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Research Article

Digital Health Monitoring through Smart Wearable Devices: A Study among College Students in Coimbatore Topic

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Abstract: The fast development of wearable technology has made smartwatches very popular among college students, especially for managing their health and fitness. Today, smartwatches are no longer used only to check time; they help users track daily activities, monitor heart rate, check sleep quality, count calories and receive instant notifications. These features can influence students' daily routines, lifestyle choices and overall well-being. The main purpose of this study is to understand how smartwatches affect the health and fitness of college students in Coimbatore. This study is based on primary data collected from 222 college students who use smartwatches. The information was gathered using a structured questionnaire. A descriptive research design was followed and statistical tools such as percentage analysis, correlation, ANOVA and chi-square test were used to analyze the data. The study focuses on students' preferences, their awareness and use of smartwatch features, motivation levels and the role of smartwatches in improving physical activity, health awareness and lifestyle habits. The results of the study show that smartwatches have a positive influence on students by motivating them to stay active, encouraging healthier habits and increasing awareness about their health and fitness. The findings also indicate that health monitoring features and connectivity options play an important role in the regular use of smartwatches. Overall, the study concludes that smartwatches act as helpful tools in promoting a healthier and more fitness-oriented lifestyle among college students.

Keywords: Smartwatch Technology, Health and Fitness Monitoring, College Students' Lifestyle, Wearable Devices, Physical Activity Awareness.

INTRODUCTION

Smartwatches have evolved from being simple time-telling devices to advanced pieces of technology that offer a wide array of features, particularly in the realms of health and fitness. As wearable technology has become more ubiquitous, the impact of smartwatches on our physical well-being is undeniable. These devices allow users to monitor various aspects of their health and fitness, making it easier for individuals to maintain healthy habits and achieve their fitness goals. In this article, we will explore the various ways smartwatches have impacted health and fitness, both positively and negatively.

STATEMENT OF PROBLEM:

In recent times, smartwatches have become very popular among college students because of their health and fitness-related features. These devices are designed to help users stay active, track their health and follow healthier lifestyles. However, there is very little clear research that shows how far smartwatches actually influence the health and fitness behavior of college students, especially those studying in Coimbatore.Many students own smartwatches but do not use all the features properly or understand how these features can benefit their health. Factors such as personal motivation, level of awareness, daily habits and buying decisions can affect how effectively a smartwatch is used. In addition, only a few studies have focused on understanding the real impact of smartwatches on both physical health and lifestyle habits of undergraduate and postgraduate students at a regional level.

Hence, this study aims to examine whether the use of smartwatches has a meaningful effect on the health, fitness and lifestyle habits of college students in Coimbatore. The study also seeks to understand students' awareness of smartwatch features, their usage patterns and the role of smartwatches in motivating them towards a healthier lifestyle.

OBJECTIVES:

- To analyse consumer preferences, purchase decisions and spending patterns related to smartwatches.
- To assess awareness and usage of smartwatch features, along with the factors influencing their adoption.
- To evaluate the impact of smartwatches on users' health, fitness and lifestyle habits.
- To explore user satisfaction, future intention to use and suggestions for improving smartwatch feature.

REVIEW OF LITERATURE:

Many researchers have studied how wearable devices such as smartwatches and fitness trackers help in understanding health, fitness and stress among college students. A study by Bloomfield and colleagues (2024) focused on first-year college students and used sleep data collected from

wearable devices. The study found that students who slept less and showed changes in heart rate and heart rate variability experienced higher stress levels. This shows that sleep-tracking features in wearable devices can play an important role in helping students manage stress. In a similar way, Ta and co-authors (2025) conducted a 12-week experimental study using smartwatches along with machine-learning technology. Their results showed a clear reduction in stress and anxiety among students who used the devices, proving that wearable technology can actively support stress reduction.

Another study by Fudolig et al. (2024) examined sleep and physical activity patterns of college students using wearable devices. The findings revealed irregular sleep routines, late sleeping habits and shorter sleep duration during academic semesters compared to vacation periods. This study explains how college schedules affect students' daily health behaviors. Likewise, Monica Gulap's comparative study showed that students who used smartwatches with fixed fitness goals performed better physically than students who did not use smartwatches. This highlights the usefulness of goal-based tracking in improving physical effort and activity levels.

SIGNIFICANCE OF THE STUDY:

In recent years, wearable technology such as smartwatches has become very popular because it helps people monitor their health and fitness in an easy way. Many researchers have tried to understand how smartwatches and fitness trackers affect physical activity, health awareness and everyday lifestyle habits, especially among students and young adults. Research shows that smartwatches are useful for tracking daily activities like the number of steps taken, calories burned and time spent on exercise. People who use these devices regularly are usually more active than those who do not use them. Features like movement alerts and daily fitness targets encourage users to stay active and avoid sitting for long periods.

