International Journal of Pharmacy and Pharmaceutical Research (IJPPR)
Volume 32, Issue 5, May 2026 ijppr.humanjournals.com ISSN: 2349-7203

A Study on Knowledge, Attitude, and Practice (KAP) Regarding Diabetes Mellitus and the Effectiveness of Patient Education

Hariharan V*[1], Sridevi Azhagammal R[2], Abirami E[3], Harini R[4], Yogeshwari A[5], Kaviyadharshini M[6], Naveenkumar R V[7]

Department of Pharmacology, Paavai College of Pharmacy and Research, Pachal, Namakkal - 637018. India.

Received: 30 March 2026 Revised: 25 April 2026 Accepted: 30 April 2026

ABSTRACT:

Diabetes mellitus is one of the most prevalent chronic metabolic disorders worldwide and is associated with significant morbidity and mortality due to its long-term microvascular and macro-vascular complications.[1-3] Effective management of diabetes requires adequate patient knowledge, a positive attitude towards the disease, and appropriate self- care practices. However, lack of awareness regarding disease condition, lifestyle modification, medication adherence, and blood glucose monitoring remains a major challenge. Patient education and counselling have been identified as key strategies to improve disease understanding and promote behavioural change among diabetic patients.[2-4] **AIM:** To assess the knowledge, attitude, and practice (KAP) regarding diabetes mellitus among patients and to evaluate the effectiveness of structured patient counselling in improving disease awareness, self-care behaviour, and treatment adherence. [5] **OBJECTIVE:** 1.To assess the knowledge, attitude, and practice (KAP) of patients suffering from diabetes mellitus. 2.To evaluate the role of patient counselling in improving knowledge about diabetes mellitus. 3.To study the change in attitude of diabetic patients towards disease management after counselling. 4.To assess the improvement in self-care practices following patient counselling.[5]. 5.To compare pre-counselling and post-counselling KAP levels among diabetic patients.[6-9]

Keywords: Diabetes mellitus, Patient education, Self-care practices, Medication adherence, knowledge, attitude, practice, questions.

INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycaemia due to defects in insulin secretion, action, or both, and it has become a major public health problem worldwide, particularly in India[10]. The disease is associated with serious complications such as retinopathy, nephropathy, neuropathy, and cardiovascular disorders, which can be minimised through proper glycemic control, lifestyle modification, medication adherence, and regular monitoring.[11,15] However, inadequate knowledge, poor attitude, and improper self-care practices among patients remain significant barriers to effective disease management.[12,13] The Knowledge, Attitude, and Practice (KAP) model is a useful tool to assess patient awareness and behaviour and to identify gaps that can be addressed through structured educational interventions.[14-16] Patient counselling and education have been shown to improve understanding, promote positive behavioural changes, and enhance treatment adherence. [17-18]Therefore, the present pre- and post-interventional study was conducted to assess the KAP regarding diabetes mellitus among patients and to evaluate the impact of patient education on improving their awareness and self-care practices.[19-20]

Materials and methods:

Study design and Subject recruitment:

A pre and post intervention study was conducted to assess the knowledge, attitude and practice (KAP) regarding diabetes mellitus among the participants.[21-23] The study was carried out in Salem, and participants were recruited by approaching individuals in public areas, healthcare facilities, educational institutions and local pharmacies.[22] Individuals who met the inclusion criteria were informed about the purpose of the study and those who were willing to participate were enrolled after obtaining written informed consent. The structured KAP questionnaire was administered before the educational intervention and reassessed after the

intervention to evaluate the impact of patient education.[24-25-26] The collected data were recorded and analysed to determine the improvement in knowledge, attitude and practice scores. Participant confidentiality was maintained throughout the study period.

Instrument used:

The materials used for the study included a data collection form (Annexure 1) to record participant details, an informed consent form (Annexure 2) to obtain consent from the participants, a structured diabetes awareness questionnaire (Annexure 3) to assess knowledge, attitude and practice, and a health education pamphlet (Annexure 4) used to provide patient education[27].

