Knowledge And Attitude Regarding Lifestyle Diseases Among Engineering Students

Aby Thankachan[1], Tamilselvi A[2], Bavani. P[3], Bershiya.T.H[4],
Beryl Jeba.J[5], Bhuvaneswari.R[6], Cathrin Hema.G[7].
[1]*Associate Professor, PPG College of Nursing, Coimbatore, Affiliated to The Tamil Nadu Dr. MGR Medical University, Chennai*
[2] *Principal, PPG College of Nursing, Coimbatore, Affiliated to The Tamil Nadu Dr. MGR Medical University, Chennai*
[3,4,5,6,7]*B.Sc. N IV yr Students, PPG College of Nursing, Coimbatore, Affiliated to The Tamil Nadu Dr. MGR Medical University, Chennai*

***Abstract*—Lifestyle diseases such as diabetes mellitus, hypertension, obesity, cardiovascular diseases, and cancer have become major public health concerns due to unhealthy dietary habits, physical inactivity, stress, tobacco use, and alcohol consumption. Assessing the knowledge and attitude of young adults regarding lifestyle diseases is essential for promoting preventive health behaviours. The present study aimed to assess the knowledge and attitude regarding lifestyle diseases among biomedical engineering students. A quantitative descriptive research design was adopted. The study was conducted among 100 biomedical engineering students selected using a convenient sampling technique. Data were collected using a structured questionnaire to assess knowledge and a Likert scale to assess attitude. The collected data were analysed using descriptive and inferential statistics.**

The findings revealed that 54% of the participants had inadequate knowledge, 38% had moderate knowledge, and only 8% had adequate knowledge regarding lifestyle diseases. Most participants demonstrated a moderately positive attitude toward the prevention and control of lifestyle diseases. The study highlights the need for health education programs to improve awareness and encourage healthy lifestyle practices among college students.

***Index Terms*—Lifestyle diseases, Knowledge, Attitude, Biomedical Engineering Students, Prevention, Health Education.**

I. INTRODUCTION

Lifestyle diseases, also known as non-communicable diseases (NCDs), have become one of the leading causes of morbidity and mortality worldwide. Rapid changes in daily life, urbanization, industrialization, modernization and technological advancement have significantly altered people's lifestyles, resulting in unhealthy dietary habits, physical inactivity, increased screen time, irregular sleep patterns, stress, smoking, and alcohol consumption. These behavioural changes have contributed to a growing burden of lifestyle-related diseases such as diabetes mellitus, hypertension, obesity, cardiovascular diseases, chronic respiratory diseases, chronic kidney disease, non-alcoholic fatty liver disease, and certain types of cancer.

According to Rabindra Kaur (2023), non-communicable diseases account for approximately 41 million deaths annually worldwide. Lifestyle-related risk factors such as unhealthy diet, physical inactivity, tobacco use, alcohol consumption, and stress are major contributors to these diseases. Although many of these risk factors are modifiable, a lack of knowledge and poor health practices continue to increase the prevalence of lifestyle diseases.

Several researchers have emphasized that lifestyle diseases are largely preventable through healthy lifestyle practices. Singh and Verma (2026), Thomas and George (2025), Sharma (2024), Joseph and Mathew (2023), and Patel (2023) reported that adopting a balanced diet, engaging in regular physical activity, maintaining adequate sleep, managing stress, and avoiding harmful habits such as smoking and alcohol consumption can significantly reduce the risk of developing chronic diseases. They also highlighted that increasing awareness and promoting healthy

behaviours at an early age are essential strategies for disease prevention.

College students represent a vulnerable group because they are in a transitional stage of life during which lifelong habits are formed. Academic workload, peer influence, hostel life, increased independence, excessive use of digital devices, and easy access to fast food often led students to adopt unhealthy lifestyle behaviours. These behaviours increase their susceptibility to lifestyle diseases in later life.

Non-medical professional students, including those pursuing engineering, commerce, arts, management, and other non-health-related courses, may have limited exposure to formal health education compared with students studying medicine or allied health sciences. Sandhya and Grace (2024) reported that these students often lack adequate knowledge regarding disease prevention and healthy lifestyle practices, making them more vulnerable to unhealthy behaviours and their long-term health consequences.

