

## A Comparison between Shear Bond Strength of VMK Master Porcelain with Three Base-Metal Alloys (Ni-Cr-T3, Verabond, Super Cast) and One Noble Alloy (X-33) in Metal-Ceramic Restorations

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**Abstract :** Statement of Problem: The increase in the use of metal-ceramic restorations and a high prevalence of porcelain chipping entails introducing an alloy which is more compatible with porcelain and which causes a stronger bond between the two. This study is to compare shear bond strength of three base-metal alloys and one noble alloy with the common VMK Master Porcelain. Materials and Method: Three different groups of base-metal alloys (Ni-cr-T3, Super Cast, Verabond) and one group of noble alloy (x-33) were selected. The number of alloys in each group was 15. All the groups went through the casting process and change from wax pattern into metal disks. Then, VMK Master Porcelain was fired on each group. All the specimens were put in the UTM and a shear force was loaded until a fracture occurred. The fracture force was then recorded by the machine. The data was subjected to SPSS Version 16 and One-Way ANOVA was run to compare shear strength between the groups. Furthermore, the groups were compared two by two through running Tukey test. Results: The findings of this study revealed that shear bond strength of Ni-Cr-T3 alloy was higher than the three other alloys (94 Mpa or 330 N). Super Cast alloy had the second greatest shear bond strength (80.87 Mpa or 283.87 N). Both Verabond (69.66 Mpa or 245 N) and x-33 alloys (66.53 Mpa or 234 N) took the third place. Conclusion: Ni-Cr-T3 with VMK Master Porcelain has the greatest shear bond strength. Therefore, the use of this low-cost alloy is recommended in metal-ceramic restorations.

**Keywords :** shear bond, base-metal alloy, noble alloy, porcelain

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