



**A Cross-Sectional Survey Exploring the Factors Affecting
University Students Participating in the Exercise in the Al-Ahsa
Region of Saudi Arabia**

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Introduction

Physical activity (PA) is defined by the World Health Organization (WHO) as any bodily movement produced by muscles that requires energy expenditure. This includes activities such as walking, cycling, and even daily chores (WHO, 2017). The health benefits of PA are well-documented, with studies showing improvements in physical health, the prevention of non-communicable diseases (NCDs), and positive effects on mental well-being (Warburton & Bredin, 2016). Regular PA helps to manage weight, reduce the risk of chronic diseases (e.g., type 2 diabetes and heart disease), and improve psychological health and academic performance (Doyle et al., 2019).

Despite these benefits, physical inactivity remains a significant global challenge. According to the WHO (2017), physical inactivity has contributed to the rise in NCDs, leading to millions of premature deaths annually. In Saudi Arabia, 82.6% of those aged 15 years and older were reported as being physically inactive in 2019 (General Authority for Statistics, 2020). This trend is particularly noticeable among university students, where lifestyle changes and academic demands often lead to a decline in PA (Stapp & Prior, 2018). Barriers to PA among students include individual factors, such as a lack of motivation and knowledge, as well as external factors, including limited access to facilities (Herazo-Beltrán et al., 2017).

Given the critical role of PA in public health, this research seeks to explore the barriers to PA among university students in Al-Ahsa, Saudi Arabia. The findings aim to inform strategies to promote PA, thereby supporting Saudi Vision 2030's goal of increasing the percentage of individuals participating in regular PA.

Methodology

A descriptive cross-sectional survey helps explore and describe the students' behaviors. The current study utilized a purposive non-probable sample, which has the advantage of focusing on specific characteristics of the group that are appropriate to the research objectives. Purposive sample selection is less costly and time-consuming than alternative methods (Ames et al., 2019). Students enrolled at the university were chosen to collect a variety of perspectives. Therefore, the criteria for inclusion were undergraduate and postgraduate students over 18 years enrolled at the university's 16 colleges. The exclusion criteria were students who refused to participate in the survey, individuals who were not enrolled at university, and students under the age of 18 years.

A pragmatic approach was adopted because the research applies a non-probability approach, which is more suitable for students because of the associated cost and time constraints (Denscombe, 2017). Therefore, it is often unnecessary to calculate the sample size with this approach (Fink, 2020). However, it is understood to be better to have a sample ranging between 30 and 250 participants when using this approach (Denscombe, 2017).

Data Handling and Analysis

Data were collected via Qualtrics and analyzed using SPSS version 26.0. The survey was structured into two main sections: Demographic information and barriers. The barriers section included 24 statements categorized into themes such as lack of time, social support, energy, willpower, and environmental obstacles, each rated from "very likely" (3) to "very unlikely" (0).

After data cleaning to remove incomplete responses, 258 valid responses (67.7%) were available for analysis. Descriptive statistics (frequency, percentage, mean, standard deviation) were applied to all variables. Inferential statistical analysis (Mann-Whitney and Kruskal-Wallis) was applied for 18 barrier-related statements, with a score of 5/9 or more indicating a significant barrier. Statistical significance was set at $P < 0.05$ with a 95% confidence interval.

Findings

Table 1 presents the respondents' demographic characteristics. The majority were female (72.9%, n=188), and almost half (42.2%, n=109) were aged 18-21. Most of the participants were single (79.5%, n=205), undergraduates (93.0%, n=240), and engaged in low-to-moderate levels of PA (56.6%, n=146).

Variables	Items	Frequency	Percent
Gender	Male	70	27.1
	Female	188	72.9
Age	18-21	109	42.2
	22-25	95	36.8
	25 and more	54	20.9
Marital Status	single	205	79.5
	married	50	19.4
	divorced	3	1.2
level of study	Undergraduate	240	93.0
	Postgraduate	18	7.0
level of physical activity	High activity level	43	16.7
	Medium or low activity level	146	56.6
	Inactive	69	26.7

Table 2 confirms that there were no statistically significant differences in activity levels based on gender because $p = 0.264$. 22.9% of males were physically active, compared to just 14.4% of females. However, because the difference is statistically insignificant, it is likely to be the result of chance.

