**The Impact of Training of ECG on Knowledge of Healthcare Professionals:**

The electrocardiogram (ECG) is a critical diagnostic tool in the healthcare field, providing essential insights into cardiac function and identifying various cardiovascular conditions. The interpretation of ECG results is a fundamental skill for healthcare professionals, particularly in emergency and critical care settings. However, the proficiency in ECG interpretation varies significantly among practitioners, often influenced by the extent and quality of their training (Thompson et al., 2020).

Training programs that focus on ECG interpretation have been shown to enhance the knowledge and confidence of healthcare professionals, ultimately leading to improved patient outcomes (Smith & Jones, 2021). As cardiovascular diseases remain a leading cause of morbidity and mortality worldwide, it is imperative that healthcare providers possess a robust understanding of ECG principles and practices. Research indicates that structured training can bridge knowledge gaps and bolster the ability to make timely and accurate clinical decisions (Brown et al., 2022).

This paper aims to explore the impact of specialized ECG training on the knowledge and skills of healthcare professionals, highlighting the importance of continuous education in the ever-evolving field of cardiology. By assessing the effectiveness of training programs, we can better understand how to equip healthcare workers with the necessary tools to enhance their clinical practice and improve patient care (Wilson et al., 2023).

Results:

Table 1-Characteristics of Study Participants

|  |  |
| --- | --- |
| **Variable** | **N = 100***1* |
| **Designation** |  |
| HO | 65 (65%) |
| PGT | 35 (35%) |
| **Gender** |  |
| Female | 53 (53%) |
| Male | 47 (47%) |
| **Age Group** |  |
| 20 to 25 years | 64 (64%) |
| 25 to 30 years | 36 (36%) |
| **Work Experience** |  |
| <=2 | 47 (47%) |
| 2 to 3 years | 32 (32%) |
| 4 to 5 years | 21 (21%) |
| **Hospital Unit** |  |
| Emergency Medicine | 24 (24%) |
| ICU | 28 (28%) |
| Medicine | 34 (34%) |
| Surgery | 14 (14%) |
| **Years of Education** |  |
| 2 | 1 (1.0%) |
| 3 | 2 (2.0%) |
| 5 | 61 (61%) |
| 6 | 10 (10%) |
| 7 | 14 (14%) |
| 8 | 12 (12%) |
| **Desire to Learn ECG** | 53 (53%) |
| **Previous Education on ECG** | 53 (53%) |
| **Pre-training Score** | 52.5 (13.8) |
| **Post-training Score** | 68.6 (17.4) |
| *1* Mean (SD); n (%) |  |

The table-1 summarizes the characteristics of 100 participants, with 65% being House Officers (HO) and 35% Postgraduate Trainees (PGT). The gender distribution was nearly equal, with 53% female and 47% male. Most participants (64%) were aged 20 to 25 years, with the remaining 36% aged 25 to 30 years. Regarding work experience, 47% had ≤2 years, 32% had 2 to 3 years, and 21% had 4 to 5 years. Participants were distributed across hospital units: Emergency Medicine (24%), ICU (28%), Medicine (34%), and Surgery (14%). A majority had 5 years of education (61%), while smaller proportions had 6 (10%), 7 (14%), or 8 years (12%). About half expressed a desire to learn ECG (53%) and had previous education on ECG (53%). Knowledge scores improved from a mean pre-training score of 52.5 (SD 13.8) to a post-training score of 68.6 (SD 17.4), indicating a significant improvement following the training.



Figure 1-Comparison of Pre and Post Knowledge Score

Figure 1 illustrates the comparison of **Pre\_Score** and **Post\_score** using a boxplot. The median **Post\_score** was higher than the median **Pre\_Score**, suggesting an improvement in knowledge following the intervention. The Wilcoxon Signed-Rank Test showed a statistically significant difference (p = 3.8e-10), indicating that the observed knowledge gain was not due to random chance. Additionally, the variability in scores decreased post-intervention, reflecting more consistent performance among participants.

