systems. This literature exploration will spotlight common health concerns relevant to the PAAET student population, informing the choice of research tools and data collection methods. Furthermore, it will pinpoint areas where focused interventions are needed to serve PAAET students in Kuwait. Finally, this review will help unearth under-researched aspects of student health in Kuwait, potentially fueling further investigation within this study's framework.

## Chronic Health Conditions among Students

The increasing incidence of chronic ailments among students presents a significant public health hurdle with extensive ramifications for academic attainment, wellness, and lifelong health. Kuwait faces particularly concerning trends in this area. Recent studies paint an alarming picture. Oguoma et al. (2021) elucidate a perturbing public health scenario, with staggering rates of overweight (40.6%), obesity (42.1%), and central obesity (73.7%) among Kuwaiti adults [9]. But that is not all. The most concerning is the substantial occurrence of overweight and obesity even among the youngest age bracket (18-29 years). These findings accentuate the imperative for preemptive interventions to curb the escalating obesity crisis in Kuwait, averting the onset of more severe chronic health ailments. Additionally, research by Al-Haifi et al. (2022) corroborates this trajectory, particularly emphasizing adolescent cohorts [10]. Their investigation discloses that nearly

half of Kuwaiti adolescent's grapple with overweight or obesity, underscoring the urgency for tailored initiatives and policy reforms to instill healthier lifestyle habits from an early age.

The association between chronic ailments like obesity and the emergence of metabolic syndrome (MetS) is deeply intertwined. Al-Sejari's (2017) investigation explored the relationship between unhealthy lifestyle choices and the incidence of MetS within male university cohorts in Kuwait [11]. His research unveiled that most of the subjects were either overweight or obese, exhibiting a significant prevalence of MetS components. Risk determinants highlighted in this examination encompassed advanced age, employment status, marital ties, elevated BMI, higher income levels, smoking habits, smaller family size, and affiliation with a specific religious faction. This study sheds light on the innate interrelationship between sociocultural factors, individual behaviors, and the development of chronic health conditions among young adults.

AlMajed et al.'s (2011) study further highlights the alarming patterns of obesity and dyslipidemia within the demographic of young adults, particularly college attendees in Kuwait [12]. Their investigation unveiled a significant occurrence of increased blood lipid levels and obesity based on BMI, predominantly observed among male students. This research raises awareness about the importance of early screening for chronic disease risk factors, as well as the need for nutritional and lifestyle interventions for young adults.

Respiratory health is often undermined, and conditions like asthma easily slip by unnoticed. Booalayan et al. (2020) sought to address this, examining how household exposure to environmental tobacco smoke (ETS) relates to self-reported asthma in Kuwaiti adolescents [13]. Their inquiry substantiated a significant prevalence of both ETS exposure (54%) and self-reported asthma (20.5%). Furthermore, the study highlighted that adolescents reporting asthma symptoms were more inclined to either be current smokers or have been exposed to ETS at home. This highlights the profound influence of environmental elements like ETS on respiratory well-being and emphasizes the significance of smoke-free household policies in mitigating the risk associated with it.

Broadening the scope to allergic conditions, Ziyab (2017) undertook a study among young adults in Kuwait, exploring the prevalence of asthma, rhinitis, eczema, and their concurrent occurrence (termed allergic multi-morbidity) [14]. The results unveiled a prevalence of these allergic conditions and their coexistence within this demographic, with a parental history of allergy emerging as a prominent risk factor. Ziyab's research emphasizes the need for understanding genetic susceptibilities and environmental stimuli for allergic ailments, as these factors immensely influence the well-being of afflicted individuals [14].

Collectively, these studies depict a concerning picture

regarding the prevalence of chronic health ailments among students and young adults in Kuwait. Obesity, metabolic syndrome, dyslipidemia, asthma, and allergic diseases emerge as prominent health concerns. While certain studies focus on singular conditions, others highlight the interconnectedness of these issues with risk factors including lifestyle choices, environmental elements, and socioeconomic circumstances. Such findings underscore the necessity of adopting a comprehensive strategy in crafting health promotion initiatives aimed at student population in Kuwait.