Gender		Activity level			Total
		High activity level	Medium or low activity level	Inactive	
Female	N	27	109	52	188
	%	14.4	58.0	27.7	100.0
Male	N	16	37	17	70
	%	22.9	52.9	24.3	100.0
Total	N	43	146	69	258
	%	16.7	56.6	26.7	100.0
Chi-square: 2.662		p.value:0.264			

Table 3 presents the perceived barriers for university students to PA based on 24 items. Their median scores were between 0 and 2 on the 4-point Likert scale. The mean was 1.44, and the median was 1.46, indicating low perceptions about perceived barriers to PA.

N	Items	Approval degree								Mean	Median	Percentage	Ranking
		Very likely		Somewhat likely		Somewhat unlikely		Very unlikely					
		N	%	N	%	N	%	N	%				
1	My day is so busy now, I just don't think I can make the time to include physical activity in my regular schedule.	40	15.5	122	47.3	65	25.2	31	12.0	1.66	2.0	41.5	9
2	None of my family members or friends like to do anything active, so I don't have a chance to exercise.	35	13.6	61	23.6	71	27.5	91	35.3	1.16	1.0	29.0	19
3	I'm just too tired after work or school to get any exercise.	77	29.8	118	45.7	40	15.5	23	8.9	1.97	2.0	49.3	4
4	I've been thinking about getting more exercise, but I just can't seem to get started.	119	46.1	80	31.0	28	10.9	31	12.0	2.11	2.0	52.8	2
5	I don't get enough exercise because I have never learned the skills for any sport.	49	19.0	64	24.8	63	24.4	82	31.8	1.31	1.0	32.8	15
6	I don't have access to jogging trails, swimming pools, bike paths, etc.	82	31.8	63	24.4	66	25.6	47	18.2	1.70	2.0	42.5	8
7	Physical activity takes too much time away from other commitments—time, work, family, etc.	32	12.4	93	36.0	93	36.0	40	15.5	1.45	1.0	36.3	13
8	I'm embarrassed about how I will look when I exercise with others.	20	7.8	38	14.7	53	20.5	147	57.0	0.73	0.0	18.3	21
9	I don't get enough sleep as it is. I just couldn't get up early or stay up late to get some exercise.	52	20.2	75	29.1	80	31.0	51	19.8	1.50	1.0	37.5	11
10	It's easier for me to find excuses not to exercise than to go out to do something.	87	33.7	98	38.0	44	17.1	29	11.2	1.94	2.0	48.5	5
11	I know of too many people who have hurt themselves by overdoing it with exercise	13	5.0	30	11.6	73	28.3	142	55.0	0.67	0.0	16.8	22
12	It's just too expensive. You have to take a class or join a club or buy the right equipment.	43	16.7	65	25.2	53	20.5	97	37.6	1.21	1.0	30.3	18

N	Items	Approval degree								Mean	Median	Percentage	Ranking
		Very likely		Somewhat likely		Somewhat unlikely		Very unlikely					
		N	%	N	%	N	%	N	%				
13	My free times during the day are too short to include exercise.	32	12.4	95	36.8	72	27.9	59	22.9	1.39	1.0	34.8	14
14	My usual social activities with family or friends do not include physical activity	126	48.8	77	29.8	43	16.7	12	4.7	2.23	2.0	55.8	1
15	I'm too tired during the week and I need the weekend to catch up on my rest.	61	23.6	89	34.5	65	25.2	43	16.7	1.65	2.0	41.3	10
16	I want to get more exercise, but I just can't seem to make myself stick to anything.	97	37.6	101	39.1	41	15.9	19	7.4	2.07	2.0	51.8	3
17	I'm afraid I might injure myself or have a heart attack.	14	5.4	18	7.0	60	23.3	166	64.3	0.53	0.0	13.3	23
18	I'm not good enough at any physical activity to make it fun.	34	13.2	77	29.8	74	28.7	73	28.3	1.28	1.0	32.0	16
19	If we had exercise facilities and showers at college, then I would be more likely to exercise.	104	40.3	77	29.8	34	13.2	43	16.7	1.94	2.0	48.5	6
20	extreme hot weather is an obstacle.	90	34.9	77	29.8	52	20.2	39	15.1	1.84	2.0	46.0	7
21	sports cloths are not culturally appropriate.	43	16.7	55	21.3	58	22.5	102	39.5	1.15	1.0	28.8	20
22	PA in the summer times is not convenient to me.	61	23.6	70	27.1	62	24.0	65	25.2	1.49	2.0	37.3	12
23	My religious thoughts are against performing PA.	7	2.7	7	2.7	15	5.8	229	88.8	0.19	0.0	4.8	24
24	the environment around be is not supportive for PA.	48	18.6	61	23.6	61	23.6	88	34.1	1.27	1.0	31.8	17
Overall mean										1.44	1.46	36.0	-

The most notable barriers were that my usual social activities with family or friends do not include PA (median=2.0, 78.6%) and that I've been thinking about getting more exercise but just can't seem to get started (median=2.0, 77.1%).