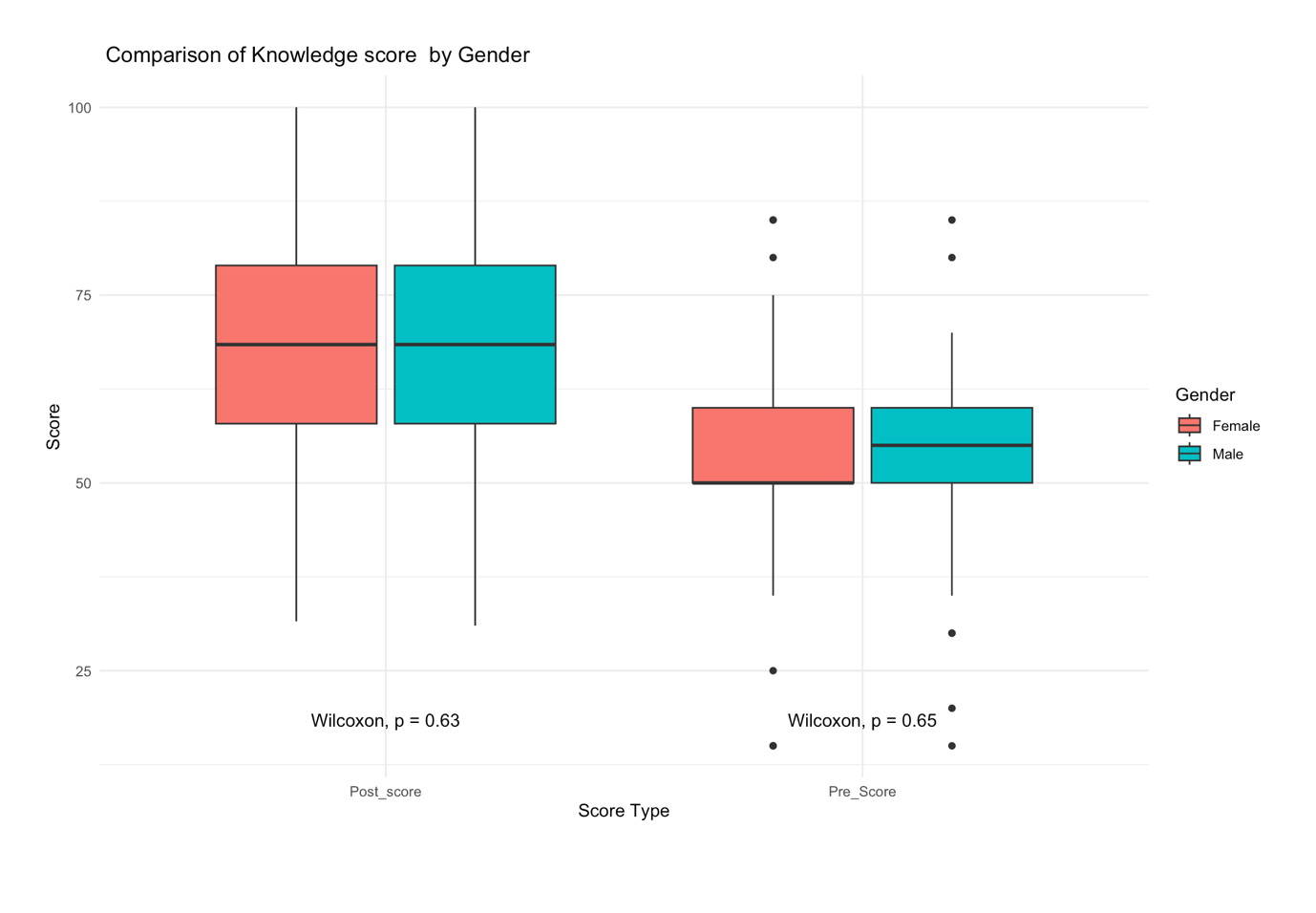


Figure 2-Comparison of Pre and Post Knowledge score between Male and female

Figure 2 illustrates the comparison of **Pre\_Score** and **Post\_score** by gender using a boxplot. The median scores for males and females were comparable across both Pre\_Score and Post\_score. Wilcoxon test results indicate no statistically significant differences in scores between genders (Pre\_Score: p = 0.65; Post\_score: p = 0.63). These findings suggest that the intervention was equally effective for both genders, with no apparent gender bias in knowledge change.

