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# A COMPARATIVE STUDY ON EVALUATION OF INSULIN WITH METFORMIN VERSUS INSULIN WITH OTHER ORAL HYPOGLYCEMIC AGENTS IN TYPE 2 DIABETES: SAFETY, EFFICACY AND QUALITY OF LIFE ASSESSMENT USING MDQOL-17 QUESTIONNAIRE

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## ABSTRACT

**Background:** Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder ... MDQOL-17 serves as a reliable tool for evaluating patient well-being in T2DM management.

**KEYWORDS:** Type 2 Diabetes Mellitus; Insulin; Metformin; Oral Hypoglycemic Agents; MDQOL-17; Quality of Life; Comparative Study.

## 1. INTRODUCTION

Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels.

Management focuses on lifestyle modification and pharmacotherapy. Metformin is the first-line oral agent; when inadequate, other OHAs or insulin are added. Combination therapy improves glycemic control and quality of life.

## 2. MATERIALS AND METHODS

A comparative observational study was conducted among T2DM patients to evaluate the efficacy, safety, and quality of life of insulin combined with metformin versus insulin combined with other OHAs.

Ethical approval was obtained from St. John's College of Pharmaceutical Sciences Ethics Committee. The study included 100 patients aged 30–90 years at Aarka Super Specialty Hospital, Kurnool. Data were collected at 0, 4, 8, and 12 weeks. Statistical analysis was performed using mean ± SD and t-tests with significance at $p < 0.05$.

## TABLES AND FIGURES

**Table 1: Distribution of patients by age group (n=100).**

| Age (years) | Group A (Insulin+Metformin) | Group B (Insulin+Other OHAs) | Total |
|---|---|---|---|
| 30–40 | 3 | 4 | 7 |
| 41–50 | 11 | 10 | 21 |
| 51–60 | 13 | 12 | 25 |
| 61–70 | 16 | 14 | 30 |
| 71–80 | 7 | 7 | 14 |
| 81–90 | 0 | 3 | 3 |

**Table 2: Gender-wise distribution.**

| Gender | Group A | Group B |
|---|---|---|
| Male | 30 | 21 |
| Female | 20 | 29 |
| Total | 50 | 50 |

**Table 3: Baseline glycemic parameters (0 week) — mean values.**

| Parameter | Group A (Mean) | Group B (Mean) | Units | P value |
|---|---|---|---|---|
| HbA1c | 9.410 | 9.392 | % | |
| FBS | 379.775 | 365.24 | mg/dL | 0.281252 |
| PPBS | 7.697 | 7.478 | mmol/L | |
| RBS | 433.816 | 372.3 | mg/dL | |

**Table 4: Follow-up glycemic parameters (mean values at 4, 8, and 12 weeks).**

| Week | Parameter | Group A (Mean) | Group B (Mean) | Units | P value |
|---|---|---|---|---|---|
| 4 | GRBS | 252.897 | 389.48 | mmol/L | |
| 4 | FBS | 320.825 | 340.26 | mg/dL | 0.645854 |
| 4 | PPBS | 5.428 | 6.289 | mmol/L | |
| 4 | RBS | 390.62 | 320.9 | mg/dL | |
| 8 | GRBS | 245.698 | 310.92 | mmol/L | |
| 8 | FBS | 308.734 | 297.76 | mg/dL | 0.969444 |
| 8 | PPBS | 4.824 | 5.428 | mmol/L | |
| 8 | RBS | 343.75 | 284.64 | mg/dL | |

| | | | | | |
|---|---|---|---|---|---|
| 12 | HbA1c | 7.691 | 8.502 | % | |
| 12 | FBS | 280.693 | 210.67 | mg/dL | 0.191264 |
| 12 | PPBS | 3.284 | 4.259 | mmol/L | |
| 12 | RBS | 310.67 | 228.52 | mg/dL | |

**Table 5: MDQOL-17 quality-of-life scores (mean).**

| Group | Baseline MDQOL-17 | End of study MDQOL-17 | Change |
|---|---|---|---|
| Group A (Insulin+Metformin) | 60.2 | 73.8 | +13.6 |
| Group B (Insulin+Other OHAs) | 59.1 | 70.6 | +11.5 |