Table 4 presents the respondents' perceptions regarding the perceived barriers related to lack of time, social support, energy, willpower, resources, and environmental barriers to PA, with a cumulative mean score of 29.31 out of 72.0 and a cumulative median of 30.0. In this context, a lack of willpower ranked first.

N	Barriers*	Mean	SD	median	Percentage	Ranking
1	Lack of time	4.50	2.16	5.0	50.0	5
2	Lack of social support	4.12	1.96	4.0	45.6	6
3	Lack of energy	5.11	2.24	5.0	56.6	2
4	Lack of willpower	6.12	2.32	6.5	67.9	1
5	Lack of resources	4.85	2.01	5.0	54.0	3
6	Environmental barriers	4.61	2.59	5.0	51.3	4
Overall Score		29.31	9.14	30.0	54.3	-

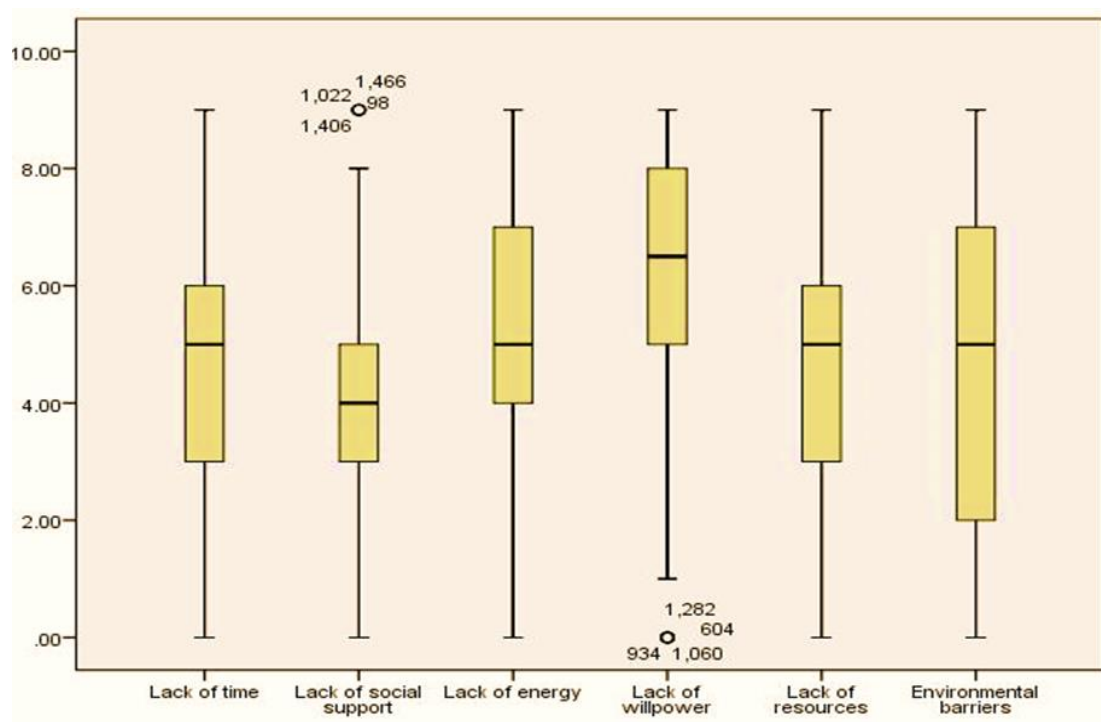


Figure 1: Boxplot for the six perceived barriers to PA for university students

A Mann-Whitney U test was conducted to determine whether there is a difference between males and females regarding perceived barriers to leisure-time PA. The hypothesis suggested that gender differences influence perceived barriers. A normality distribution test revealed non-normal data ($p=0.001$), requiring non-parametric analysis. The results were significant at the 5% level regarding barriers related to a 'lack of social support,' with females reporting higher perceptions of this barrier than males (mean rank: females 135.45, males 113.52;

$p=0.033$), leading to the hypothesis being accepted. However, no significant differences were found regarding barriers related to lack of time, energy, willpower, resources, or environmental factors, resulting in the hypothesis being rejected for these barriers.