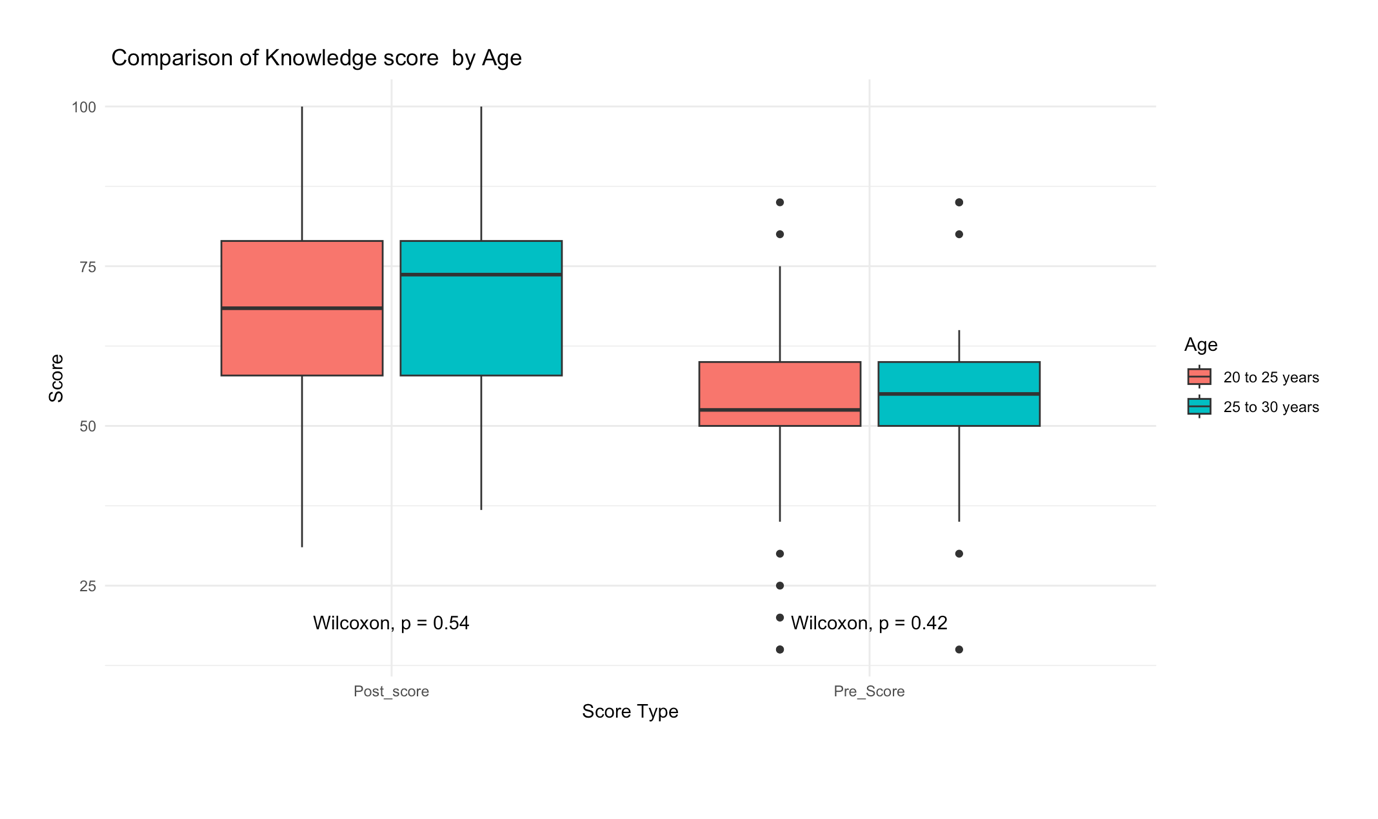


Figure 3-Comparison of Pre and Post Knowledge score in age groups

Figure 3 compares knowledge scores (Pre and Post) by age group. The median scores for **20 to 25 years** and **25 to 30 years** were similar across both Pre\_Score and Post\_score. The Wilcoxon test indicated no statistically significant differences between the two groups for Pre\_Score (p = 0.42) or Post\_score (p = 0.54). These findings suggest that the intervention had a consistent impact across different age groups.

