

Knowledge, Attitude and Practice of Female Non-medical Undergraduates regarding Lifestyle Diseases – Diabetes Mellitus, Hypertension and Polycystic Ovarian Syndrome

Vijay K Yalamanchili, Ramya Swathi Guntupalli, Usha Rani Andraju, Sravani Ambati, Vijaya Kumar Uthakalla, Partha Sarathy Naidana

ABSTRACT

Introduction

Lifestyle diseases among female adolescents are a growing concern in public health specialists significantly improving their reproductive and general health. Apart from knowledge about risk factors and complications of these diseases, right attitude and practice are also necessary to prevent them. Hence this study was undertaken to assess the knowledge, attitude and practice of non-medical undergraduate students regarding Polycystic Ovarian Syndrome (PCOS) and other lifestyle diseases like hypertension and type-2 Diabetes Mellitus.

Material and Methods

A total of 300 students selected from three different streams by simple random method were included in the study. The study was an institution-based cross-sectional study done using a questionnaire designed for this purpose and validated. The knowledge, attitude and practice scores were calculated and means were compared between different groups and also across socio-cultural factors.

Results

There was significant difference among the knowledge, attitude and practice scores of the three groups. The students of applied science showed much higher level of knowledge compared to basic sciences and arts students. However, that difference was not sustained when it came to attitude and practice.

Conclusion

Majority of the students were unaware of the lifestyle basis of PCOS. Knowledge about lifestyle diseases did not translate into adequate preventive action among non-medical undergraduate students. Hence there is necessity to sensitize them in taking adequate lifestyle changes at an early stage.

GJMEDPH 2025; Vol. 14, issue 3 | OPEN ACCESS

1*Corresponding author: Vijay K Yalamanchili, Assistant Professor, Department of Community Medicine, Government Medical College, Machilipatnam, E-mail: vkrissh5900@gmail.com; 2. Ramya Swathi Guntupalli, Assistant Professor, Department of Obstetrics & Gynecology, Government Medical College, Ongole; 3. Usha Rani Anaju, Associate Professor, Department of Anesthesia, Government Medical College, Machilipatnam; 4. Sravani Ambati, Assistant Professor, Department of Community Medicine, Rangaraya Medical College, Kakinada; 5. Vijaya Kumar Uthakalla, Professor, Department of Community Medicine, ASRAMS, Eluru; 6. Partha Sarathy Naidana, Professor & HOD, Community Medicine, ASRAMS, Eluru.

Conflict of Interest—none | Funding—none

© 2025 The Authors | Open Access article under CC BY-NC-ND 4.0

INTRODUCTION

Obesity, Hypertension (HTN and Type-2 Diabetes Mellitus (DM) are major public health problems in India and their prevalence is rapidly increasing among both urban and rural populations. In fact, hypertension is the most prevalent chronic disease in India. The Global Burden of Disease (GBD) states that ischemic heart disease, largely a consequence of hypertension, is the biggest killer in the world (1,2). International Diabetes Federation stated that people with diabetes is expected to increase from 171 million in 2000 to 578 million in 2030 globally. In July 2020, the number of people with diabetes is calculated to be almost 463 million worldwide (3). Polycystic Ovarian Syndrome (PCOS) is a significant public health issue impacting the general and reproductive health of women.

Adolescents are a growing part of any nation. Recently, this age group is getting increasingly prone to risk factors for lifestyle disease like Type-2 Diabetes Mellitus and Hypertension (4,5). Several studies across the country have reported rising levels of blood pressure among adolescents (6-9). Several factors like overweight, obesity, family history, consumption of junk food, physical inactivity, increased screen time etc. were reported to be predisposing factors for rise of prevalence of these diseases in young population. This will make the population vulnerable to morbidities like coronary artery disease, stroke and renal failure at a young age, putting a huge strain on the public health system.

Lifestyle diseases also add to significant gender-specific morbidity in women. Lifestyle has been directly linked to various disorders of endocrine and reproductive systems ranging from simple irregular menstrual cycles to polycystic ovarian disease to carcinomas of breast, endometrium and ovary (1-3). This is going to hugely impact the women's health in future.

There has been a focus on aggressive health promotion in this age group to adopt healthy lifestyle as primordial and primary preventive strategies. This is much more significant in view of the rising burden of these two diseases in India.