Table 5: Normality test (Kolmogorov-Smirnov & Shapiro-Wilk)

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Lack of time	.122	258	.000	.970	258	.000
Lack of social support	.144	258	.000	.967	258	.000
Lack of energy	.127	258	.000	.960	258	.000
Lack of willpower	.147	258	.000	.920	258	.000
Lack of resources	.109	258	.000	.969	258	.000
Environmental barriers	.112	258	.000	.954	258	.000

Table 6: Mann-Whitney test

Dimensions	Female (n=188)			Male (n=70)			Z	P Value
	Mean rank	Sum of ranks	Median	Mean rank	Sum of ranks	Median		
Lack of time	128.51	24159.50	5.0	132.16	9251.50	5.0	0.353	0.724
Lack of social support	135.45	25464.50	4.0	113.52	7946.50	4.0	2.126	0.033
Lack of energy	132.59	24926.50	5.0	121.21	8484.50	5.0	1.101	0.271
Lack of willpower	133.62	25121.00	7.0	118.43	8290.00	6.0	1.469	0.142
Lack of resources	126.51	23784.50	5.0	137.52	9626.50	5.0	1.066	0.286
Environmental barriers	128.94	24241.50	5.0	130.99	9169.50	5.0	0.197	0.844
Total	131.61	24743.00	30.0	123.83	8668.00	29.0	0.745	0.456

Differences in perceived barriers to PA based on age

Table 7 reveals no statistically significant differences in barriers related to lack of time, social support, energy, willpower, resources, or environmental factors.

Table 7: Kruskal-Wallis test regarding perceived barriers to PA according to age

Dimensions	18-21 years (n=109)	22-25 years (n=95)	25 and more (n=54)	Chi-square	P Value*
Lack of time	125.75	137.72	122.60	1.927	0.382
Lack of social support	141.66	121.08	119.77	5.156	0.076
Lack of energy	138.70	121.77	124.53	2.978	0.226
Lack of willpower	139.97	127.05	112.69	5.092	0.078
Lack of resources	128.26	131.77	128.01	0.143	0.931
Environmental barriers	138.77	123.85	120.73	3.009	0.222
Total	138.33	125.51	118.69	2.937	0.230

Table 8 confirms that there were no statistically significant differences between the study participants' responses regarding a lack of time, social support, energy, willpower, resources, or environmental barriers based on marital status.

Dimensions	single (n=205)	Married (n=50)	Divorced (n=3)	Chi-square	P Value*
Lack of time	127.03	138.57	147.00	1.150	0.563
Lack of social support	131.51	119.00	166.83	1.940	0.379
Lack of energy	127.83	136.20	132.00	0.520	0.771
Lack of willpower	131.58	120.35	139.67	.0987	0.610
Lack of resources	130.72	119.65	210.33	4.553	0.103
Environmental barriers	131.08	123.08	128.67	0.468	0.791
Total	129.74	125.19	185.00	1.831	0.400

Table 9 shows that there were no statistically significant differences between the perceptions of barriers to PA related to lack of time, social support, energy, willpower, resources, or environmental barriers based on the level of study.

Dimensions	Undergraduate (n=240)		Postgraduate (n=18)		Z	P Value
	Mean rank	Sum of ranks	Mean rank	Sum of ranks		
Lack of time	128.81	30784.50	138.24	2626.50	0.535	0.592
Lack of social support	128.80	30784.00	138.26	2627.00	0.539	0.590
Lack of energy	128.10	30617.00	147.05	2794.00	1.076	0.282
Lack of willpower	130.43	31172.50	117.82	2238.50	0.716	0.474
Lack of resources	128.96	30820.50	136.34	2590.50	0.420	0.674
Environmental barriers	129.22	30884.00	133.00	2527.00	0.214	0.831
Total	129.28	30898.50	132.24	2512.50	0.166	0.868

Table 10 shows that the analysis of differences revealed statistically significant differences between inactive and active students in perceived barriers to PA, including lack of time ($p=0.041$), social support ($p=0.001$), energy ($p=0.001$), willpower ($p=0.001$), and environmental barriers ($p=0.010$), all favoring inactive respondents. Inactive students reported higher perceptions of these barriers. However, there were no significant differences in perceived barriers related to a lack of resources ($p=0.359$).

