

Prevalence Of Suboptimal Health Status Amongst General Population of Residential Area, Heavy Industries Taxila, Taxila

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Abstract

Objective: Determine the prevalence of suboptimal health levels and find an association between suboptimal health and lifestyle factors in a population of residential area HIT Taxila.

Methods: A community-based Descriptive Cross-sectional study was conducted in HIT Taxila, Jun-Nov 2023 on 400 individuals of age groups ranging from 20 to 60 years including males and females via systematic random sampling. Data was collected by Suboptimal Health Measurement (SHMS V1.0) scale including general, physical, mental and social subdomains and demographic and lifestyle factors. Chi-square was tested to determine the association between suboptimal health and demographic characteristics. Correlation was used to assess the correlation between suboptimal health and lifestyle-related factors

Results: A final sample of 400 participants was included. In our sample, 86 (21.5%) had suboptimal health with a mean age of 29.96±9.3 years. Sub-optimal Health status was found to be significantly associated with gender (0.005), age (0.006), working status (0.015) and occupation (0.000). Health status was found to be weak and negatively correlated with social support (p-value 0.01) and a weak positive correlation was observed between nutritional habits and health status (p-value 0.05)

Conclusion: SHS is significantly associated with behavior and lifestyle-related factors. To comprehensively prevent and control SHS, it is urgently needed to reduce the risk factors and enhance the protective factors among adolescents.

Keywords: adaptive behaviour, Health status, Lifestyle.

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1. Introduction

Stated differently, suboptimal health status (SHS) is a state in between illness and wellness. Wang, a Chinese researcher was the first one who coined this term.¹ According to the World Health Organization, it is characterised by decreased energy, physiological function, and adaptability without any known or verified underlying illness. It is said to be in the grey area between health and illness.² SHS is further explained as “a state of general physical health that lies between illness and health and is characterised by chronic fatigue, a sense of unwellness, and a variety of physical symptoms that impact the heart, digestive tract, immune system, and mental state and have been present for at least three months before the onset of the disease.”^{2,3} SHS is often understood to be the period before the beginning of clinical manifestations of diseases. Even yet, it may not correspond with the early stage or preclinical phase description of the condition.⁴

Individuals experiencing preclinical or early stages of a disease typically require specific medication as a kind of intervention to either avoid or postpone the onset of the condition. Individuals diagnosed with SHS are viewed as more susceptible to certain illnesses, but no specific clinical treatment is required at this stage.⁵ Only 23% of SHS patients reportedly sought medical attention, and nearly 80% of them didn't get better within 6 months even after individualised intervention.^{6,7} Therefore, it is critical to advance efforts to identify people with SHS from the perspectives of PM (predictive, preventive, personalized medicine).^{8,9} PPPM is an integrated concept in medicine that allows one to predict a person's susceptibility before a disease shows symptoms. This helps to provide targeted preventative measures and treatment algorithms that are tailored to each patient.^{10,11} The idea of SHS, as seen from the perspective of (PM), represents the conviction that chronic illnesses can be successfully anticipated and prevented before they show clinical symptoms.¹² Chronic conditions like cardiovascular disease and



Type 2 Diabetes Mellitus are treated after symptoms appear, which a delayed strategy is. People who are suffering from early-stage or preclinical disease frequently need to be treated with personalized therapies to stop or delay the onset of the illness.³

Suboptimal Health Status (SHS) is acknowledged as a critical public on a global scale. In many countries like Japan, Australia, Canada and China. The idea of SHS has already gained widespread acceptance.⁶ Moreover, SHS was found to be 78.1% and 51.7% in a study conducted at King Edward Medical University and CMH Medical College Lahore respectively.^{1,7}

According to the previous literature, only a few studies are conducted in the Pakistani context related to the prevalence of suboptimal health status in the general population which determines the association of all the domains of lifestyle behaviours with the suboptimal health status and the factors /behaviour contributing the most. This multi-phasic research and its intended findings will be unique to our setting, contributing to the empirical gap in the related field. We not only intend to find out the prevalence of suboptimal health status in our population but also will find out its associations with the lifestyle factors contributing to this in the next phase of the study. This will lay the groundwork and provide a substantial amount of data related to the prevalence of SHS in this vicinity also contributing to information about their lifestyle practices in this particular population, this makes it possible to forecast a person's propensity before a disease manifests, to provide focused preventive measures, and to create customized therapy algorithms that are tailored to each patient's unique needs.¹² Furthermore, stakeholders, policymakers, administrations and the community itself can be benefited by planning and implementing appropriate health-related strategies.