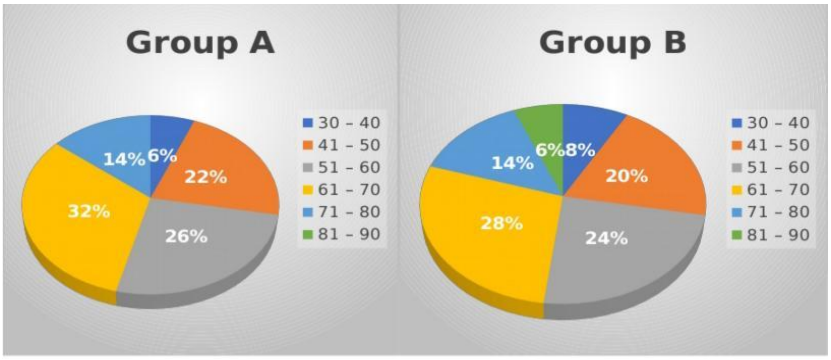



**Figure 1. Distribution of patients based on age group .**

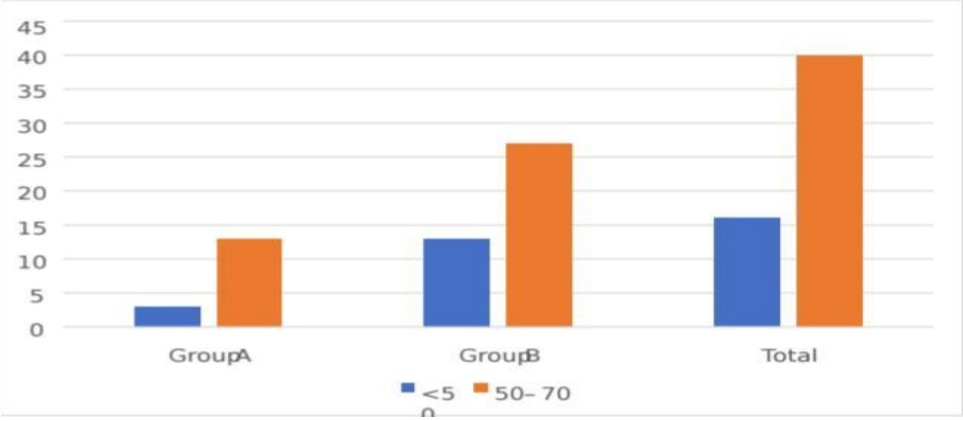



**Figure 2. Gender wise distribution.**

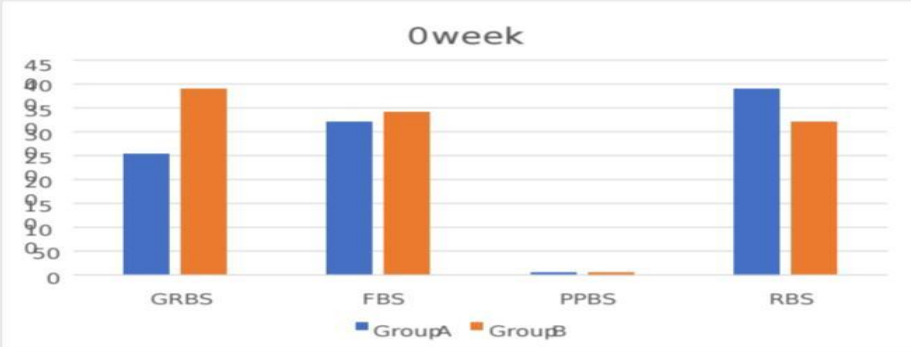
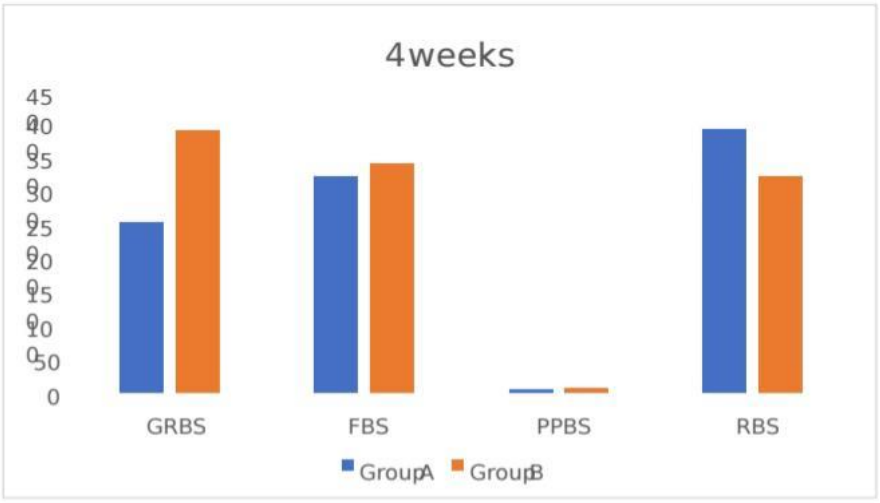