Dimensions	high (n=43)	Medium or low (n=146)	Inactive (n=69)	Chi- square	P Value*
Lack of time	112.85	126.12	147.04	6.375	0.041
Lack of social support	124.51	116.51	160.10	16.651	0.001
Lack of energy	107.27	122.30	158.59	15.987	0.001
Lack of willpower	90.71	119.32	175.22	41.067	0.001
Lack of resources	144.02	125.83	128.22	2.051	0.359
Environmental barriers	121.66	120.80	152.80	9.296	0.010
Total	111.24	117.59	166.07	22.900	0.001

Discussion

This study identified perceived barriers to PA among 258 university students in Al-Ahsa, categorized across the dimensions of the Socioecological Model (SEM): individual, social environment, physical environment, and policy factors. The study surveyed 258 university students to explore sociodemographic characteristics

and their perceived barriers to PA. The response rate was acceptable for social research (Denscombe, 2017), with a notable representation of females (72.9%) compared to males (27.1%). Most participants were 18-21 (42.2%), aligning with the Ministry of Education's (2019) report indicating that undergraduate students in Saudi Arabia typically range from 18-22 years. The sample included 93.0% undergraduates and 7.0% postgraduates, reflecting the limited number of postgraduate enrolments (36,643 undergraduates versus 3,485 postgraduates).

Additionally, 79.5% of the respondents were single, consistent with GASTAT's (2020) report indicating that 66.23% of young citizens aged 15-34 have never been married. The analysis revealed statistically insignificant differences in perceived barriers based on age, marital status, or level of study, probably due to the sample's homogeneity and smaller size. This aligns with Idowu et al.'s (2015) finding that perceived barriers may not differ significantly among sociodemographic factors within a limited community sample. This study identified the level of PA among males and females, most of whom consider themselves to engage in low-to-medium activity. This supports the current research findings which indicate that more males (22.9%) than females (14.4%) were regularly active. 27.7% of females were inactive, compared to just 24.3% of males. Interestingly, the participation of females in high-, moderate- or low-profile activity was unexpectedly 58.0% versus 52.9% for males. These results are likely due to the significantly higher rate of female respondents in the current study who may use housework as PA, which is considered moderate movement.

Individual level

A lack of willpower was among the key parameters at the intrapersonal level of the SEM. This study found that both male and female students widely cited a lack of willpower as the highest perceived barrier to PA among the participants. It was perceived as a more significant barrier among females than males (median=7.0 vs 6.0, $p=0.142$).

The ranking of lack of willpower was also in accordance with that reported by Al-Drees et al. (2016) who reported it as a key barrier to PA ranking second to adherence to PA among Saudis attending King Khalid University Hospital. Three-quarters of the participants in the current study reported that they were thinking of exercising more but could not start. A lack of willpower is associated with numerous barriers, such as a lack of skill, access to facilities, and support.

Furthermore, most students (especially females) need more motivation to start and continue practicing PA. This may be due to the lack of physical education in girls' schools in Al-Ahsa and the poor quality of physical education at boys' schools, resulting in a lack of skills, knowledge, and willpower (Al-Hazzaa, 2018). Alsahli's (2016) explanation for the lack of motivation could be intertwined with various other factors among university students, particularly among girls, including that PA is not their first option, they lack knowledge of the benefits of PA, and family support is poor. Thus, PA is regarded as a challenging task that could be more enjoyable. Confirming this, the current research findings indicate that 43% of students report that PA is not enjoyable and, therefore, poses a barrier to practicing PA.

Another barrier revealed in this study was a lack of energy, which ranked second for both males and females, with the difference between the sexes being insignificant (median=5.0 vs 5.0, $p=0.271$).

Empirical research has identified a lack of energy as a notable barrier to PA, particularly among Saudi females, possibly due to physiological differences and variations in food intake (Wu & O'Sullivan, 2011). Many students report feeling tired and stressed as a result of their university assignments, with Al-Hassan et al. (2020) citing energy depletion as a significant hindrance to PA. Approximately three-quarters of students felt fatigued after studying, adversely affecting their motivation to exercise, often due to poor planning and limited awareness of the importance of PA.