This will provide the framework for health promotion and education initiatives, as well as awareness campaigns about preserving overall health and developing tailored possible solutions to meet the specific needs of the populace. Additionally, it will contribute to enhancing the data and knowledge currently available on preserving health in Pakistan. There will be Potential benefits for healthcare systems and for society in improving their quality of life,

promoting the professionalism of healthcare providers further contributing to a sustainable healthcare economy.

The objectives of this study are to determine the prevalence of suboptimal health levels in the population of residential area HIT Taxila and to determine the association between suboptimal health and lifestyle and demographic factors.

2. Materials & Methods

The community-based descriptive cross-sectional study was conducted in HIT Taxila from June -Nov 2023 on the general population of HIT Taxila age group ranging from 30 to 60 years including males and females. All adults aged 30 to 60 years residing in the survey area were included in the study while Individuals diagnosed with any chronic diseases were excluded from the study. The National Center for Chronic Disease Prevention and Health Promotion defines chronic diseases as problems that last a year or longer, impede daily living activities, or both, and necessitate continuous medical care. The main causes of death and disability are chronic illnesses like diabetes, cancer, and heart disease.

A sample size of 384 was calculated by the WHO Sample size calculator by taking the Confidence of Interval 95%, Margin of error of 5% and previous prevalence of 51%⁷. Systematic Random sampling was used for sampling. A list of households and residents was obtained from the concerned authority. From the target population, a sampling frame is selected including all the households in the vicinity from which every 5th household was selected for interviewing the study participants.

Informed verbal consent was obtained from the study participants before participating in the study. Data was collected through a questionnaire which was composed of three sections (i.e. both a self-designed part and standardized questionnaire). The self-designed part of the questionnaire asks for general demographic characteristics. Here, the demographic characteristics included age, gender, weight and marital status, no. of children, work status, monthly income, and occupation and education status. The Second part consisted of lifestyle factors which included questions relevant to nutrition (6 questions), physical activity (5 questions), stress (2 questions), social support (3 questions), sleep(3

questions), substance abuse(5 questions). Based on the Suboptimal Health Measurement (SHMS V1.0) scale, the standardized components were created. Its validity and reliability are good (0.917 Cronbach's α)¹³ A total of 39 items, ranging from extremely poor to very good, are measured on a 5-point scale in the SHMS V1.0 (16). Out of the 39 items, items 4–12, 15, 20–25, 28, and 38–39 were reverse scored. The SHMS V1.0 was used to measure general SHS (GS) based on three aspects, including physical SHS (PS), mental SHS (MS), and social SHS (SS). Suboptimal health status was measured on a 39-item SHMS V1.0 scale. Where the lowest score will be 39 and the highest score will be 195^{13,14}. Higher scores indicated better health status. We further operationalize suboptimal health status by taking a cut-off score of 100 categorizing suboptimal health and healthy individuals.

The perception of health complaints, chronic fatigue, and a cluster of physical symptoms affecting the immune system, digestive system, cardiovascular system, and mental state that have persisted for at least three months before the disease has started are all considered to be part of suboptimal health status, an overall state of physical well-being between health and illness

The SPSS version 28 program was used to enter and analyze the data. For categorical data, descriptive analysis was performed by computing frequencies and percentages, and for continuous variables, mean and standard deviations. The relationship between sociodemographic factors and unsatisfactory health was examined using the Chi-square test. The relationship between substandard health and lifestyle factors was calculated using the Pearson correlation.

3. Results

A total of 400 participants were included in the study. The demographic profile of the participants is given in Table 1.

In our sample, 86(21.5%) were found to be having suboptimal health. The mean health status score was found to be 111.42 ± 22.08 .

Health status was found to be significantly associated with gender (0.005), age (0.006), working status (0.015) and occupation (0.000).

The correlation between health status and lifestyle factors is given in Table 3.

Health status was found to be weak and negatively correlated with social support (p-value 0.01) and a weak positive correlation was observed between nutritional habits and health status (p-value 0.05)

Table 1: Demographic profile of participants

Variables	N (%)	Mean $\pm$ standard deviation
Gender		
Male	236(59%)	
Female	164(41%)	
Age		29.96 $\pm$ 9.3
20-40 years	351(87.75%)	
41-60 years	49(12.25%)	
Educational status		
Matric	57(14.2%)	
Bachelors	256(64.0%)	
Masters and above	8(21.8%)	
Working status		
Working	238(59.5%)	
Not working	162(40.5%)	
Marital status		
Single	180(45%)	
Married	220(55%)	
Occupation		
HIT Employee (Officer)	67(16.8%)	
HIT Employee (Worker)	72(18%)	
Health professional	27(6.8%)	
Businessman	34(8.5%)	
Teacher	34(8.5%)	
Others	166(41.5%)	
Monthly income		
<30,000	82(20.5%)	
30000-60000	209(52.3%)	
60000-100000	63(15.8%)	
>100000	46(11.5%)	
Number of children		2.66 $\pm$ 1.49

Medical professionals have begun to recognize poor health as a significant public health concern on a global scale.⁹ In our sample, 86(21.5%) were found to be having suboptimal health. Literature depicts the variable prevalence of suboptimal health in different populations.