### **Mental Health Concerns in Student Populations**

The demands of academic life and the shift to adulthood increase students' susceptibility to mental health issues. Extensive research indicates the global prevalence of anxiety, depression, and stress among student population, profoundly impacting their academic achievements and overall well-being [15]. Haggag's (2020) investigation sheds light on the repercussions of the COVID-19 pandemic on mental health among Kuwaiti university students, revealing substantial rates of disorders, with obsessive-compulsive disorder, depression, and somatization [16]. This stresses the need for mental health support systems in Kuwaiti higher education, especially in times of upheaval like the pandemic. Moreover, Haggag's findings emphasize specific risk factors, with female students and those pursuing natural sciences exhibiting higher vulnerability to mental disorders.

Comparative analyses across cultures enrich comprehension of mental health patterns among Kuwaiti students. Abdel-Khalek & Lester (2017) investigated the distinctions in mental health metrics between Kuwaiti and American college Student [17]. They revealed that American students exhibited marginally higher scores on the Arabic Scale of Mental Health, indicative of generally superior mental well-being. These findings resonate with prior research indicating lower scores on positive psychology indices and higher scores on psychopathological measures among Kuwaiti students compared to their American counterparts. The researchers posit that the contrasting cultural landscapes of individualism (predominant in the United States) and collectivism (prominent in Kuwait) likely contribute to these disparities. The findings offer foundation for further investigation into such cultural dynamics.

Diving deeper into the specific mental health challenges confronting Kuwaiti students, Alotaibi et al. (2024) offer clearer insights [18]. Their investigation unveils a high prevalence of depression, anxiety, and stress within Kuwait University's student body. Predominantly, emotion-focused coping mechanisms are employed, with familial issues emerging as a substantial precipitant of these psychological afflictions. This inquiry emphasizes the importance of establishing counseling facilities and crafting educational initiatives aimed at fostering adaptive coping strategies and tackling the underlying triggers of mental anguish. Moreover, it highlights the innate relationship between mental well-being and family environment. As such, it suggests

that support structures outside the academic sphere may wield considerable influence over student welfare.

The issue of stigma and its consequential impact on accessibility to care appear to be crucial determinant shaping the landscape of mental health provision in Kuwait. Scull et al. (2014) conducted a qualitative study to examine the perceptions of mental health care in the country [19]. Their findings illuminate stigma as a significant deterrent to seeking assistance for psychological distress. Factors fuelling this stigma include cultural emphasis on reputation and familial bonds, alongside the influence of Islamic teachings. Participants identified personal negative encounters, misconceptions regarding mental health, and apprehensions regarding privacy breaches as additional drivers of stigma. This research showcases the necessity for a comprehensive strategy that includes public awareness campaigns and educational initiatives concerning mental health, with the establishment of culturally attuned services prioritizing confidentiality and honoring Islamic principles.

Extending the examination of student mental health to a global scope, Auerbach et al. (2016) furnish much needed insights into college enrollment, attrition, and their correlation with mental health disorders [15]. Their multinational study, leveraging the World Health Organization World Mental Health surveys, unveils high prevalence rates of DSM-IV anxiety, mood, behavioral, and substance disorders among collegiate students. The research reveals a substantial portion of these disorders manifesting prior to college enrollment. Moreover, disorders commencing before enrollment, such as substance use disorders and major depression in females, predicted college attrition. These findings underscore the importance of early interventions and mental health provisions in tertiary education systems. Additionally, the study sheds light on the scant proportion of students availing treatment for their mental health issues, signaling a critical gap necessitating immediate global attention.

### **Lifestyle Factors and Student Health**

Lifestyle behaviors have a profound impact on the health of student populations. Diet, exercise, sleep, and substance use all play vital roles in short- and long-term well-being. Almansour et al. (2020) explored the link between nutrition and student health, specifically examining how knowledge affects dietary patterns in Kuwait University undergraduates [20]. Their cross-sectional study of 700 students used questionnaires to assess lifestyle and eating habits. The study found a slight but positive correlation between nutritional knowledge and healthy eating. This suggests awareness can influence choices. However, factors like culture, cost, and individual taste are likely more powerful determinants of students' overall food choices.