Poor dietary habits are among the major risk factors contributing to lifestyle diseases in this population. Frequent consumption of fast foods, processed foods, sugary beverages, irregular meal timings, and inadequate intake of fruits and vegetables increase the risk of obesity, diabetes, and cardiovascular diseases.

Physical inactivity resulting from prolonged screen time, online learning, and lack of regular exercise further contributes to metabolic disorders and poor cardiovascular health.

Stress and inadequate sleep also play an important role in the development of lifestyle diseases among college students. Academic pressure, examinations, career uncertainty, and social challenges often lead to chronic stress, while irregular sleep schedules adversely affect metabolic and immune functions. These factors may increase the risk of obesity, hypertension, diabetes, depression, and cardiovascular diseases. In addition, unhealthy coping mechanisms such as smoking and alcohol consumption further increase the risk of chronic illnesses.

Gupta et al. (2022) found that although many college students had basic awareness about lifestyle diseases, they lacked adequate knowledge regarding risk factors, early symptoms, preventive measures, and healthy lifestyle practices. The study also highlighted that many students underestimate the seriousness of lifestyle diseases because these conditions usually develop gradually over time.

Knowledge and attitude play a crucial role in influencing healthy lifestyle behaviours. Adequate knowledge helps individuals recognize risk factors and adopt preventive measures, while a positive attitude encourages long-term healthy practices. However, there is often a gap between knowledge and actual behaviour, particularly among non-medical professional students who receive limited health education.

Considering the increasing burden of lifestyle diseases and the importance of prevention through awareness and healthy lifestyle practices, it is essential to assess the knowledge and attitude of non-medical professional students regarding lifestyle diseases.

Identifying existing gaps in knowledge and attitude will help in planning effective health education programmes and awareness campaigns to promote healthy lifestyles and reduce the future burden of lifestyle-related diseases.

Therefore, the present study aims to assess the knowledge and attitude regarding lifestyle diseases among non-medical professional students.

II. STATEMENT OF THE PROBLEM

A study to assess the knowledge and attitude regarding lifestyle diseases among engineering students at a selected college, Coimbatore.

Objectives

- To assess the level of knowledge and attitude regarding lifestyle disease among engineering students.
- To corelate the level of knowledge and attitude regarding lifestyle diseases among engineering students.
- To find the association between the level of knowledge and attitude regarding lifestyle diseases and selected demographic variables among engineering students.

III. MATERIALS AND METHODS

The present study adopted a quantitative research approach with a descriptive research design to assess the knowledge and attitude regarding lifestyle diseases among engineering students. The study was conducted among students at PPG Institute of Technology,

Coimbatore. The study population consisted of engineering students, and a sample of 100 students who fulfilled the inclusion criteria was selected using a non-probability convenience sampling technique. Students who were willing to participate and available during the period of data collection were included in the study.

Data were collected using a structured questionnaire consisting of three sections. Section A included demographic variables such as age, gender, course of study, year of study, type of family, area of residence, monthly family income, dietary pattern, physical activity, and sleep duration. Section B consisted of a structured knowledge questionnaire regarding lifestyle diseases, while Section C comprised a 5-point Likert attitude scale to assess the attitude of students toward lifestyle diseases and their prevention. The knowledge questionnaire had a maximum score of 20, with scores categorized as inadequate knowledge (0–7), moderately adequate knowledge (8–14), and adequate knowledge (15–20). Higher scores on the attitude scale indicated a more positive attitude toward the prevention of lifestyle diseases.

Prior to data collection, permission was obtained from the concerned institutional authority, and informed consent was obtained from all participants. The purpose of the study was explained to the participants, confidentiality and anonymity were assured, and participation was entirely voluntary. Data collection was carried out using the structured questionnaire, and each participant required approximately 20–30 minutes to complete it. The collected data were analysed using descriptive statistics such as frequency, percentage, mean, and standard deviation, while inferential statistics including the Chi-square test and Pearson's correlation coefficient were used to determine the association between variables and the relationship between knowledge and attitude. The level of statistical significance was set at $p < 0.05$.

