REVIEW OF LITERATURE

Girish Kumar & Amit Shaivrayan (2015) evaluated and compared differences in compressive strength, diametral tensile strength and flexural strength of two composite materials (Z-100 Restorative and Dyraact), Resin Modified GIC (Vitremer), silver cermet (Hi-Dense XP) and silver amalgam (Shofu). Visible light cured composite (Z-100) was found having the highest strength among the tested materials. Amalgam showed the highest value for elastic modulus and silver cermet showed less value for all the properties except for elastic modulus.

Lalit Kumar et al (2015) assessed the fracture resistance of three composite resin core build-up materials on three prefabricated non metallic posts, cemented in extracted endodontically treated maxillary central incisors. Luxacore showed the highest fracture resistance among the three core build up materials with all three post systems. Ti-core had intermediate values of fracture resistance and Lumiglass had the least values of fracture resistance.

Anatara Agarwal & Kundbala Mala (2014) evaluated and compared individual compressive, tensile, and flexural strength of fiber re-inforced dual cure resin core build up material (Para Post ParaCore), silorane based composite resin (Filtrek Tm P90), and dual curing composite for core build up (Luxa Core Dual) with silver amalgam as control. Both dual cure composite materials with nanofillers were found superior to amalgam core. The silorane based material showed the highest flexural strength, but other mechanical properties were inferior to dual core composite materials with nanofillers.

Kiran KV et al (2014) evaluated and compared the compressive strength of microhybrid and nanocomposites. Materials tested in this study were Filtek Z250 XT, CharmFill plus, Tetric Ceram and Esthet X. Statistical Analysis showed that the compressive strength of nanocomposites is higher than microhybrids. Also, it was observed that Charm Fill Plus showed the highest compressive strength and Tetric Ceram showed the least compressive strength among the tested materials.

Sheila P Passos et al (2013) compared the mechanical properties of five materials (Rock Core, Cosme Core, Para Core, Multi Core Flow and Filtek Supreme Plus); concluded that Cosme Core had the highest KHN values and was expected to present a higher degree of conversion during its dual core process (light and chemical cure) when compared to the dual cure materials.
while Rock Core had the lowest young’s values. Based on these results and taking into consideration the convenience of the use of automix systems and dual cure properties, the authors suggested Cosme Core and Multi Core Flow as core build up materials of choice.

**B. Petronijević et al (2012)** examined the fracture resistance of restored maxillary premolars with composite resin, dental amalgam and glass ionomer cement (GIC) using compressive strength test. Also, they analysed the influence of bond strength of restorative materials on intact and carious dentin. The fracture force corresponding to the teeth restored with GIC were significantly lower compared to the control group and the group with composite resin and amalgam. Satisfactory mechanical properties of restored premolars were obtained using composite resin and dental amalgam as a core build-up material. The carious-affected dentin led to lower bond strength of restored teeth.

**D Markovic et al (2011)** examined the ultimate strength of restored Maxillary Incisors with composite resin, dental Amalgam and Glass Ionomer Cement as a traditional restoration and concluded that the caries affected dentin led to lower bond strength of restored teeth and composite resin had the best bond and tensile strength ratio.

**Mithra N Hegde et al (2010)** assessed and compared compressive strength of newer nanocomposites (Filtek Z350, Ceram X Mono, Ceram X Duo) and monohybrid (Tetric Ceram) and concluded that nanocomposites had better compressive strength than microhybrid composite. Filtek Z 350 showed the highest compressive strength and Tetric Ceram showed the least compressive strength among the tested materials. Among the nanocomposites, Ceram X Duo had the least compressive strength as compared to Ceram X Mono and Filtek Z 350.

**Carlos A Munoz – Viveros (2009)** evaluated the compressive strength, fracture toughness, and flexural strength of four different core materials – Build It FR core material, Luxacore Z core material, Core Paste Syringeable core material and Clearfil Photo Core core material and concluded that Build it FR core material exceeds all physical properties for comparable core-Build up materials.

**Bonilla ED (2009)** tested five core build up materials: (1) glass ionomer, (2) resin-modified glass ionomer, (3) titanium-reinforced composite, (4) composite resin with fluoride, and (5) amalgam and compared their fracture toughness. They concluded that titanium-reinforced
composite resin, the composite resin with fluoride, and amalgam materials showed fracture
toughness most likely to withstand the stresses generated during mastication.

**Sepideh Banava & Saman Salchyar (2008)** evaluated the compressive strength of five
composite resins after 1 hour, 24 hours, 7 days and 1 month. Materials studied were Nulite –F, Z250, P60, Biscore & Tetricceram HB. P60 and Z250 had the highest and Nulite –F and Tetric Ceram HB had the lowest compressive strength at all times. The study also concluded that compressive strength increased with time.

**Fernandes A.S & Dessai G.S (2001)** obtained articles cited in MEDLINE search and reviewed them with respect to factors affecting fracture resistance of post-core reconstructed teeth. They concluded that literature indicates that (1) preservation of tooth structure is a must; (2) posts should not be used with the intention of reinforcing the tooth; (3) review of functional and parafunctional forces must be undertaken before restoring the tooth, as these will influence the prognosis; and (4) controlled prospective clinical studies evaluating each factor should be undertaken.

**Braem MJ (1995)** conducted a study to investigate the fatigue behavior of several dental restoratives, including composites, glass ionomers and a resin-reinforced glass ionomer. As a general trend, all products showed a decrease in Young's modulus following water sorption. For all products except the resin-reinforced glass ionomer, the same trend was seen in the restrained fracture strength. This was, however, no longer valid for the flexural fatigue limit: the trend is steady-state for the glass ionomers, status quo for the resin-reinforced glass ionomer, and all composites tested show a decrease.
SUMMARY OF REVIEW OF LITERATURE

With the existing literature it can be concluded that most of the materials which have been studied were not specifically developed for the purpose of core build up, but as a consequence of their properties, have found application in core build-up procedures. More recent formulations have incorporated different combinations of materials; therefore flow composite core build-up materials have been introduced. These are specifically developed to be used as core build up materials. Although many studies compared fracture loads of simulated cores in various geometric configurations often on extracted teeth, the strength of these core materials has rarely been compared separately. Shear failures are unlikely to occur in the oral cavity, hence shear strength of the material holds less significance while choosing the strongest material.

LACK OF LITERATURE

There is lack of literature on classification of core build up materials in general and classification of core build up materials according to strength specifically.