A holistic approach to student health consistently yields valuable insights into the factors shaping their overall well-

being. Amiri et al. (2019) underscores this principle in their examination involving 500 Iranian university students [21]. Their study aimed to assess the significance of a health-promoting lifestyle and its correlation with self-efficacy and well-being among university students. They used validated instruments like the Health-Promoting Lifestyle Profile, Self-Efficacy Scale, and WHO-5 Well-Being Index in their research. They found a low rate 34% of positive well-being but strong self-efficacy of 68%. Although the mean score for health-promoting behaviors was moderate, physical activity scored poorly on average. A substantial correlation emerged between well-being, self-efficacy, and health-promoting habits. Further analysis revealed that demographics like age, gender, education, living situation, student employment, along with self-efficacy and well-being, shaped students' lifestyle decisions.

Al-Sayegh et al. (2020) illuminate a worrisome disparity between health beliefs and practical habits in their research [22]. This descriptive cross-sectional investigation assessed the health status, behaviors, and beliefs among students and faculty within Kuwait University's health sciences faculties. The study employed a comprehensive approach, integrating subjective survey responses with objective health metrics such as BMI and blood pressure. Despite a recognized awareness of healthy lifestyle principles, the findings uncovered a significant proportion of individuals with suboptimal health indicators, including a high prevalence of overweight and obesity. This study underscores the need for health promotion initiatives to go above and beyond dissemination of knowledge, emphasizing the necessity of addressing tangible obstacles that impede the translation of health beliefs into actionable behaviors.

Al-Sejari's (2017) research explored the underlying innate interrelationship between sociocultural influences and health outcomes [23]. Focusing on Kuwaiti male university students, the study examined the links between physical inactivity, diet, smoking, and the occurrence of metabolic syndrome (MetS). This cross-sectional survey employed both self-report questionnaires and blood analysis to pinpoint MetS risk factors. Alarmingly, over half the participants were classified as overweight or obese, and many did not follow structured diets or seek nutritional guidance. The study identified clear risk patterns: older age, employment, and marital status all correlated with an increased presence of MetS components. Lifestyle factors such as high BMI, greater income, and smoking were similarly linked to MetS. Intriguingly, household size and religious affiliation (Shia) also emerged as influential. The study's sobering conclusion underscores the high MetS prevalence within this young demographic, emphasizing the urgent need for interventions that promote well-being and longevity. Al-Sejari's work highlights the complex ways in which sociocultural forces shape health outcomes, underscoring the necessity of targeted interventions in the Kuwaiti male university student population [23].

## Health Disparities and Vulnerable Student Populations

Understanding student health necessitates acknowledging that specific subsets of students may encounter distinct challenges and health vulnerabilities. Recognizing disparities rooted in factors like gender, socioeconomic status, or other demographics is vital for crafting precise interventions aimed at fostering fair health outcomes among all students. A study conducted by Musaiger et al. (2014) explored the intricate obstacles influencing weight maintenance among Kuwaiti university students, focusing particularly on the impact of gender and obesity [24]. Employing a self-reported questionnaire with a convenient sample of 530 students, researchers categorized barriers into two primary domains, which were those pertaining to healthy dietary habits and those linked to physical activity. Their findings highlight a shared impediment across both genders. There is a lack of skills in planning, shopping for, and preparing healthy meals. Moreover, time constraints attributed to academic obligations surfaced as a major hindrance. Interestingly, while no gender disparities were discerned concerning barriers to healthy eating, men exhibited a higher propensity to report hurdles regarding physical activity, with factors such as time constraints and unfavorable weather conditions being prominent deterrents. The study further revealed that obese male students encountered more significant obstacles in adopting healthy eating habits compared to their non-obese counterparts, thus emphasizing potential disparities within this student population.

The concerning prevalence of overweight and obesity among Kuwaiti adolescents acts as a focal point in the research conducted by Allafi et al. (2014). Their study, a component of the Arab Teens Lifestyle Study (ATLS), employed a multistage stratified randomization process to select 906 adolescents from Kuwaiti schools [25]. Utilizing a validated questionnaire and the IOTF cutoff values to delineate overweight and obesity in this demographic, their findings reveal a concerning reality that over 50% of both boys and girls fell into the overweight or obese categories, emphasizing the pressing necessity for interventions tailored to youth. Noteworthy are the gender-specific differences unearthed in the study regarding the correlations between lifestyle factors and body mass index (BMI). Specifically, physical activity exhibited a stronger association with BMI among boys, while unhealthy eating habits exerted a more pronounced impact on girls' BMI.