Traditionally, diabetes and hypertension were considered diseases of late middle age and old age. Adolescents were not trained to worry about them. But now the focus needs to gradually change. However in spite of adequate sensitisation and knowledge, there may be some gaps in adopting them into day-to-day life.

Hence this study aims to study the knowledge, attitude and practice of non-medical undergraduate students regarding the two major lifestyle diseases, Type-2 diabetes mellitus and hypertension. It also aims to study the effect of other factors like family history of these diseases and having a family member in medical field on the knowledge, attitude and practice levels. This study also tries to put into application the principles of primordial and primary prevention strategies, which will give the biggest yield in changing the disease morbidity at community level. As part of a wider study to design and implement lifestyle interventions for control of major non-communicable diseases, this study was undertaken to identify the gaps in Knowledge, Attitude and Practice.

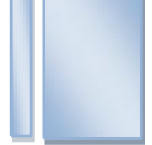
Material and Methods

The study was a cross-sectional analytical study done in higher educational institutions of coastal Andhra Pradesh.

Sampling: The sample size was calculated assuming that forty percent of undergraduate students are well aware of causes and complications of diabetes mellitus and hypertension (10). Thus, for a confidence level of 95pc, a sample size of 266 was obtained, which was rounded to 300. Hundred students each from three different streams were selected by simple random sampling.

- Arts Stream: 100 students of social sciences, humanities and languages.
- Basic Sciences Stream: 100 students of physics, chemistry and mathematics.
- Applied sciences Stream: 100 students of nutrition, microbiology and biochemistry.

Study tool: A questionnaire was designed for this study. The main risk factors and preventive measures relevant to diabetes and hypertension



Vijay K Yalamanchili et al.

were listed. Among them, the items relevant for the age group of study population were identified and modified into items suiting the Knowledge, Attitude and Practice domains of the study tool. The questionnaire was distributed among a few selected subjects of study population and they were asked to fill it. Based on the inputs received while filling the questionnaire, necessary changes were made. The questionnaire comprised of two parts. a. The first part was about the socio-demographic and academic details of the study subject. These were added in order to be the dependant variables that might influence the study variables. b. The second part comprised of the actual questions testing the knowledge, attitude and practice. Ten questions each about knowledge and practice and eight questions about attitude were included in the questionnaire. The questions regarding knowledge of normal blood sugar and blood pressure values were framed as right or wrong type. The remaining questions were framed in Likert-type scale on a scale of one to three. Afterwards, its validity and internal consistency were checked. The Cronbach's alpha was found to be 0.76, which was satisfactory. The data obtained in the study was entered in Microsoft Excel and analysed with SPSS Trial Version 23. The qualitative variables were expressed as percentages and continuous variables were expressed as means. The difference in mean scores between various comparison groups was analysed by Independent Samples T-test or One-way Analysis of Variance (ANOVA). Post-hoc analysis was also applied to know the inter-group variability in case of significant difference in ANOVA.

RESULTS

Among the students participating in the study, majority of the students (49.4%) belonged to science stream. Arts students comprised of 29.6% whereas applied science students comprised of 16.3%. Majority of the study subjects (63.6%) resided in rural areas whereas the remaining 36.2% of the subjects resided in town. Family history of PCOS was reported in 6% of the students. Family history of diabetes mellitus was reported in 23.2% of the study subjects. Hypertension was reported in the family members of the study subjects. Family history of obesity was reported in 8.5% of the study subjects.

Major Findings on Knowledge of Study Subjects regarding Lifestyle Diseases

The most commonly identified complications were heart attack for hypertension and delayed wound healing for diabetes. Irregular menstrual cycles were reported to be the commonest complication of PCOS. 23.2 percent knew the normal values of blood sugar. 34.8 percent knew the higher limits of blood pressure. 58 percent of the study subjects knew that PCOS adversely affects the reproductive health. 12 percent of the study subjects knew that PCOS is related to lifestyle. 48 percent believe PCOS can be cured by medicines alone. 51 percent believed lifestyle diseases can occur only after 40 years. 25 percent believed medicines can be stopped once sugar/ blood pressure levels come to normal. 89.3 percent knew that diet and exercise are necessary along with medicines for control. 88 percent knew that DM and HTN can exist without any symptoms.