Methods:

Participants were recruited in person from the selected study areas and the purpose of the study was explained, after which written informed consent was obtained. The questionnaire was administered either as self-filled or interviewer-assisted based on the participant's literacy level and preference, and confidentiality and anonymity were strictly maintained. A pre-intervention assessment (pre-test) was conducted to collect baseline data on knowledge, attitude and practice using a pre-tested structured

questionnaire, followed by a patient educational intervention on diabetes mellitus, and a post-intervention assessment (post-test) was carried out using the same questionnaire to evaluate the effectiveness of the educational program. The questionnaire consisted of three sections: Section A assessed knowledge regarding diabetes, symptoms, complications and management; Section B assessed attitude towards diabetes control, medication, diet and follow-up; and Section C assessed practice including medication adherence, diet control, foot care, blood glucose monitoring and management of missed doses.

OBSERVATION AND RESULT:

KNOWLEDGE SECTION:

1. What is the main problem in diabetes?

a) High blood pressure

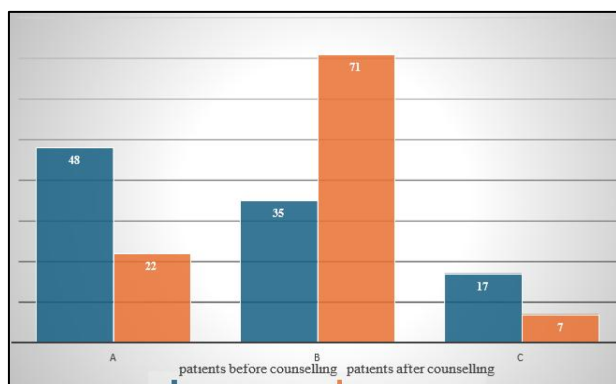
b) High level of sugar in the blood

c) Lack of vitamins

OBSERVATION:

Options	Patients before counselling	Patients after counselling
A	14	15
B	79	82
C	7	3

RESULT:



2. Which of these is a common symptom of high blood sugar?

a) Shakiness and sweating

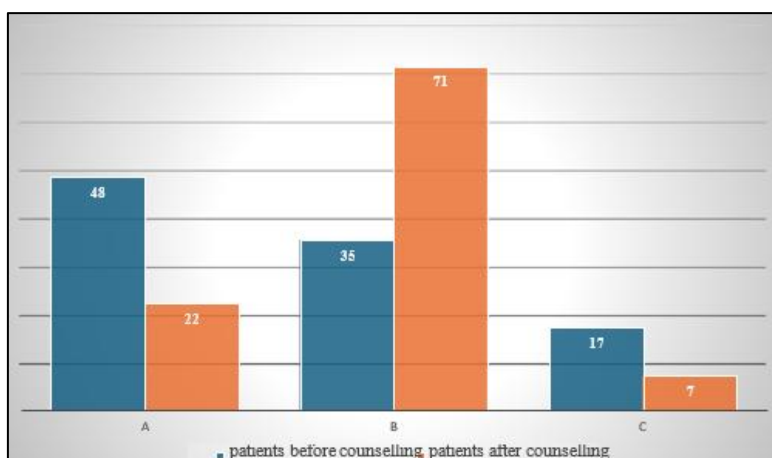
b) Increased thirst and frequent urination

c) Feeling very cold

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	23	6
B	62	91
C	15	3

RESULT:



3. Why is foot care especially important for people with diabetes?

a) For general cleanliness

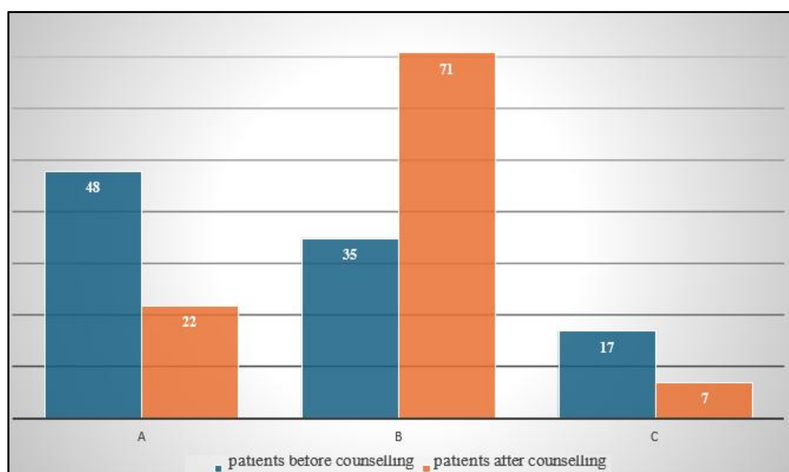
b) Because injuries can heal slowly and lead to serious infections.

c) It is not very important.