IV. RESULTS

Section-A: Distribution of The Demographic Variables

The above table presents the demographic characteristics of the 100 biomedical engineering students who participated in the study. Among the respondents, 71 (71%) were females and 29 (29%) were males, indicating that the majority of the participants were female students. Regarding the type of family, 80 (80%) belonged to nuclear families, while 20 (20%) belonged to joint families, showing that most respondents were from nuclear families. With respect to the area of residence, 59 (59%) students were residing at home and 41 (41%) were staying in hostels, indicating that the majority were home residents. In terms of monthly family income, 48 (48%) respondents had a family income of ₹10,001–₹30,000, 21 (21%) had an income below ₹10,000, 19 (19%) had an income above ₹50,000, and 12 (12%) had an income between ₹30,001–₹50,000, with the largest proportion belonging to the ₹10,001–₹30,000 income group. Regarding dietary pattern, 67 (67%) respondents consumed a mixed diet, 28 (28%) followed a non-vegetarian diet, and 5 (5%) were vegetarians, indicating that a mixed diet was the most common dietary pattern.

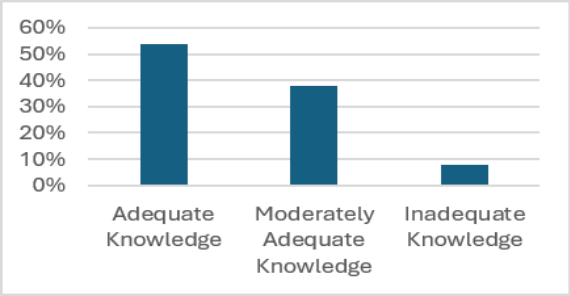
Concerning physical activity, 36 (36%) respondents engaged in regular physical activity, another 36 (36%) rarely performed physical activity, 18 (18%) participated occasionally, and 10 (10%) never engaged in physical activity. With regard to sleep duration, 49 (49%) respondents slept for 6–8 hours per day, 43 (43%) slept for 5–6 hours, 8 (8%) slept for more than 8 hours, and none reported sleeping for less than 2 hours per day, indicating that most respondents had an average sleep duration of 6–8 hours. Regarding daily screen time, 49 (49%) respondents used screens for 2–4 hours per day, 22 (22%) used screens for less than 2 hours, another 22 (22%) used screens for 5–7 hours, and 7 (7%) used screens for more than 7 hours daily. In relation to personal habits, 98 (98%) respondents reported no smoking or alcohol consumption, while 2 (2%) reported alcohol consumption only, and none reported smoking or both smoking and alcohol use. Concerning fast food consumption, 53 (53%) respondents consumed fast food rarely, 30 (30%) consumed it once a week, 12 (12%) consumed it 2–3 times per week, 5 (5%) never consumed fast food, and none consumed it daily, indicating that rare consumption was the most common pattern.

Regarding family history of lifestyle diseases, 85 (85%) respondents had no family history, whereas 15 (15%) reported a positive family history. Among those reporting a family history, diabetes was the most commonly reported condition (10%), followed by hypertension (4%) and heart disease (2%), while none reported obesity. With respect to regular health check-

ups, 81 (81%) respondents did not undergo regular health check-ups, whereas only 19 (19%) reported attending regular health check-ups. Among those who underwent health check-ups, 13 (13%) reported general health check-ups, 6 (6%) underwent blood sugar testing, 4 (4%) had blood pressure monitoring, and 2 (2%) underwent cholesterol testing, while the remaining respondents fell under others or not applicable. Regarding the source of information about lifestyle diseases, social media was the most common source, reported by 49 (49%) respondents, followed by health professionals (27%), friends and family (12%), television (8%), and books/newspapers (4%).