Major Findings on Attitude of Study Subjects regarding Lifestyle Diseases:

54.6 percent believed they should start healthy lifestyle right now. 45 percent would like to have good physical activity but don't find time/space/company. 41.4 percent would attend health awareness sessions only if it is compulsory. 21.6 percent didn't care about their food, as anything is okay in this age. 20.2 percent believed it is okay to get lifestyle diseases as we have better treatment options.

Majority were not aware of renal ocular and vascular complications.

Major Findings on Practices of Study Subjects regarding Lifestyle Diseases:

61.2 percent share/forward health-related posts on social media. 52.9 percent checked their weight in last three months. 11.6 percent actively search for health-related information. 50 percent never checked the calories of processed foods they eat. 71.7 percent were aware of yoga/meditation but never practice them. 8 percent consumed fruits less than 3 days a week. 46.6 percent ate the same amount of food irrespective of their mood. 58.6 percent did not have any significant physical activity. 51.3 percent would suggest healthier ways to prepare food at home/hostel.

Table 1. KAP Score Vs Study Stream of Study Subjects

Stream of Education	Knowledge Score Mean \pm SD P <0.001	Attitude Score Mean \pm SD P =0.01	Practice Score Mean \pm SD p <0.001
Arts	19.36 \pm 3.61	17.40 \pm 3.65	19.55 \pm 2.61
Science	23.70 \pm 4.60	19.01 \pm 2.96	21.85 \pm 2.81
Applied Science	26.92 \pm 5.08	17.64 \pm 1.93	21.32 \pm 2.26

Table 1 shows the mean scores of Knowledge, Attitude and Practice for each stream of students. The mean knowledge score was highest for students of applied sciences (26.92), followed by students of basic sciences (23.7), and then the students of arts

(19.36). Similar pattern was also seen in the scores of attitude and practice. Students of applied sciences had the highest mean scores in all the domains, followed by students of basic sciences and then the students of arts.

Table 2. KAP Scores Vs Residence of Study Subjects

Place of Residence	Knowledge Score Mean + SD P=0.40	Attitude Score Mean + SD P=0.87	Practice Score Mean + SD P=0.44
Urban	23.51 + 4.38	18.25 + 3.09	21.31 + 2.65
Rural	22.56 + 5.47	18.16 + 3.3	20.81 + 3.02

Table 2 shows the comparison of Knowledge, Attitude and Practice Scores in the study subjects according to the residence – whether urban or rural.

There was no statistically significant difference between the scores of students from urban and rural areas.

Table 3. KAP Scores Vs Association with Health Profession

Health Professionals in Family	Knowledge Score Mean \pm SD P=0.02	Attitude Score Mean \pm SD P=0.13	Practice Score Mean \pm SD P=0.87
Present	26.33 \pm 6.4	19.18 \pm 2.19	21.0 \pm 2.56
Not Present	22.8 \pm 4.6	18.06 \pm 3.31	21.03 \pm 2.91



The impact of having doctors, nurses or other healthcare professionals in the family was studied in Table 3. The mean knowledge score was significantly higher in students who had a health professional in their family. However the scores of attitude and practice were not significantly higher in this group.

DISCUSSION

The present study found glaring gaps in the knowledge, attitude and practice of the non-medical undergraduate students regarding lifestyle diseases. The students of the subjects directly related to health sciences only showed higher mean scores of knowledge compared to students of arts and basic sciences. The knowledge should not be confined to students of certain subjects since majority of the students are not in touch with medical subjects, but all are equally prone to lifestyle diseases. A concerning finding of the present study is lesser proportion with adequate knowledge regarding PCOS. This has been demonstrated in previous studies also (10-12). This issue was also reported by Rau et al who found knowledge gaps in students without medical background. The knowledge of PCOS and its association with lifestyle needs aggressive promotion among adolescent girls due to the burgeoning health burden of this condition. It should not be treated as an isolated gynecological condition. Another important finding of this study is that mere knowledge did not translate into good

healthy practices. Students of applied sciences as well as students having health professionals in their family had higher knowledge scores but they did not have any better health attitudes and practices compared to others (13). This leads to an impression that even though certain groups of students have more awareness, they do not see themselves at risk of these diseases, hence do not translate that knowledge into healthy attitude and practice. An exception to this pattern is the finding reported by Mohammed et al where among technical students it was found that the attitudes and healthy practices were equally good as knowledge scores (14). The poor intake of fruits and healthy diet reported in the present study was similar to that reported by Akter et al (15).