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	23	7
B	65	89
C	12	4

RESULT:



4. Regular physical activity (like walking) helps in diabetes by:

a) Curing the disease.

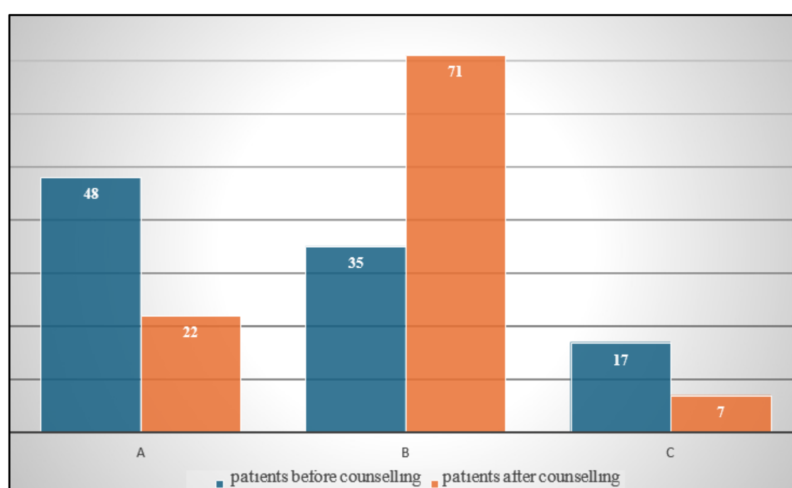
b) Having no effect.

c) Helping your body use insulin better and controlling weight.

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	31	8
B	15	23
C	54	69

RESULT:



5. What is the first thing you should do if you feel symptoms of low blood sugar (e.g., shaking, sweating)?

a) Take your diabetes medicine.

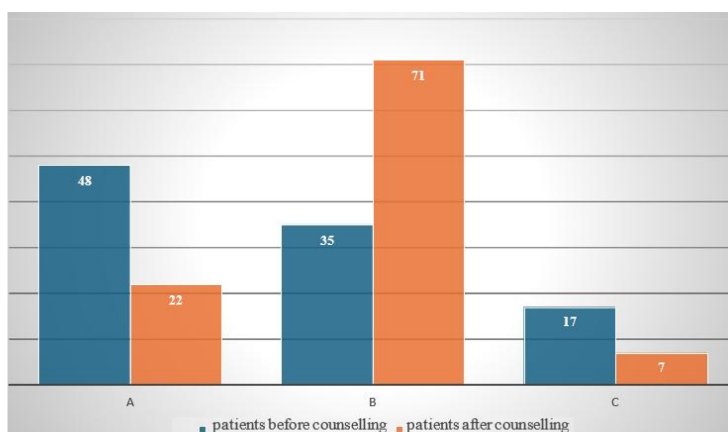
b) Lie down and rest.

c) Have a spoon of sugar or a sweet drink.

OBSERVATION:

options	Patients before counselling	Patient after counselling
A	16	7
B	20	10
C	64	83

RESULT:



6. Can diabetes affect wound healing?

a) Yes

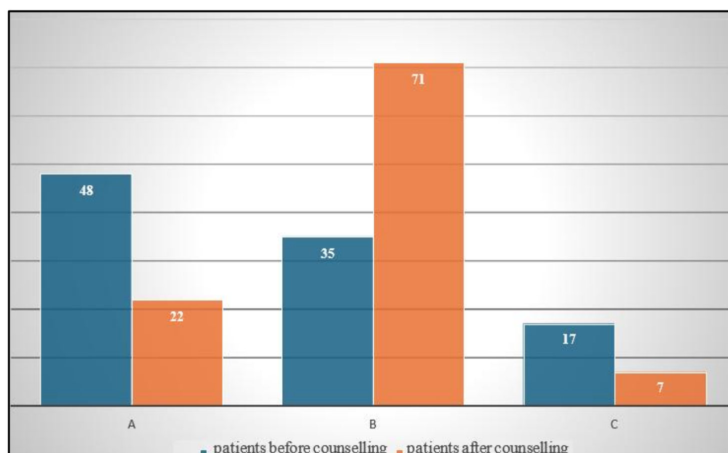
b) No

c) Sometimes

OBSERVATION:

Options	Patients before counselling	Patient after counselling
A	69	88
B	18	4
C	13	8

RESULT:



International Journal of Pharmacy and Pharmaceutical Research (IJPPR)
Volume 32, Issue 5, May 2026 **ijppr.humanjournals.com** ISSN: 2349-7203

7. Can uncontrolled diabetes cause loss of vision?

a) Yes

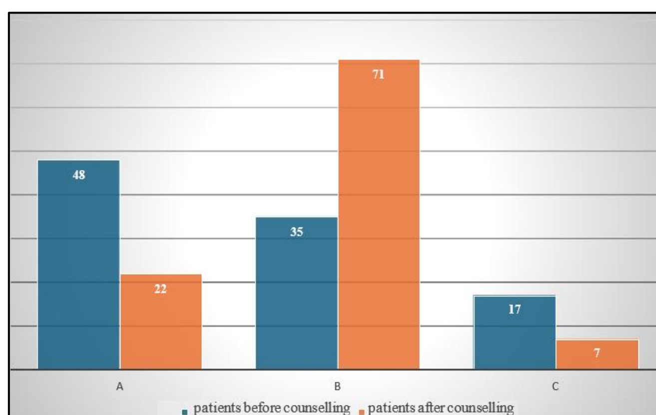
b) No

d) Only in elderly

OBSERVATION:

Options	Patients before counselling	Patients after counselling
A	55	87
B	29	7
C	16	6

RESULT:



ATTITUDE SECTION

8. I believe that controlling my diabetes is very important for my future health.

A) agree

B) neutral

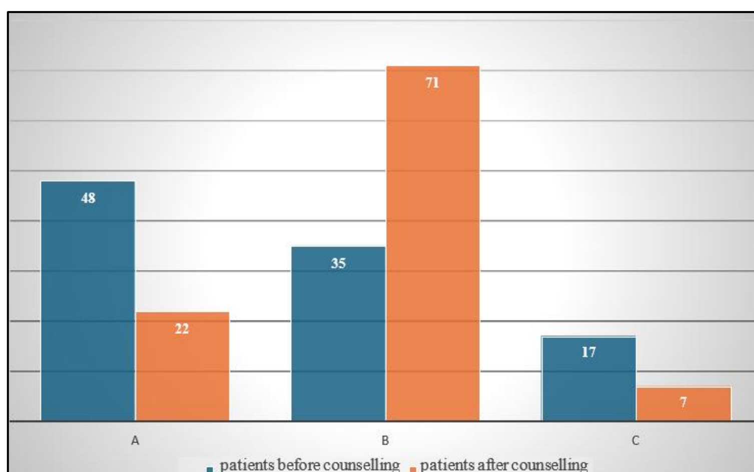
C) disagree

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	67	87
B	25	7
C	8	6

International Journal of Pharmacy and Pharmaceutical Research (IJPPR)
Volume 32, Issue 5, May 2026 ijppr.humanjournals.com ISSN: 2349-7203

RESULT:



9. Taking diabetes medication every day is a burden for me.

A) agree

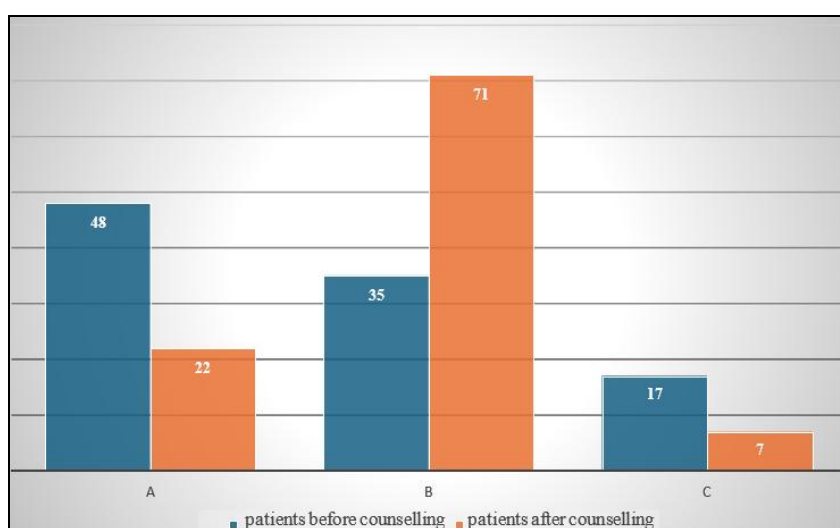
B) neutral

C) disagree

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	24	11
B	30	10
C	46	79

RESULT:



10. Following a healthy diet for diabetes is too difficult and restrictive

A) agree

B) neutral

C) Disagree

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	20	11
B	33	5
C	47	84

RESULT:

11. I believe that regular follow-up with my doctor is essential.

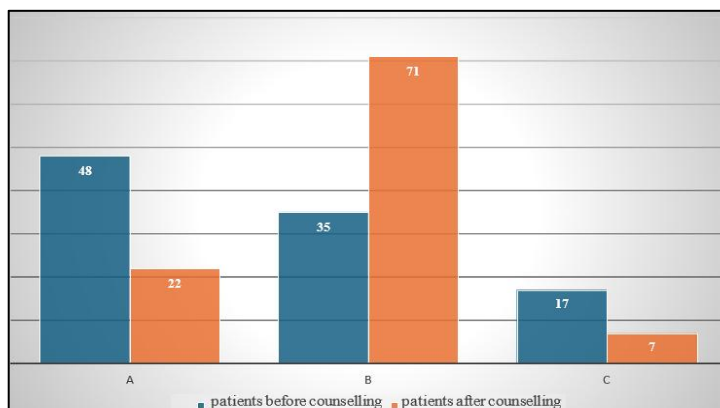
A) Agree

B) Neutral

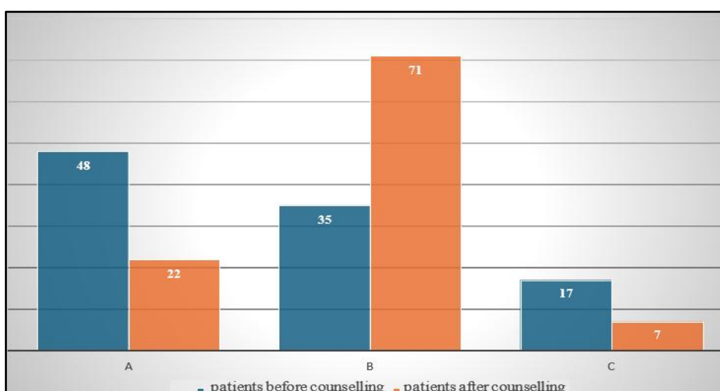
C) Disagree

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	62	90
B	28	9
C	10	1



RESULT:



PRACTICE SECTION

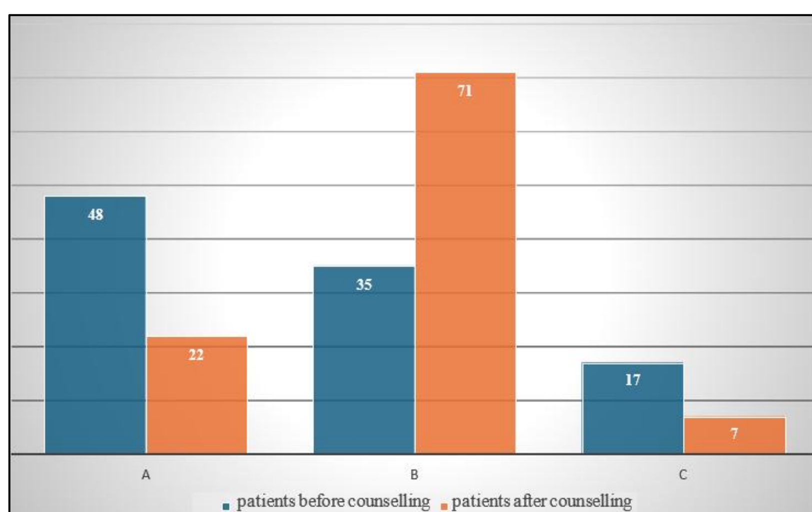
12. How often do you take your diabetes medicines exactly as prescribed by your doctor?

Always Sometimes Rarely/Never

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	57	86
B	34	9
C	9	5

RESULT:



13. How often do you check your feet for any cuts, blisters, or injuries?

A) Daily

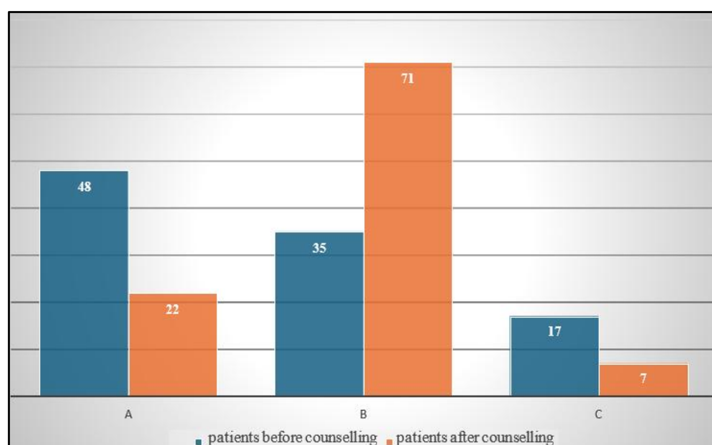
B) Weekly

C) Rarely/Never

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	62	87
B	28	8
C	10	5

RESULT:



14. How often do you follow a healthy diet plan for your diabetes?

A) Most of the time

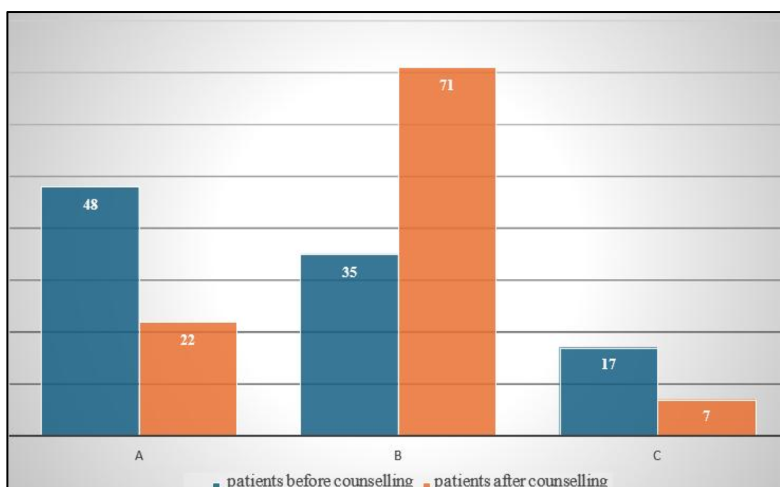
B) Sometimes

C) Rarely/Never

OBSERVATION:

Options	Patients before counselling	Patients after counselling
A	57	72
B	33	23
C	10	5

RESULT:



15. What do you do when you miss a dose of your diabetes medicine?

A) Take it as soon as I remember.