The results of the current study are similar to the study conducted in eastern and western areas of China showing a frequency of 21%,¹⁵ while in contrast, another study in China by Jianlu et al had a high frequency of 55.9% was found.¹⁶

Table 2: Association between Demographic variables and Health status

Variables	Health status		p-value
	Suboptimal (n)	Healthy (n)	
Gender			
Male	62	174	0.005
Female	24	140	
Age			
20-40 years	68	283	0.006
41-60 years	18	31	
Educational status			
Matric	12	45	0.440
Bachelors	51	205	
Masters and above	23	64	
Working status			
Working	61	177	0.015
Not working	25	137	
Marital status			
Single	41	139	0.574
Married	45	175	
Occupation			
HIT Employee (Officer)	20	47	0.001
HIT Employee (Worker)	26	46	
Health professional	01	2	
Businessman	11	23	
Teacher	03	31	
Others	22	144	
Monthly income			
<30,000	21	61	0.443
30000-60000	43	166	
60000-100000	10	53	
>100000	12	34	

Table 3: Correlation between lifestyle factors and health status

	Sleep Quality	Physical activity	Nutritional status	Social support	Substance abuse	Stress
Health status	0.059	-0.12	0.099*	-	-	0.032
				0.137**	0.025	

** Correlation is significant at 0.01

*Correlation is significant at 0.05

4. Discussion

Another study conducted on medical students in Pakistan reported the prevalence of suboptimal health as 78%,⁷ The difference might be due to the study population

In our study significant association was found between suboptimal health and male gender, these results are consistent with Ahmed F which showed males were more in suboptimal health status. That might be due to differences in genetic makeup between males and females can contribute to variations in susceptibility to certain health conditions along with certain social and cultural. In contrast, a study by Rashid Z showed

suboptimal health was significantly associated with female medical students and another study by Hou H showed similar results.¹⁵

Our study showed, that individuals aged 20-40 had suboptimal health and the association was significant. These results are similar to the study by Ahmed F which showed similar results but these results are contradictory with Nauman E,¹⁷ which reported that younger adolescents had improved health. We hypothesise that the majority of young adults are under financial stress and making poor lifestyle choices.

The results of the current investigation indicated a strong correlation between working as an officer and having poor health. Poor work-recreation balance was linked to a higher likelihood of inadequate health conditions, according to Wu et al.¹⁸ Chang et al. discovered a strong correlation between job stress and middle school teachers' subpar health status⁹ chronic stress at work can contribute to cardiovascular issues, immune system suppression, gastrointestinal problems, anxiety, depression, burnout, and sleep disturbances. Unhealthy coping mechanisms, decreased physical activity, strained relationships, and cognitive impairments are common responses to work stress.

For lifestyle factors, a weak positive correlation was observed between nutritional habits and health status (p-value 0.05). Nutrition-related questions were frequency of breakfast per week, overeating, water intake per day, consumption of fruits and vegetables per day, and healthy eating habits. A study by Cheng in Ma showed nutrition was negatively associated with suboptimal health status.¹⁹ Many studies have previously found that poor nutrition status can seriously damage health.^{20,21}

In 2012–2013, Chen et al. carried out a cross-sectional survey in southern China on a clustered sample of 159 people ages 12–80. According to this survey, having breakfast sporadically was linked to a higher risk of SHS, and eating breakfast more frequently may help to reduce the incidence of SHS in southern China.²⁰

Health status was found to be negatively correlated with social support (p-value 0.01) these results are in contrast with a study by B Jinalu showed better interpersonal relations will result in better health status.¹⁶

5. Conclusion

In conclusion, the intricate relationship between lifestyle factors and suboptimal health status is undeniable, underscoring the profound impact that daily choices can

have on overall well-being. The cumulative effects of diet, physical activity, sleep patterns, stress management, and other lifestyle choices play a pivotal role in determining an individual's health trajectory. Scientific evidence consistently emphasizes that adopting a healthy lifestyle can mitigate the risk of various health conditions and contribute to a higher quality of life.

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Contributions:

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All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

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