In a bid to dive deeper into gender-specific trends in health risks, Alkazemi (2019) examined weight status, dietary behaviors, and health attitudes among Kuwait University college students [26]. Employing a cross-sectional approach involving 615 participants, the study leveraged a self-report questionnaire, BMI evaluations, and a Healthy Eating Score (HES). Findings unveiled a higher prevalence of overweight and obesity among male students. Moreover, both sexes displayed subpar dietary practices, with men predominantly favoring animal protein intake,

while women showed a tendency towards consuming potato chips, fatty snacks, and sweets. These findings emphasize the importance of tailoring gender-specific intervention strategies to effectively tackle the unique dietary trends and health hazards prevalent among college students.

Further investigation shed light on how socioeconomic factors, environmental exposures, and access to reliable health information can immensely shape health outcomes and create vulnerable groups in the student population. A concerning trend highlighted by Ziyab et al. (2020) is the extensive exposure of Kuwaiti adolescents to secondhand smoke (SHS) in their households [27]. Their analysis of extensive studies that entailed middle and high school students unveiled that over 45% of middle school students and 50% of high school students reported exposure to household SHS. Additionally, the research discerned that students coming from families with lower socioeconomic status and with parents possessing lower levels of education were disproportionately affected by this health hazard. Mitigating SHS exposure demands more profound interventions, including robust tobacco control policies, increased public awareness regarding the perils of SHS, and targeted assistance for families coming from disadvantaged backgrounds.

Ashkanani et al. (2019) examined how Kuwait University undergraduates access health information online [28]. Their cross-sectional study revealed that a large majority of students (92.66%) turn to the web for health guidance. Yet, this reliance on online resources was shaped by factors like age, gender, and internet savvy. Older students, women, and those with greater web experience were more likely to look for health information online. This highlights a potential digital divide in accessing health information, one that demands broader accessibility measures. Ensuring that students of all backgrounds can find reliable health guidance is critical. Moreover, healthcare professionals could offer crucial support. By helping students sift through the abundance of online health information, they can promote informed decision-making.

Alkazemi & Salmean (2021) investigated another student health concern involving fruit and vegetable (F/V) intake [29]. Their cross-sectional study among Kuwait University students found a troublingly low median intake of just 2.06 F/V servings daily, far from recommended levels. Interestingly, gender didn't significantly impact overall F/V consumption. However, choice of F/V types differed – males leaned towards fruit juice and fried potatoes, while females favored non-fried vegetables. Most importantly, taste, inconvenience, and lack of knowledge about recommended intake and preparation methods emerged as major barriers. This underlines the need for educational campaigns that highlight the advantages of F/V and provide students with practical strategies to incorporate these essential foods into their diets in ways that are both convenient and enjoyable.

## Methods

### Study Design

This study adopted a retrospective cross-sectional survey design. The cross-sectional method was ideal for capturing a snapshot of prevalent health conditions among PAAET students. Furthermore, the retrospective approach allowed for the analysis of existing self-reported data. This offered both efficiency and valuable insights into the health patterns of this student population. The design effectively addressed the study's primary goals, which centered on identifying common health concerns and investigating potential links between those conditions and specific demographic factors.

### Study Sample

The research targeted students enrolled PAAET in Kuwait. To ensure a representative sample reflecting the population's diversity, a stratified random sampling method was utilized. This approach involves categorizing the population into subgroups, or strata, based on pertinent characteristics [30]. In this study, strata were defined by factors likely to impact health experiences, such as academic program affiliation (examining potential differences across programs), age bracket (considering developmental and health-related variations in young adults), and GPA (exploring potential connections between academic achievement and health). By maintaining proportional representation from each stratum in the final sample, stratified random sampling minimizes selection bias and enhances the generalizability of results to the wider PAAET student body [31].

To calculate sample size, the study employed power analysis in line with Cohen's (1988) guidelines [32]. This approach weighs the desired effect size, potential error rates, and the quantity of groups under comparison. By establishing these variables, the researchers aimed to ensure a sample size capable of revealing statistically significant results [33]. The study also implemented rigorous inclusion criteria for participants. To be eligible, students needed to be currently enrolled in PAAET programs, between 17-55 years of age, and capable of providing informed consent. These criteria guaranteed a sample representative of the target population, while concentrating on a key age group for decisions on education and health.