Lack of time was also reported as a barrier, ranking fifth in the current study, especially by males, although the difference between the genders was statistically insignificant (median=5.0, $p=0.724$). This contrasts with the findings of Alzahrani et al. (2019), who reported that females were more likely to cite time constraints, potentially due to their family responsibilities. In the current study, only 19.4% of the participants were married, possibly affording them more free time.

Awadalla et al. (2014) further noted that students prioritize academic success over exercise due to their busy schedules and misconceptions that exercise requires significant time and effort. More than half of the students in the current study considered their hectic schedules a barrier to regular PA.

Social environment level

Another barrier was the lack of social support, ranked last among the six perceived barriers to PA. There was a statistically significant difference between males and females regarding the barrier of social support, with

more females citing this, in accordance with the findings of Al-Drees et al. (2016) and Alsahli (2016). This may be due to the perceived need for females to satisfy Saudi society's cultural norms.

The responses indicated that social activities often do not include PA. This was shown to be among the most notable barriers, with approximately three-quarters of the participants supporting this. These findings are supported by empirical research, which indicates that female Saudis suffer from limited social support for exercise compared to males. According to Awadalla et al. (2014), females attending King Khalid University perceived the main barriers to PA as a lack of peer support and encouragement (27.8%). Thus, peers exert considerable influence. Additionally, Lawler et al. (2020) confirmed that friends exert more influence than parents regarding PA behavior, especially among young students. Furthermore, when family and friends are not interested in PA, there is a positive correlation with sedentary behaviors (Al-Hazzaa et al., 2011).

Traditional clothing and religion were the least reported barriers. This supports the findings of Samara et al. (2015), who noted that Islam does not hinder PA, and participants in this study recognized that Islam encourages PA.

Physical environment

Built environment

The physical (built) environment is likely to influence the level of PA due to difficulties accessing sports facilities. This is considered a common barrier that deters students from practicing PA at Saudi universities. In the current study, a lack of resources ranked third among the barriers. More than half of the students perceived the lack of sports facilities as a barrier, with males being more likely than females to perceive the lack of resources as a barrier (median=5.0 vs. 5.0, $p=0.286$).

Interestingly, several local research studies have been conducted among Saudi university students to assess the barriers to PA (Awadalla et al., 2014; Samara et al., 2015; and AL Reshidi, 2016), and these reported that a lack of resources is a common barrier to Saudi university students practicing PA daily. Various reasons were given, including the lack of a gym instructor, gym membership cost, inadequate facilities, and certain sports exclusive to males. The current study's results support this because three-quarters of the students reported that if there were exercise facilities at college, they would be more likely to exercise.

Most Saudi universities require gender segregation, and most of the funding for physical education is allocated to buildings designated for male rather than female students (Alsahli, 2016). Accordingly, Al-Ahsa's university has four gyms for males with a wide range of equipment, whereas females have only one gym that can accommodate 50 students, and all sporting activities and initiatives are dedicated to males (A university in Al-Ahsa, 2018). Faqihi et al. (2019) reported that males and females considered a lack of appropriate facilities among the main barriers to PA, especially for females.

However, most previous Saudi studies contradict the current findings, with males rather than females citing a lack of resources as a barrier. This may be due to females being less interested in PA and exercise facilities. Another possibility is that males are more likely to attend sports clubs, and there are insufficient sports clubs in the city to satisfy demand (Al-Otaibi, 2013).

In the current study, almost half of the respondents indicated that taking a class or joining a club is too expensive. Likewise, Al-Otaibi (2013) reported that in Al-Ahsa there are limited sports clubs available, particularly for females. In addition, female gym membership is more expensive than male membership. The lack of suitable facilities may be connected to other influences, including a lack of skills, the weather, weak policies, and a lack of exercise facilities at the university.

Natural environmental factors

One of the common natural barriers faced in the Gulf region is the weather. In the current study, the weather was the fourth most commonly cited barrier, with more males than females citing this factor (median=5.0 vs 5.0, $p=0.844$), although the difference was statistically insignificant. Similarly, Alzahrani et al. (2019) found no statistically significant difference between the genders regarding the number of barriers. The study showed that more than half of males and females agreed that extreme heat was a barrier to PA.

Policy level

Among the local policies, a lack of education posed a barrier to engagement in PA among university students. According to more than half of the respondents, the current study revealed that a lack of outdoor space poses a barrier, such as parks, bike paths, and safe pavements. Abdel-Salam & Abdel-Khalek (2016) showed that

the most significant barrier for students was the need for more neighborhood facilities, including indoor walking trails, to address the weather problem. Assessing the issues faced by university students through each component of the SEM and its effect on PA helps to appreciate the overarching framework and understand the barriers so that they can be addressed rather than focusing on individual factors.