Section –B: Distribution of The Score Based on Level of Knowledge

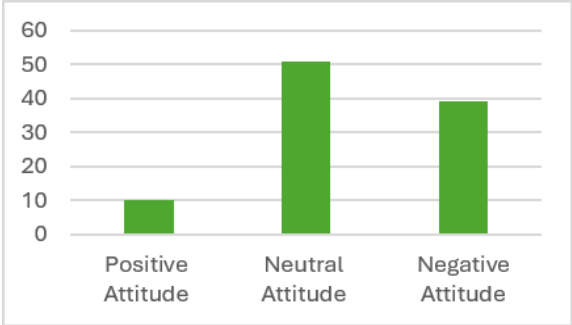
The above table shows the frequency and percentage distribution of respondents according to their level of knowledge regarding lifestyle diseases. Out of the 100 engineering students who participated in the study, 54 (54%) had inadequate knowledge, 38 (38%) had moderately adequate knowledge, and only 8 (8%) had adequate knowledge regarding lifestyle diseases. The findings indicate that the majority of the respondents possessed inadequate knowledge, while a smaller proportion demonstrated moderately adequate knowledge, and only a few had adequate knowledge regarding lifestyle diseases.



Frequency and Percentage distribution of Level of Knowledge among Engineering Students Regarding Lifestyle Disease

Section –C: Distribution of The Score Based on Level of Attitude

It shows the frequency and percentage distribution of attitude levels regarding lifestyle diseases among biomedical engineering students. Out of the total 100 respondents, 55 (55%) had a neutral attitude, representing the majority of the participants.



Frequency and Percentage distribution of Level of Attitude among Engineering Students Regarding Lifestyle Disease

A total of 37 (37%) students exhibited a negative attitude, while only 8 (8%) students demonstrated a positive attitude towards lifestyle diseases. The findings indicate that most biomedical engineering students had a neutral attitude regarding lifestyle diseases, followed by a considerable proportion with a negative attitude, whereas only a small percentage of students exhibited a positive attitude.

Section -D: Data Pertaining to Correlation Between Level of Knowledge and Level of Attitude Regarding Lifestyle Diseases Among Biomedical Engineering Students

It shows the correlation between the level of knowledge and the level of attitude regarding lifestyle diseases among biomedical engineering students. The analysis revealed a Karl Pearson correlation coefficient (r) of 0.150 with a p-value of 0.135, indicating a weak positive correlation between knowledge and attitude.

However, the correlation was not statistically significant at the 5% level ($p > 0.05$). These findings indicate that there was no significant relationship between the level of knowledge and the level of attitude regarding lifestyle diseases among the biomedical engineering students.

Section E: Data Pertaining to Association of Chi Square Between the Level of Knowledge and Demographic Variables Among Biomedical Engineering Students.

The table shows the association between the level of structured knowledge regarding lifestyle diseases and selected demographic and lifestyle variables among engineering students. Out of 100 students, 75 (75%)

had adequate knowledge, 12 (12%) had moderately adequate knowledge, and 13 (13%) had inadequate knowledge. The chi-square test revealed that there was no statistically significant association between the level of structured knowledge and variables such as gender, type of family, area of residence, monthly family income, dietary pattern, physical activity, sleep duration, screen time, personal habits, fast-food consumption, family history of lifestyle diseases, regular health check-ups, and source of information at the 0.05 level of significance. Thus, the findings indicate that the level of structured knowledge was not significantly associated with any of the selected variables among the engineering students.

Variables	Mean Level Score Mean ±SD	Pearson correlation coefficient	Interpretation
Level of knowledge score Vs Level of Attitude	19±3.74 12±2.44	r = 0.150 p = 0.135	Positive weak correlation Not significant.