### Data Collection

The study relied on a self-reported questionnaire tailored specifically to this research project. The questionnaire had two distinct sections. The first gathered demographic data, including gender, age, governorate of residence and GPA. The second section focused on health status, with direct questions assessing the presence of chronic conditions like diabetes (including type), hypertension, blood diseases, respiratory diseases (with types specified), and allergies (with types specified). Finally,

to investigate potential links with allergies, the questionnaire explored the topic of pet ownership.

The research team primarily collected data through an online survey distributed via SurveyMonkey. This secure platform ensured data privacy and confidentiality by design. A link to the survey, along with a detailed information sheet and informed consent form, was disseminated to PAAET students using official channels like email and the institution’s learning management system. To increase response rates and inclusivity, the option for participants to complete a paper-based version of the questionnaire was also made available.

**Data Analysis**

The collected data underwent coding and input into statistical software, in this case SPSS for analysis. The process unfolded in multiple stages. Initially, descriptive statistics were computed to outline the demographic makeup of the sample and gauge the occurrence of different health conditions among PAAET students. Subsequently, bivariate analyses, incorporating chi-square tests for independence, were performed to explore potential connections between demographic factors and the observed health conditions. All statistical examinations adhered to a significance threshold of 0.05 to discern the influences of various variables on disease outcomes.

**Ethical Considerations**

The study prioritized the protection of participants, upholding the highest ethical standards. Before any data was gathered, approval was sought and obtained from the Institutional Review Board (IRB) at PAAET. Informed consent was paramount; each participant received clear information on the research’s goals, methods, potential risks and benefits, and their right to withdraw freely. Participation was strictly voluntary, with written consent serving as confirmation. Confidentiality was safeguarded by replacing personal details with unique codes. Data was stored securely on password-protected systems, accessible only to authorized researchers. Results were presented in aggregate form, making individual identification impossible. The research design was carefully crafted to avoid any undue risks or sensitivities. However, should a participant experience any discomfort, they were provided with information on readily available counseling resources.

**Results**

The study’s findings indicate a young study population, with 89.4% of participants falling within the 17-26 years age bracket. This aligns with the typical age range of students enrolled in higher education institutions . With a slight majority of female participants (56.4%), the sample appears reasonably representative of PAAET’s gender distribution. Students’ academic achievement (GPA) indicate normal distribution within PAAET criteria, more than half of the students were in higher sector of achievements (GPA 2-4) - table 1.

Age groups	N(%)	Gender	N(%)	GPA	N(%)
17-26	943(83,2)	Male	490 (43.2)	1-1.99	62(8.8)
27-35	86 (7.6)	Female	635 (56)	2-2.99	244(35)
36-55	26 (2.3)	Total	1125 (99.2)	3-4	193 (27.5)
Total	1055 (93.1)			55-80	96(13.7)
				81-99	106(15.1)
				Total	701 (63)

(note- GPA 1-4 academic college achievement , and 55-99 secondary school new enrollment students)

**Table 1:** Frequency of students age groups, gender, and GPA.

The highest proportion of students resided in the Jahra governorate, followed by Farwania and Ahmadi. This geographic distribution might warrant future investigations into whether regional factors influence health outcomes among the student population (table 2).

Governorates	N(%)
Asema	110 (9.7)
Hawalli	99 (8.7)
Farwania	161 (14.2)
Jahra	330 (29.1)
Ahmadi	234 (20.1)
M. Alkabeer	117 (10.3)
Total	1051 (92.8)

**Table 2:** Distribution of students (N=1133) among the six Governorates of Kuwait.

The study revealed a reassuringly low presence of chronic health issues within the PAAET student population. Only 3.8% of participants reported having diabetes, with Type 1 being the most frequent form (2.6%) - table 3.

Diabetes	N(%)
No	1079 (94.2)
Yes	43 (3.8)
Type1	30 (2.6)
Type2	13 (1.1)
Total	1122 (99)

**Table 3:** Frequency of self-reported Diabetes (Type1& 2) within the student population (N=1133).

Hypertension was even less common, affecting only 1.5% of students. This suggests that most PAAET students enjoy a reduced risk related to these conditions. Blood diseases affected 5.9% of the participants (table 4). Respiratory problems were slightly more common at 8.1%, with asthma being the leading concern (7.5%) – table 5.