Conclusion and Recommendations

This study focuses on critical issues regarding the health and welfare of university students in Al-Ahsa. It sought to identify the perceived barriers to PA participation and gender differences. Using a quantitative cross-sectional approach, it highlighted numerous issues based on the CDC questionnaire. It was revealed that the majority of students in Al-Ahsa participate in PA at low-to-moderate levels, which is below the recommendations made by the WHO for young people, with particular issues regarding physical inactivity among female students. The barriers differ between females and males, although the differences were statistically insignificant. Nevertheless, the 'common sense' component in public health practice is essential to the decision-making process and should not be restricted by the value of p (Kuzma, 1998).

Females were likelier than males, indicating a lack of willpower, energy, and social support. The roles of cultural norms, peers, and families were noticeable among females. Therefore, the participants showed statistically significant differences in terms of the lack of social support. Meanwhile, males were more likely to cite a lack of resources, time, and environmental obstacles. As such, external barriers were more dominant among males. Most of these obstacles significantly contributed to reducing the level of PA. Also, the region's culture, university, and local policies play essential roles in influencing and controlling all barriers.

The socioecological model of public health and health promotion was used to make accurate predictions and clarify the disparity between genders regarding the barriers that prevent PA by focusing on the levels of influence and interrelatedness between these factors and their contribution to physical inactivity. In conclusion, health promotion aims to empower people to improve their lifestyles, achieve well-being, and promote equal opportunities for all (WHO, 2016). Saudi Vision 2030 aspires to create a supportive environment to promote and protect individual and community health (MOH, 2018). Thus, public health practitioners must confront the health issues facing society and encourage all parties to enhance the well-being and health of the community (WHO, 2016).

Recommendations for promoting PA

Changing people's lifestyles so that they adopt healthy PA habits requires the cooperation of all sectors, including those responsible for government policy, healthcare, education, sports and recreation, and non-governmental organizations.

Education recommendations

Raising awareness of the benefits of PA through workshops and courses could help students to understand its importance. Planning should focus on meeting the needs of both genders, with females likely to prefer moderate activities like tennis or cycling, whereas males may prefer more vigorous activities. Effective time management workshops are also needed to address the perceived lack of time. Universities can promote healthy lifestyles via social media, a key platform for Saudi youth, by Vision 2030's goals for fostering healthier lifestyles.

Policy recommendations

A multidisciplinary approach to national policies promoting PA involving the Ministry of Health, Ministry of Education (MOE), sports clubs, and NGOs is needed. Considering students' diverse needs, a physical education curriculum should be offered for both genders in all schools. Meanwhile, universities should provide accessible sports facilities, especially for female students. The private sector should also invest in affordable sporting facilities, and NGOs should help finance initiatives to support Vision 2030. Finally, municipalities must create shaded pedestrian areas to encourage regular PA.

Implications for public and health promotion practice

At the individual level, the first elements to avoid physical inactivity are education, awareness, and emphasizing the importance of PA for physical and mental health as well as academic performance.

The social environment level confirms that awareness and education about PA require the involvement of family and peers. This entails developing plans for social activities between family and friends, including promoting PA to encourage group participation and the learning of new techniques from others.

At the physical environment level, some platforms may encourage and remind students to practice PA regularly. Advertisements at university can remind students of the importance of PA for their well-being. Gyms should be established for both male and female students on each campus, and there should be campaigns to promote PA with continuous evaluation.

All members of society must help raise awareness to address the obstacles to practicing PA. In addition, green spaces need to be created in neighborhoods to encourage people to practice PA in the fresh air, which will encourage others to be physically active.

There is also a need to focus on university policy, including providing certified gym instructors to support both male and female students and identify their needs. To increase students' desire to engage in PA, universities should fund physical education for females, and there must be equality between male and female sporting initiatives. Finally, the MOE must prioritize educational activity in schools to improve the health of future generations (Vision 2030, 2019).

Strengths and Limitations

The current study has a number of limitations that must be noted. For instance, some of the barriers to PA were not indicated in the evaluation. However, the research addressed this problem by analyzing six barriers. In addition, the cross-sectional design used in this study was unable to infer causality.

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