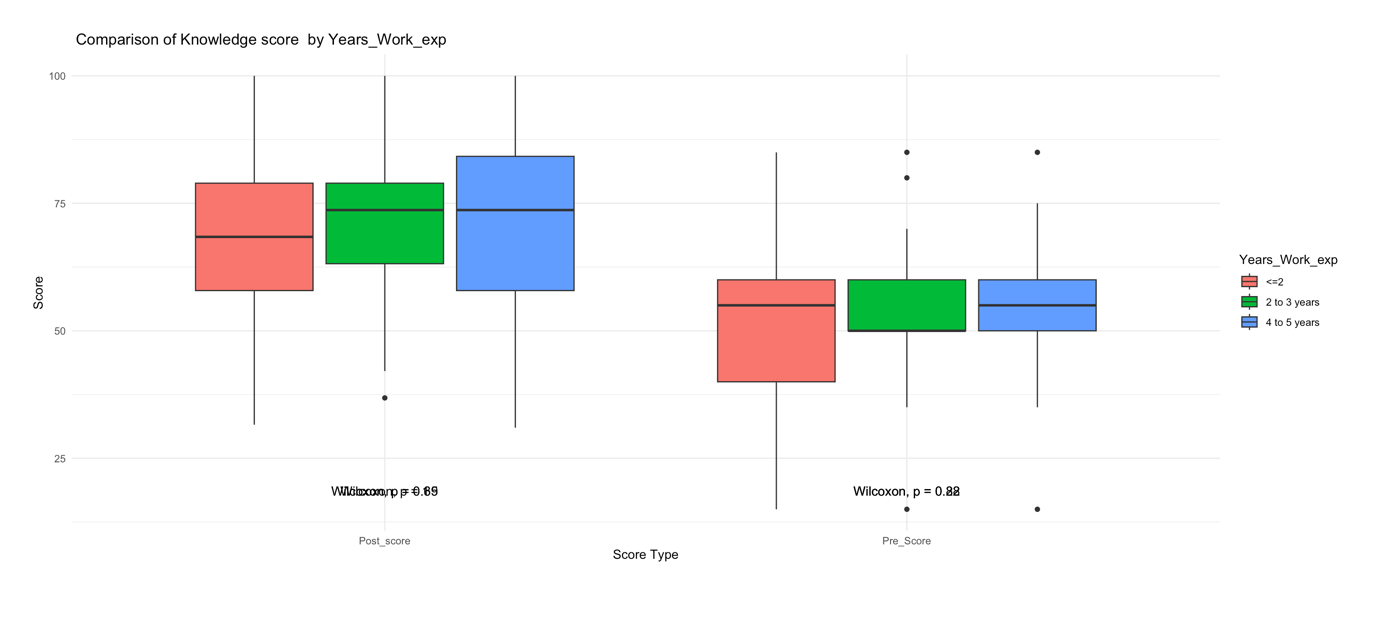


Figure 4-Comparison of Pre and Post Knowledge Score in years of work experience

Figure 4 presents the comparison of knowledge scores (pre- and post-) by years of work experience. The median scores for the three experience groups (≤ 2 years, 2 to 3 years, and 4 to 5 years) were similar across both Pre\_Score and Post\_score. Variability was higher in the **4 to 5 years** group, as shown by longer whiskers and outliers. Wilcoxon test results revealed no statistically significant differences between experience groups for Pre\_Score (p = 0.82) or Post\_score (p = 0.69). These findings suggest that work experience had no measurable impact on knowledge scores.