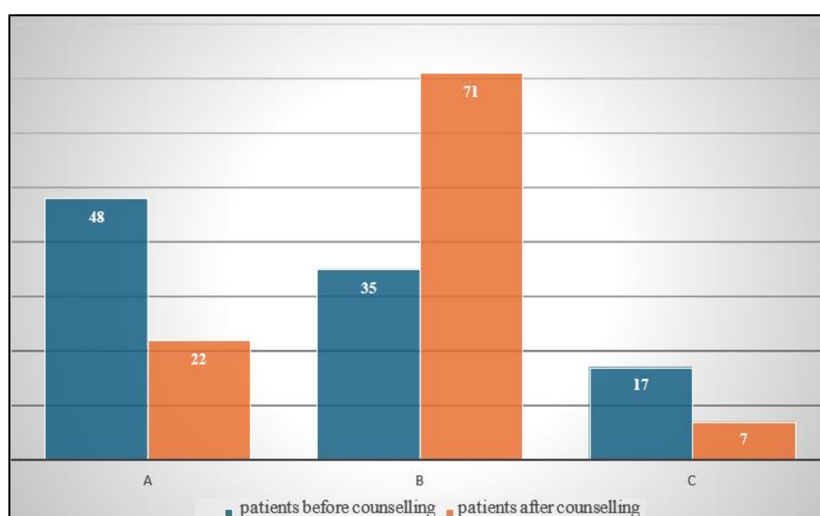
B) Skip it and take the next dose at the usual time.

C) Stop taking it for the rest of the day.

OBSERVATION:

options	Patients before counselling	Patients after counselling
A	48	22
B	35	71
C	17	7

RESULT:



DISCUSSION:

This study evaluated the impact of patient counselling on diabetes mellitus patients using the KAP questionnaire system. The comparison of responses before and after counselling clearly shows that counselling significantly improved the patients' knowledge, attitude, and practice towards diabetes management.

Before counselling, most patients had limited knowledge about diabetes. Many of them were unaware of the exact causes of diabetes, normal blood glucose levels, symptoms of hypo- and hyperglycaemia, importance of regular monitoring, and long-term complications. Knowledge about diet control, exercise, medication adherence, and foot care was also poor. This indicates that lack of proper information is a major barrier in effective diabetes control.

After counselling, there was a marked improvement in knowledge scores. More patients were able to:

Identify diabetes as a chronic metabolic disease.

Understand the importance of regular blood glucose monitoring. Recognize symptoms of hypoglycaemia and hyperglycaemia.

Know the role of diet, physical activity, and medication in controlling diabetes. Understand the importance of foot care, eye check-ups, and regular follow-up.

This shows that structured counselling is an effective tool in increasing awareness and understanding of diabetes.

In terms of attitude, before counselling many patients showed a casual or negative attitude towards diabetes management. Some believed that medicines alone were enough, some felt lifestyle changes were difficult, and some were not worried about long-term complications.

After counselling, there was a positive shift in attitude. Patients showed: Greater acceptance of diabetes as a lifelong condition.

Increased motivation to follow diet and exercise plans. Better confidence in self-management.

Stronger belief that good control can prevent complications.

CONCLUSION:

The present study clearly demonstrates that patient counselling based on the KAP (Knowledge, Attitude, Practice) questionnaire system has a significant positive impact on diabetes management. After counselling, patients showed marked improvement in their knowledge about the disease, its complications, and the importance of lifestyle modification, medication adherence, and regular monitoring. Their attitude towards diabetes also became more positive, with increased motivation and responsibility for self- care.

Moreover, practical behaviours such as following a proper diet, engaging in regular physical activity, monitoring blood glucose levels, maintaining foot care, and attending regular medical follow-ups were significantly improved after counselling. The higher number of correct and positive responses in the post-counselling KAP assessment confirms the effectiveness of structured patient education.

Thus, patient counselling plays a crucial role in empowering diabetes patients, improving treatment outcomes, and preventing long-term complications. Incorporating regular counselling sessions into routine clinical practice can enhance patient compliance, promote healthier lifestyles, and ultimately improve the overall quality of life of diabetic patients.