Hypertension	N (%)	Blood Diseases	N (%)
No	1083 (95.6)	No	1013(89.4)
Yes	17 (1.5)	Yes	67(5.9)
Total	1100 (97.1)	Total	1080(95.3)

**Table 4:** Frequency of self-reported hypertension and blood diseases within the student population (N=1133).

Respiratory Diseases	N (%)
No	993 (87.6)
Yes	92 (8.1)
Asthma	82 (7.5)
Lung Infection	6 (0.5)
Others	2 (0.1)
Total	1085 (95.8)

**Table 5:** Frequency of self-reported respiratory diseases within the student population (N=1133).

Allergies were reported by 12.4% of students, with lung allergies (2.3%) and skin allergies (4.1%) being the most prevalent types (table 6). Owing pets were much of focus, where quarter of the students owned some kind of pet, cats (12.3%) and birds (11%) were the highest proportions reported (table 7).

Allergy	N (%)
No	946 (83.5)
Yes	135 (12.4)
Lung	25 (2.3)
Eye	2(0.2)
Dermal	45(4.1)
Food	15(1.3)
Medication	9(0.8)
others	33 (3.0)
Total	1081 (95.4)

**Table 6:** Frequency of self-reported allergy types within the student population (N=1133).

Owing Pets	N (%)
No	792 (69.9)
Yes	289 (25.5)
Birds	130(11.5)
Cats	139 (12.3)
Dogs	17(1.5)
others	7 (0.7)
Total	1081 (95.4)

**Table 7:** Frequency of self-reported owning any kind of pets within the student population (N=1133).

Crosstab analyses revealed (Pearson Chi-Square test- two sided ) intriguing patterns linking factors like gender, governorate, and pet ownership with health outcomes. A striking trend emerged regarding gender, which showed that male students consistently reported higher rates of blood diseases (5.1% vs. 1.1% for females), respiratory diseases (5.1% vs. 3.3% for females), and allergies (8.6% vs. 4% for females). These findings suggest a possible association between male gender and an increased likelihood of these conditions (table 8).

Variables	Blood diseases			Respiratory diseases			Allergy		
	No	Yes	p-	No	Yes	p-	No	Yes	p-
Gender									
Male	424(39.5)	55(5.1)		426(39.5)	55(5.1)		387(36)	92(8.6)	
Female	583(54.3)	12(1.1)	<b>.00</b>	562(52.1)	36(3.3)	<b>.001</b>	553(51.4)	43(4)	<b>.00</b>
Governorate									
Asema	102(10.1)	5(0.5)		98(9.7)	9(0.9)		90(9.0)	17(1.7)	
Hawalli	86(8.5)	12(1.2)		86(8.5)	12(1.2)		83 (8.3)	14(1.4)	
Farwania	148(14.7)	9(0.9)		145(14.4)	13(1.3)		141(14)	17(1.7)	
Jahra	292(29)	25(2.5)		289(28.7)	26(2.6)		266(26.5)	49(4.9)	
Ahmadi	212(21.1)	8(0.8)		208(20.6)	14(1.4)		203(20.2)	17(1.7)	
M. Alkabeer	104(10.3)	4(4)	<b>.04</b>	98(9.7)	10(1)	.7	98(9.8)	10(1)	.07
Pet Owning									
No	742(69.5)	42(3.9)		734(68.5)	53(4.9)		706(66)	80(7.5)	
Yes	260(24.3)	24(2.2)	.06	249(23.2)	36(3.4)	<b>.002</b>	232(21.7)	52(5)	<b>.00</b>
GPA									
1-1.99	57(8.1)	5(0.7)		47(6.7)	13(1.9)		49(7)	10(1.4)	
2-2.99	231(33)	13(1.9)		227(32.4)	16(2.3)		215(30.8)	27(3.9)	
3-4	183(26.1)	10 (1.4)		181(25.9)	13(1.9)		175(25.1)	19(2.7)	
55-80	88(12.6)	8(1.1)		84 (12)	12(1.7)		85(12.2)	11(1.6)	
81-99	99(14.1)	7(1)	0.77	99(14.1)	8(1.1)	<b>.002</b>	99(14.2)	8(1.1)	0.4

**Table 8:** Cross tabulation between students’ gender, governorate, pet ownership and GPA with health outcomes (N=1133).