**Figure 3. Baseline glycemic parameters (0 week).**



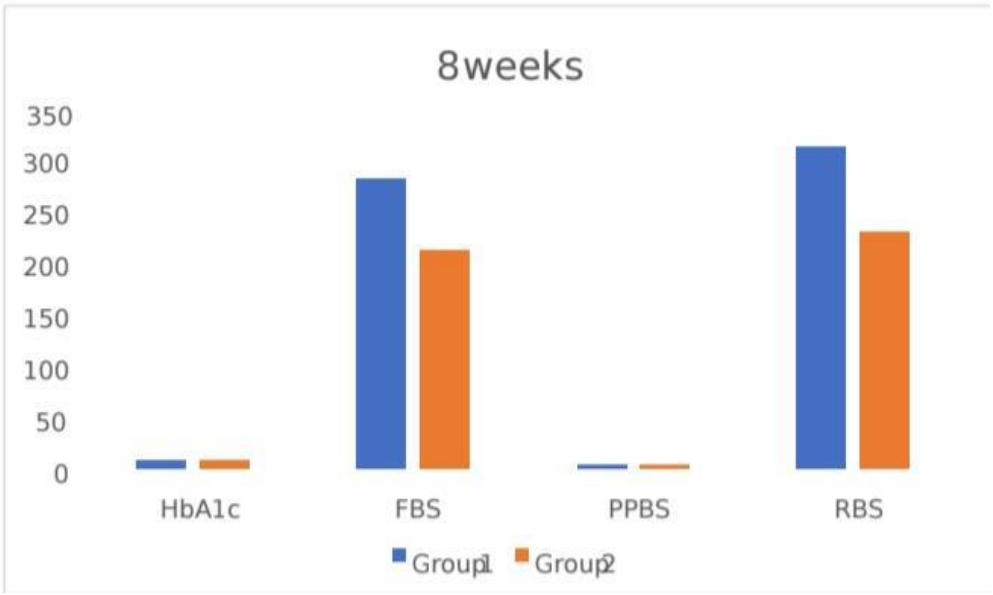





**Figure 4. Follow-up glycemic parameters (mean values at 4, 8, and 12 weeks).**

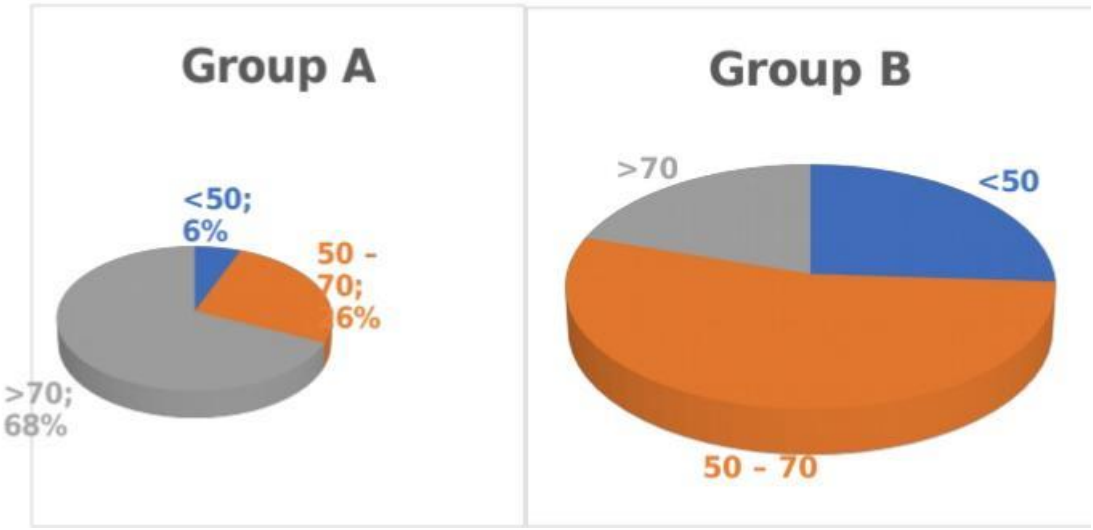



**Figure 5. MDQOL-17 quality-of-life scores (mean)**

## 6. CONFLICT OF INTEREST

Conflict of Interest: The authors declare no conflict of interest.

## 3. RESULTS AND DISCUSSION

Both insulin + metformin and insulin + other OHA groups showed improved glycemic control and quality of life. Group A (insulin + metformin) demonstrated slightly greater reductions in fasting and postprandial blood glucose. No significant difference ($p > 0.05$) was found between groups. Both regimens were safe and well tolerated. These findings align with previous studies confirming the benefits of combination therapy on glycemic control and patient well-being.

## 4. CONCLUSION

Both insulin + metformin and insulin + other OHAs combinations are effective and safe in managing T2DM. Insulin with metformin showed marginally better results and improved quality of life. Therefore, this regimen may be preferred for long-term diabetes management.

## 5. ACKNOWLEDGEMENT

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