REFERENCES:

1. Kumar P, et al. Impact of use of patient counselling in diabetic patients: A review article. Int J Pharm Res Allied Sci. Year;Volume(Issue):Pages.
2. Brown MT, Bussell JK. Medication adherence: WHO cares? Mayo Clin Proc. 2011;86(4):304–314.
3. Anderson RM, Funnell MM. Patient-centered care and self-management. Diabetes Spectr. 2005;18(3):136–142.
4. Ali M, Schifano F, Robinson P, Phillips G, Doherty L, Melnick P, et al. Impact of educational interventions on patient behavior. Int J Clin Pharm. 2018;40(1):34–44.
5. Polit DF, Beck CT. Nursing research: Generating and assessing evidence for nursing practice. 10th ed. Wolters Kluwer; 2017.
6. Jarab AS, AlQudah SG, Mukattash TL, Shattat G, Al-Azzam SI. Impact of pharmaceutical care on patient outcomes. Patient Educ Couns. 2012;86(3):292–298.
7. O'Donohue WT, Draper C. Outcome evaluation of health interventions. J Clin Psychol. 2011;67(11):1063–1074.
8. Bowling A. Research methods in health: Investigating health and health services. 4th ed. Open University Press; 2014.
9. Campbell DT, Stanley JC. Experimental and quasi-experimental designs for research. Boston: Houghton Mifflin; 1963.
10. Norris SL, Engelgau MM, Narayan KM. Effectiveness of self-management training in type 2 diabetes. Diabetes Care. 2001;24(3):561–587.
11. Funnell MM, Anderson RM. Patient empowerment: A look back, a look ahead. Patient Educ Couns. 2004;52(3):223–224.
12. Chisholm-Burns MA, Kim Lee J, Spivey CA, Slack M, Herrier RN, Hall-Lipsy E, et al. US pharmacists' effect as team members on patient care. Med Care. 2010;48(10):923–933.
13. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. Am J Hosp Pharm. 1990;47(3):533–543.
14. Gazmararian JA, Williams MV, Peel J, Baker DW. Health literacy and knowledge of chronic disease. J Gen Intern Med. 2003;18(8):588–594.
15. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. J Family Med Prim Care. 2013;2(1):5–7.
16. Saleh F, Mumu SJ, Ara F, Begum HA, Ali L. Knowledge, attitudes and practices regarding diabetes mellitus among patients. BMC Public Health. 2012;12:1110.
17. World Health Organization. Advocacy, communication and social mobilization for TB control. Geneva: WHO; 2008.
18. Kaliyaperumal K. Guideline for conducting a knowledge, attitude and practice (KAP) study. AECS Illumination; 2004.
19. Launiala A. How much can a KAP survey tell us about people's knowledge, attitudes and practices? Anthropol Matters. 2009;11(1).
20. American Diabetes Association. Management of diabetes in pregnancy: Standards of Medical Care in Diabetes—2022. Diabetes Care. 2022;45(Suppl 1):S232–S243.
21. Marathe PH, Gao HX, Close KL. Hypoglycaemia: The neglected complication. Indian J Endocrinol Metab. 2013;17(5):819–834.
22. Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, et al. Management of hyperglycemia in type 2 diabetes, 2022. Diabetes Care. 2022;45(11):2753–2786.
23. Atkinson MA, Eisenbarth GS, Michels AW. Type 1 diabetes. Lancet. 2014;383(9911):69–82.
24. DeFronzo RA, Ferrannini E, Groop L, Henry RR, Herman WH, Holst JJ, et al. Type 2 diabetes mellitus. Nat Rev Dis Primers. 2015;1:15019.
25. American Diabetes Association. Classification and diagnosis of diabetes: Standards of Medical Care in Diabetes—2022. Diabetes Care. 2022;45(Suppl 1):S17–S38.
26. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels: IDF; 2021.

27. American Diabetes Association. Standards of medical care in diabetes—2023. Diabetes Care. 2023;46(Suppl 1):S1–S291.
28. Powers MA, Bardsley J, Cypress M, Duker P, Funnell MM, Hess Fischl A, et al. Diabetes self-management education and support. Diabetes Care. 2020;43(7):1636–1649.

How to cite this article:
Hariharan V et al. Ijppr.Human, 2026; Vol. 32 (5): 494-506.
Conflict of Interest Statement: All authors have nothing else to disclose.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.