V. DISCUSSION

5.1 Discussion related to distribution of Demographic Variables among engineering students

- The present study revealed that 71% of the respondents were females and 29% were males, indicating that female students formed most of the participants.
- The most of respondents (80%) belonged to nuclear families, while 20% belonged to joint families, showing that most students came from nuclear family backgrounds.
- The findings showed that 59% of the respondents were residing at home and 41% were hostel residents, indicating that most participants lived with their families.
- The study found that 48% of the respondents had a monthly family income of ₹10,001–30,000, indicating that the majority belonged to the middle-income
- The most of respondents (67%) consumed a mixed diet, while 28% followed a non-vegetarian diet and 5% were vegetarians.
- The findings revealed that 36% performed regular physical activity, 36% rarely exercised, 18% exercised occasionally, and 10% never exercised.
- The study showed that 49% of the respondents slept for 6–8 hours per day, which was the most common sleep duration among the participants.
- The most of respondents (49%) reported a daily screen time of 2–4 hours, indicating moderate screen usage among the students.
- The findings revealed that 98% of the respondents had no smoking or alcohol habits, indicating healthy personal habits among most participants.
- The study found that 53% of the respondents rarely consumed fast food, showing that frequent fast-food consumption was less common.
- The most of respondents (85%). had no family history of lifestyle diseases, while only 15% reported a positive family history.
- The findings showed that 81% of the respondents did not undergo regular health check-ups, indicating poor utilization of preventive health services.
- The study revealed that 49% of the respondent's obtained information regarding lifestyle diseases through social media, making it the most common source of information. Regarding lifestyle diseases

The study findings were supported by Saba Nazz et al. (2021) among undergraduate students, which reported that the most participants belonged to nuclear families, consumed mixed diets, and obtained health information mainly through social media. The study also observed that many students did not undergo regular health check-ups and demonstrated lifestyle practices like those identified in the present study. These findings indicate that demographic and lifestyle characteristics play an important role in influencing awareness and health-related behaviours among young adults

5.2 Discussion Related to the Level of Knowledge Regarding Lifestyle Diseases

The present study assessed the level of knowledge regarding lifestyle diseases among 100 engineering students. The findings revealed that 54% of the respondents had inadequate knowledge, 38% had moderately adequate knowledge, and only 8% had adequate knowledge regarding lifestyle diseases.

These findings indicate that most engineering students had inadequate knowledge about lifestyle diseases, suggesting a need for appropriate health education and awareness programmes.

The findings of the present study are supported by Manoj Kumar et al. (2025), who conducted a descriptive study among engineering students to assess their knowledge regarding lifestyle diseases. The study reported that more than half of the participants had inadequate knowledge, while only a small proportion demonstrated adequate knowledge. The authors concluded that limited awareness of risk factors, preventive measures, and healthy lifestyle practices among students emphasizes the importance of structured health education programmes and regular awareness campaigns to improve knowledge and prevent lifestyle-related diseases.

5.3 Discussion Related to the Level of Attitude Regarding Lifestyle Diseases

The findings showed that 51% of the respondents had a neutral attitude, 39% had a negative the present study assessed the attitude of engineering students regarding lifestyle diseases. attitude, and only 10% had a positive attitude toward lifestyle diseases. These results indicate that although some students possessed a favourable attitude, the majority demonstrated either neutral or negative attitudes, highlighting the need for educational interventions to promote positive health behaviours and encourage healthy lifestyle practice.

The findings are supported by Saba Nazz et al. (2021), who reported that many college students showed only a moderate or neutral attitude toward lifestyle disease prevention. The study concluded that regular health education, counselling, and awareness programmes significantly improve students' attitudes toward healthy eating, physical activity, stress management, and disease prevention. The authors recommended integrating lifestyle disease education into college health promotion programmes to develop positive attitudes and healthy behaviours among young adults.

5.4 Discussion Related to the Correlation between Level of Knowledge and Level of Attitude Regarding Lifestyle Diseases

The present study assessed the correlation between the level of knowledge and the level of attitude regarding lifestyle diseases among engineering students. The findings revealed a weak positive correlation ($r = 0.150$) between knowledge and attitude, which was not statistically significant ($p = 0.135$). This indicates that although students with higher knowledge tended to have a slightly better attitude, the relationship was weak and not significant. Therefore, knowledge alone may not be sufficient to influence students' attitudes towards lifestyle diseases, and other factors such as personal beliefs, health practices, and environmental influences may also contribute to attitude formation.