Studies have also focused on health-related features such as heart rate checking, sleep tracking and stress monitoring. By tracking heart rate continuously, users can better understand how their body reacts to exercise and daily activities. Sleep tracking helps users learn about their sleeping patterns and sleep quality, which often motivates them to improve their sleep habits. Some studies also suggest that wearables help users notice stress levels and follow simple relaxation practices.In India, only a small number of studies have explored how college students use digital tools to track health and fitness. These studies show that wearable devices and smartphones help in understanding activity levels and sleep behavior. However, most of the research focuses on general digital tracking tools and does not specifically study smartwatches in detail

METHODOLOGY:

Area of study	The area of study covers Coimbatore city
Sample design	Snowball sampling method is used for the sample design
Sources of data	Primary data and secondary data were used for the study.
Sample size	The data has been collected from 222 respondents who have used smartwatch
Tools for analysis	The analysis tool used for this research is Chi-square test, Correlation, ANOVA.

ANALYSIS AND DISCUSSION:

Table 1: Showing the relationship between the amount spent on a smartwatch and the place of purchase.

Correlations

			How much do you spend to buy a smartwatch	Where do you buy smartwatch
How much do you spend to buy a smartwatch		Pearson Correlation	1	.222**
		Sig. (2-tailed)		.001
		N	222	222
Where do you buy smartwatch		Pearson Correlation	.222**	1
		Sig. (2-tailed)	.001	
		N	222	222

Source: Primary Data

From the above calculations, it is inferred that p value is 0.001 and thereby we reject the null hypothesis and accept the alternative hypothesis. So we concluded from correlation that, there is a significant positive relationship between the amount spent on a smartwatch and the place of purchase.

Table 2: Showing the smartwatch features have a significant impact on users' motivation to stay active.

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.381	3	3.127	4.630	.004a
	Residual	147.236	218	.675		
Total		156.617	221			

- Predictors: (Constant), Calorie tracker, Heart rate, Sleep tracker
- Dependent Variable: How motivated are you to stay active because of your smartwatch
- Smartwatch health features significantly increase motivation for fitness.

Source: Primary Data

From the above calculations, it is inferred that p value is 0.004 and thereby we reject the null hypothesis and accept the alternative hypothesis. So we concluded from anova that, smartwatch features (calorie tracker, heart rate monitor, sleep tracker) have a significant impact on users' motivation to stay active.

Table 3: Showing the significant association between user satisfaction and their future intention to use/recommend a smartwatch.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.193E2[a]	4	.000
Likelihood Ratio	89.085	4	.000
Linear-by-Linear Association	54.083	1	.000
N of Valid Cases	222		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 2.77.
b. User satisfaction strongly influences future intentionand recommendations.

From the above calculations, it is inferred that p value is 0.000 which is less than 0.001 and thereby we reject the null hypothesis and accept the alternative hypothesis. So we concluded from chi square that, that here is a significant association between user satisfaction and their future intention to use/recommend a smartwatch.

FINDINGS:

- Majority (71.2%) are 17–20 years old, indicating a younger sample group.
- Females (62.2%) outnumber males (37.8%), showing female dominance in the sample.
- Most respondents are undergraduates (76.1%), with fewer postgraduates (20.7%) and diploma holders (3.2%).
- Friends (30.2%) and advertisements (23.0%) play the biggest role in influencing purchases, followed by family (22.1%).
- Majority (51.8%) do moderate activity only 1–2 days per week, reflecting low activity levels
- Slightly more than half (53.6%) set fitness goals with their smartwatch, while a considerable share (45.9%) do not.
- Most (37.8%) take 2000–4999 steps per day; 27.9% take less than 2000, suggesting sedentary lifestyles.
- Mostly 61.7% agree smartwatches encourage healthier habits, while 17.6% disagree and 20.7% are unsure.
- The largest share (44.1%) spends ₹1000–3000, showing preference for affordable mid-range models; 15.3% spend above ₹5000 on premium ones.
- Correlation: Smartwatch sales depend on strong retail strategies and the right distribution channels to match consumer shopping preferences.
- ANOVA: The finding shows that smartwatches support better health and fitness by tracking key metrics and motivating users to manage their well-being.
- Chi- square test: User satisfaction strongly influences future smartwatch usage and loyalty, making positive experiences essential for long-term engagement.

SUGGESTIONS:

- Premium outlets can offer value-added services like customization and bundled health apps.
- Online sellers should prioritize secure payment, return policies and authentic products.
- Manufacturers should focus on improving heart rate accuracy, calorie tracking and sleep analysis.
- Integrating AI-based health insights and personalized fitness coaching can boost user engagement.
- Companies should provide regular software updates, better battery life and customizable features.
- Strong customer support and after-sales service can increase loyalty and positive word-of-mouth.

CONCLUSION:

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FUTURE SCOPE:

- Compare perceptions across different smartwatch brands and premium segments.
- Conduct longitudinal studies to measure long-term health and lifestyle impacts.
- Explore behavioural differences between online and offline buyers.
- Study advanced features like sleep analysis, stress tracking and AI integration.

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