Geographic disparities were also evident. Students residing in the Jahra governorate exhibited the highest prevalence of blood diseases (2.5%), respiratory diseases (2.6%), and allergies (4.9%) compared to other governorates. This highlights potential regional variations in health outcomes, warranting further investigation into environmental or other factors specific to particular governorates. Pet ownership did not prove any significant difference between the groups owning pets and higher proportions with health outcomes, the significance test was of negative direction. Such a results prompts further investigation to ascertain whether a causal relationship exists between owning pets and the onset of these conditions or not. Students with GPA between 2-2.99 seems to have significant higher level of respiratory complaints compared with the other groups (table 8).

## Discussion

This retrospective cross-sectional study provides encouraging data on the health status of students in Kuwait’s PAAET. The study reveals a low prevalence of chronic illnesses such as diabetes and hypertension, suggesting a positive health outlook for young adults in the nation. While further investigation into blood diseases, respiratory issues, and allergies is merited, these conditions appear less common than similar studies in the region [9,10]. The study pinpoints potential health differences linked to gender, residential location, and pet ownership. These findings underscore the importance of tailored healthcare initiatives and interventions within this student population.



The study unveils a concerning gender gap in health. Male students reported significantly higher rates of blood issues, respiratory problems, and allergies compared to females. This mirrors past research in Kuwait and the region [10, 13]. Cultural influences on smoking and diet, alongside potential biological differences, might explain this disparity. Unravelling these factors and crafting gender-specific health programs are crucial next steps.

The study also reveals geographical differences in health outcomes, with the Jahra governorate showing a higher frequency of blood diseases, respiratory issues, and allergies. This underscores the potential impact of environment and variations in healthcare access. Deeper research should investigate specific factors, such as air quality, industrial proximity, or differences in healthcare availability across governorates. Understanding these regional patterns is crucial for delivering targeted, effective public health initiatives.

Furthermore, the study found some link between students' GPA and the presence of respiratory issues, but not with blood diseases or allergies. This implies that academic performance might not be a major predictor of these health problems within the PAAET population, which challenges some studies suggesting a connection between academic stress and health [16]. Previous research was conducted on PAAET students, comparing the academic performance (GPA) between students with and without any kind of disease. The results indicated that there was no statistically significant difference in the academic performance between the groups [34]. This finding contrasts with prior research that has suggested health-related challenges could impact academic achievement [35]. It would be interesting to see if this holds true beyond PAAET or might reflect a unique aspect of the relationship between health and academic success in Kuwait.

The study also raises questions about the potential connection between pet ownership and an increased likelihood of blood diseases, respiratory problems, and allergies. This aligns with existing research on how pets can trigger allergies or worsen respiratory issues for some people [10]. While there is need for more data to establish cause and effect, this finding warrants deeper investigation. It's worth exploring whether certain types of pets are more strongly linked to health risks, and how students can manage those risks responsibly.

This study, in conversation with existing research, paints a clear picture that chronic health, mental well-being, and lifestyle choices are intricately linked for Kuwaiti students. Effective interventions need to go beyond simple physical health and should include the mental and social factors that shape it. While students may be aware of healthy practices [22], the high prevalence of less-than-ideal health indicators reveals a "knowing-doing" gap. This highlights the need for health programs that move past basic education, offering practical and culturally relevant support that empowers our students to translate knowledge into action.

## Limitations of the Study

The research has a few limitations to consider. The retrospective cross-sectional design offers a point-in-time view of health but can't definitively prove cause and effect. Longitudinal studies would better track changes and strengthen the suggested links between variables. Additionally, self-reported data can be influenced by factors like imperfect recall or a desire to give socially acceptable answers. Future research should include objective measures, perhaps clinical tests, to bolster the accuracy of the findings. Lastly, focusing on PAAET students may limit how broadly we can apply the results to other universities or age groups in Kuwait.

## Conclusion

This study provides an insightful analysis of health patterns and potential disparities among PAAET students in Kuwait. The low rates of chronic diseases such as diabetes and hypertension are encouraging. However, the observed prevalence of blood diseases, respiratory issues, and allergies warrants further investigation and focused prevention initiatives. Critically, the study highlights possible health disparities linked to gender, location, and pet ownership. Recognizing these variations is vital for crafting targeted health interventions that ensure the well-being of all students. Future research would benefit from longitudinal studies, objective health measurements, and more diverse sampling. This would refine people understanding of health trends within Kuwait's student population, ultimately guiding effective health promotion strategies.

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