5.5 Discussion Related to the Association between Level of Knowledge and Selected Demographic Variables

The present study examined the association between the level of knowledge regarding lifestyle diseases and selected demographic variables among engineering students using the chi-square test. The findings revealed that there was no statistically significant association between the level of knowledge and demographic variables such as gender, type of family, area of residence, monthly family income, dietary pattern, physical activity, sleep duration, screen time, personal habits, fast-food consumption, family history of lifestyle diseases, regular health check-ups, and source of information at the 0.05 level of significance. These findings suggest that the level of knowledge regarding lifestyle diseases was independent of the selected demographic characteristics of the respondents.

5.6 Discussion Related to the Association between Level of Attitude and Selected Demographic Variables

The present study assessed the association between the level of attitude regarding lifestyle diseases and selected demographic variables. The chi-square analysis revealed that physical activity level showed a statistically significant association with attitude ($\chi^2 = 14.469$, $p = 0.025$). However, variables such as gender, type of family, area of residence, monthly family income, dietary pattern, sleep duration, screen time, personal habits, fast-food consumption, family history of lifestyle diseases, regular health check-ups, and source of information did not show a statistically significant association with attitude. These findings indicate that students who engaged in better physical activity tended to have a more positive attitude towards lifestyle disease prevention.

The findings of the present study are supported by Ramesh et al. (2023), who conducted a descriptive

study among college students and found that regular physical activity was significantly associated with a positive attitude towards the prevention of lifestyle diseases. The authors emphasized that encouraging physical exercise and healthy lifestyle behaviours through health education programmes can improve students' attitudes and reduce the future risk of lifestyle-related diseases.

Implications for Nursing Practice, Education, Administration, and Research

- Nurses should conduct regular health education programmes on lifestyle diseases.
- Screening camps and counselling sessions should be organized to identify risk factors early.
- Nursing education should emphasize lifestyle disease prevention and health promotion.
- Student nurses should be trained in workshops, seminars, demonstrations, and audiovisual teaching.
- Continuing education should strengthen competencies in health promotion and disease prevention.
- Nursing administrators should provide resources and collaborate with colleges for preventive health programmes.
- Further research should use larger samples and compare medical and non-medical students.

VI. RECOMMENDATIONS

- A similar study can be conducted among a larger sample of non-medical students to improve the generalizability of the findings.
- Comparative studies can be carried out between medical and non-medical students to assess the differences in knowledge and attitude regarding lifestyle diseases.
- Similar studies can be conducted among different population groups such as school students, college students, teachers, and the general public.
- Longitudinal studies can be conducted to assess changes in knowledge, attitude, and lifestyle practices over time

VII. CONCLUSION

The present study assessed the knowledge and attitude regarding lifestyle diseases among engineering students in a selected college in Coimbatore. The findings revealed that the majority of students had a moderate level of knowledge and a positive attitude toward the prevention and control of lifestyle diseases, with significant associations between selected demographic variables and their knowledge and attitude levels. The study highlights the importance of health education programmes, seminars, workshops, and awareness campaigns to improve knowledge, promote healthy lifestyle behaviours, reduce risk factors, and prevent non-communicable diseases. Therefore, regular health education interventions are essential to enhance the overall health and well-being of young adults.

REFERENCES

[1] K. Park, *Park's Textbook of Preventive and Social Medicine*, 27th ed. Jabalpur, India: Banarsidas Bhanot, 2023.

[2] M. Stanhope and J. Lancaster, *Public Health Nursing: Population-Centered Health Care in the Community*, 11th ed. Elsevier, 2022.

[3] V. Mohan and R. Deepa, “Risk factors for non-communicable diseases in India,” *Indian J. Med. Res.*, vol. 123, no. 4, pp. 417–428, 2006.

[4] Misra and L. Khurana, “Obesity-related non-communicable diseases: South Asians vs. White Caucasians,” *Int. J. Obes.*, vol. 35, pp. 167–187, 2011.

[5] K. S. Reddy, B. Shah, C. Varghese, and A. Ramadoss, “Responding to the threat of chronic diseases in India,” *The Lancet*, vol. 366, no. 9498, pp. 1744–1749, 2005.

[6] V. Patel, S. Chatterji, D. Chisholm, *et al*., “Chronic diseases and injuries in India,” *The Lancet*, vol. 377, no. 9763, pp. 413–428, 2011.