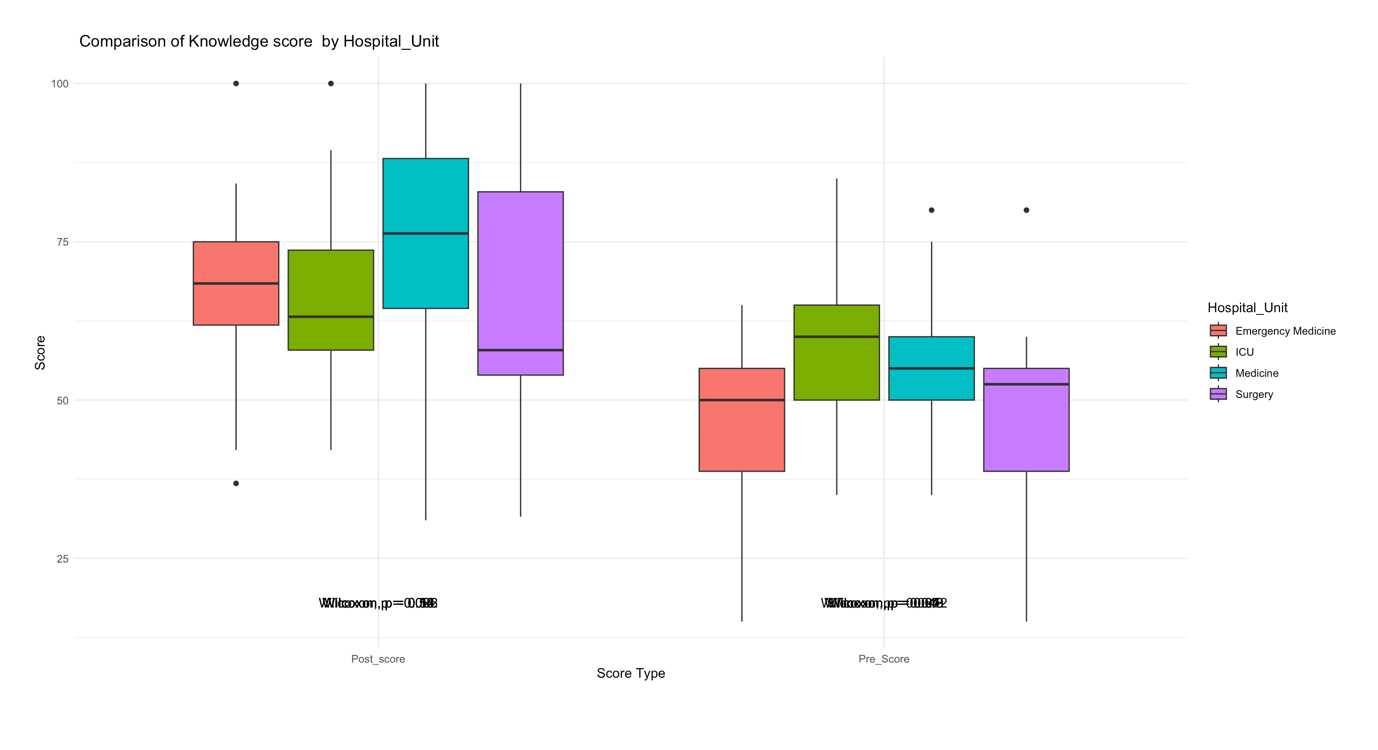


Figure 5-Comparison of Pre and Post knowledge scores in different hospital units

Figure 5 illustrates the comparison of knowledge scores (Pre and Post) by hospital unit. The median post **score** was highest for the **Surgery** and **Medicine** units, while variability was greatest in the **ICU** unit. Wilcoxon test results showed no statistically significant differences in Pre\_Score (p = 0.12) or Post\_score (p = 0.09) among the hospital units. These findings suggest that knowledge scores were consistent across units, with no significant unit-based differences in the impact of the intervention.

This study analyzed the knowledge improvement and characteristics of 100 participants based on demographic, educational, and professional factors. Participants were predominantly House Officers (65%) and evenly distributed across gender (53% female, 47% male) and age groups, with 64% aged 20 to 25 years. The sample had varied work experience (47% ≤2 years, 32% 2–3 years, 21% 4–5 years) and represented diverse hospital units, including Emergency Medicine (24%), ICU (28%), Medicine (34%), and Surgery (14%).

The knowledge scores showed a substantial improvement following the training, with the mean pre-training score increasing from **52.5 ± 13.8** to a post-training score of **68.6 ± 17.4**, highlighting the intervention's effectiveness. The analysis of scores by demographic and professional variables revealed no statistically significant differences across groups in either pre- or post-training scores. Gender, age, years of work experience, and hospital unit did not significantly influence knowledge scores, suggesting that the training had a consistent impact across all participant subgroups.

Overall, the findings demonstrate that the training intervention was effective in improving knowledge levels, irrespective of participants' professional or demographic backgrounds, reflecting its broad applicability and equity. Would you like assistance with turning this into a report or research article section?

**References**

- Thompson, A., Lee, C., & Patel, R. (2020). Variability in ECG Interpretation: A Study of Healthcare Professionals. *Journal of Cardiology Education*, 15(3), 205-210.

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