CONCLUSION

The present knowledge, attitude and practices of female adolescents regarding PCOS and other lifestyle diseases is grossly inadequate. Hence there is need for robust health education and also inculcate healthy lifestyles. While students of life sciences streams and those associated with health professions had higher knowledge levels, which did not translate into better attitudes and healthy practices. This study also identified areas that can be stressed upon for any planned lifestyle interventions in adolescents.

REFERENCES

1. Murray CJ. The global burden of disease study at 30 years. *Nature medicine*. 2022 Oct;28(10):2019-26.
2. Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. *Nature Reviews Nephrology*. 2020 Apr;16(4):223-37.
3. Nanditha A, Chamukuttan S, Raghavan A, Ramachandran A. Global Epidemic of Type 2 Diabetes Mellitus: An Epidemiologist's Perspective. *Current Trends in Diabetes*; JP Medical Publishers: Ashland, OH, USA. 2020 Nov 30:36.
4. Daniel RA, Haldar P, Prasad M, Kant S, Krishnan A, Gupta SK, Kumar R. Prevalence of hypertension among adolescents (10-19 years) in India: A systematic review and meta-analysis of cross-sectional studies. *PLoS One*. 2020 Oct 6;15(10):e0239929.
5. Meena J, Singh M, Agarwal A, Chauhan A, Jaiswal N. Prevalence of hypertension among children and adolescents in India: a systematic review and meta-analysis. *Indian journal of pediatrics*. 2021 Nov;88:1107-14.
6. Singh SK, Verma A. Prevalence of hypertension among school going adolescent boys in Najafgarh, Delhi, India. *International Journal of Adolescent Medicine and Health*. 2021 Oct 13;33(5):20190005.
7. Kumar P, Srivastava S, Mishra PS, Mooss EK. Prevalence of pre-diabetes/type 2 diabetes among adolescents (10–19 years) and its association with different measures of overweight/obesity in India: a gendered perspective. *BMC endocrine disorders*. 2021 Dec;21:1-2.
8. Oza C, Khadilkar V, Karguppikar M, Ladkat D, Gondhalekar K, Shah N, Khadilkar A. Prevalence of metabolic syndrome and predictors of metabolic risk in Indian children, adolescents and youth with type 1 diabetes mellitus. *Endocrine*. 2022 Mar;75(3):794-803.fxz
9. Amritanshu K, Kumar A, Pathak A, Garg N, Banerjee DP. Prevalence and risk factors associated with hypertension in children and adolescents. *Pediatric Oncall Journal*. 2015;12(2):40-3.
10. Rathod GG, Vadodariya NJ, Thakor N. Assessment of knowledge regarding hypertension and its preventive measures among students of Government Science College of North Gujarat region, India. *International Journal of Advances in Medicine*. 2020 Jan;7(1):67.
11. Kaur H, Pandey M, Agrawal A, Nigam A, Rathi S, Verma SK. Assessment of Pre and Post Interventional Study on Knowledge, Attitude and Practice Among PCOS Women in Government Hospital, Saharanpur, UP. *American Journal of Psychiatric Rehabilitation*. 2025 May 13;28(5):136-46.
12. Ravi R, Murthy MK, Sa J. Polycystic Ovarian Syndrome: Perception of Women with Pcos and Impact of Pharmacist's Intervention. *Value in Health*. 2018 Sep 1;21:S59.
13. Rao US, Zin T, RN KK, Subramaniam SA, Shan TB, Mogan KA, Ismail AS. Cross-sectional study on knowledge, attitude and practice regarding diabetes mellitus among medical and non-medical students. *Research Journal of Pharmacy and Technology*. 2018;11(11):4837-41.
14. Mohammed AA, Al-Aaragi AN, Merzah MA. Knowledge, attitude, and practice regarding diabetic mellitus among a sample of students at technical institute of Karbala. *Medical Journal of Babylon*. 2018 Apr 1;15(2):164-8.
15. Akter F, Rashid SM, Alam N, Lipi N, Qayum MO, Nurunnahar M, Mannan A. Knowledge, attitude and practice of diabetes among secondary school-going children in Bangladesh. *Frontiers in Public Health*. 2022 Nov 17;10:1047617.